



**KNOWLEDGE, ATTITUDE, AND PRACTICE
TOWARDS BREAST CANCER, RISK FACTORS,
AND SCREENING AMONG IRAQI WOMEN**

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“I declare that all the information within this thesis has been gathered and presented in accordance with academic regulations and ethical principles and I have according to the requirements of these regulations and principles cited all those which do not originate in this work as well.”

Shadan SHKUR AZEEZ

ABSTRACT

M. Sc. Thesis

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The aim of this descriptive, cross-sectional exploratory study is to assess Iraqi women's knowledge, attitude, practice towards breast cancer and screening, and to explain the influence of the Arab culture specific barriers on women's participation in breast cancer screening. 1066 Iraqi women have taken part in the study. Data were collected through the four instruments which determine the socio-demographic characteristics of the women survey, and the women's knowledge about breast cancer, risk factors and breast cancer screening survey, the women's breast cancer screening practices, and Arab culture-specific barriers to breast cancer questionnaire (ACSB). The data were analyzed by using descriptive statistics, and Logistic regression analysis. The statistical significance was set at 0.05 for all analyses. In the study, it was found that 46.1% of women had information about BSE and majority source about performing BSE were doctors (77.2%). 58.1% of them did not practice BSE. 43.9% of Iraqi women heard about CBE. 62.5% of them did not had CBE. 43.2% of women had

information about mammography, but 64.9% of them have not had mammography. The majority source of information about BSE, CBE, and mammography were health care providers. The most common reason was “not having a breast complaint” for not doing BSE, CBE, and mammography. There was a significant relationship between age, knowledge of BC, risk factors, BCS, and exposure barriers (OR=.545, CI=.440-.674), environment barriers (OR=.571, CI=.464 - .703), uneasiness barriers (OR=.736, CI=.557-.974) and BSE practice. In addition, exposure barriers (OR=.553, CI=.447-.684), and environment barriers (OR=.585, CI=.474 -.722) were predictors to undergo CBE. Exposure barriers (OR=.324; CI=.251-.419), environment barriers (OR=.636, CI=.500 -.809), and uneasiness barriers (OR=.644, CI=.464-.893) were predictors for undergoing mammography. We recommend organizing culturally sensitive educational campaigns with the help of media, led by healthcare professionals for spreading information about breast cancer and screening.

Key Words : Breast cancer, Breast Cancer Screening, Knowledge, Attitude, Practice, Barriers.

Science Code : 1032.08

ÖZET

Yüksek Lisans Tezi

IRAKLI KADINLARIN MEME KANSERİ, RİSK FAKTÖRLERİ VE TARAMAYA YÖNELİK BİLGİ, TUTUM VE UYGULAMALARI

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Tanımlayıcı ve kesitsel tipteki çalışmanın amacı, Iraklı kadınların meme kanseri ve taramaya yönelik bilgilerini, tutumlarını, uygulamalarını değerlendirmek ve Arap kültürüne özgü engellerin kadınların meme kanseri taramasına katılımı üzerindeki etkisini açıklamaktır. 1066 Iraklı kadın çalışmaya dahil edildi. Veriler, kadınların sosyo-demografik özelliklerini, meme kanseri, risk faktörleri ve tarama yöntemleri hakkındaki bilgilerini, kadınların tarama uygulamaları ile Arap kültürüne özgü meme kanseri önündeki engelleri (ACSB) içeren dört anket aracılığıyla toplandı. Veriler, tanımlayıcı istatistikler ve lojistik regresyon analizi kullanılarak analiz edildi. Araştırmada kadınların %46, 1'inin KKMM hakkında bilgisi olduğu, çoğunluğun KKMM yi doktordan öğrendiği (% 77, 2) bulundu. Kadınların % 58.1'i KKMM yapmamıştı. Iraklı kadınların % 43,9'u KMM'sini duymuş ancak, % 62,5'i KMM'sini yapmamıştı. Kadınların % 43, 2'si mamografi hakkında bilgi sahibi iken, % 64,9'u mamografi yaptırmamıştı. BSE, CBE ve mamografi hakkındaki bilgilerin çoğu sağlık

profesyonelleriydi. KKMM, KMM ve mamografi yapılmamasının en yaygın nedeni “meme şikayeti olmaması” idi. Yaş, meme kanseri, risk faktörleri ve taramaya yönelik bilgi durumu, maruz kalma engelleri (OR = .545, CI = .440-.674), çevre engelleri (OR = .571, CI = .464 - .703), huzursuzluk engelleri (OR = .736, CI = .557-.974) ile kadınların KKMM uygulaması arasında anlamlı ilişki belirlendi. Yine, maruz kalma engelleri (OR = .553, CI = .447-.684) ve çevre engelleri (OR = .585-.553, CI = .474 - .722) kadınların KMM yapmamalarının, maruz kalma engelleri (OR = .324; CI = .251-.419), çevre engelleri (OR = .636, CI = .500 -.809) ve huzursuzluk engelleri (OR = .644, CI = .464 -.893) ise mamografi yaptırmanın belirleyici faktörleri idi. Meme kanseri ve taramayla ilgili bilgilerin yayılması için sağlık uzmanları tarafından yönetilen medya ile kültürel açıdan duyarlı eğitim kampanyaların düzenlenmesi önerilmektedir.

Anahtar Kelimeler : Meme kanseri, Meme Kanseri Taraması, Bilgi, Tutum, Uygulama, Engeller.

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SYMBOLS AND ABBREVIATIONS INDEX

- BC : Breast cancer
- BCS : Breast Cancer Screening
- BSE : Breast Self-Examination
- CBE : Clinical Breast Examination
- WHO : World Health Organization

PART 1

INTRODUCTION

Cancer is the major reason for morbidity and mortality worldwide. In 2020, a global cancer burden approximated the rate to 19.3 million patients diagnosed with cancer and 10 million death. The mortality rate of cancer in low-medium income countries is high which approximated 70% (WHO, 2021; GLOBOCAN, 2020). It is revealed that 2.3 million women each year have been impacted specifically by BC in 2020, and other related breast diseases caused the greatest number of deaths among women. The death estimation among women by BC is 685,000 in 2020. World Health Organization (WHO) reports showing that in the developed regions, BC rates among women are higher and the rate is on the rise almost in every area of the world (WHO, 2020). BC is identified as one of the cancer types which falls under the category of illnesses in which the cells of breast tissue change and divide in a way that cannot be controlled, this results in a lump or mass. The major BC was observed within the channels which attach the lobules to a nipple and the milk glands (Amjad et al., 2018; American Cancer Society, 2019)

It is recognized that BC risks are increased by various factors, which comprise of positive family history especially genetic susceptibility (BRCA1 and BRCA2), personal history of bone mineral density, non-cancerous breast conditions, and endogenous hormone. Hormonal therapy after menopause, fertility medications, and oral contraceptives are other reproductive factors that increase the risk of BC. Also, factors related to the environment are contributing to increasing the risks of BC which includes exposure to diethylstilbestrol, waste products, and exposures related to job and radiation. Other factors are smoking, unhealthy food, overweighting, and physical inactivity, drinking alcohol (Ozsoy et al., 2017; Farhadhosseinabadi et al., 2018; Escala-Garcia et al., 2020)

Breast cancer is the most common reason of mortality among females particularly in countries of low- and medium-income when compared to upper-income countries, BC rates are lower among women in low-income countries but the death is greater (Bellanger, Zeinomar, Tehranifar & Terry, 2018). It is believed that high death in low-income countries is due to not enough awareness and knowledge about BC detection, insufficient diagnostic tools, and difficulty in accessing treatment. The reasons which have arisen cases of BC in many developing countries include changes in reproductive factors, urbanization, a westernized lifestyle, raised life expectancy (Shulman, Willett, Sievers & Knaul, 2010; Alawad et al., 2018). In addition to an increase in BC cases worldwide, it is emphasized that the mortality rate decreases with more effective therapy and screening methods (Majid et al., 2009; Al-Issawi et al., 2016). For this reason, the WHO and the Breast Health International Initiative offer guidelines emphasizing the importance of public health awareness programs, breast health protection, early diagnosis, and screening (Karim, Ghalib, Muhammad and Fattah, 2015; Alwan et al., 2017). It is stated that delay in BC diagnosis can be prevented, treatment will begin early, and the mortality rate will be reduced (Abdulla, Alwan, Al-Attar & Mallah, 2016; Shakor & Mohammed, 2019)

In Iraq, the main causes of morbidity and mortality in the general population are cardiovascular diseases and cancer. The following categories of cancers are among the most widespread types of cancers, lung, breast, brain, leukemia, colorectal, prostate, and stomach cancers (Abood, Abdahmed & Mazyed, 2020). After the destruction of the Iraqi regime in 2003, a rapid change happened in the lifestyle of the Iraqi people that affected the patterns and levels of cancer trends in Iraq. In the following years (1980-1988, 1990-1991, 2003-2006, and 2014-2016) biological and chemical war have too much negative impact that leaves high levels of uranium and radiation all over the place, bombing all these things have special effects with danger, bad quality, and difficulty in accessing medical care, environmental pollution, and increased cancer incidence (Saadi, Bond & Percac-Lima, 2011; Khoshnaw, Mohammed & Abdullah, 2016; Aldujaily et al., 2020; Hussain & Lafta, 2021). BC has ranked the first malignancy among Iraqi women. It is stated that BC rates on the raising which reaches approximately one-third of all the Iraqi women who have been diagnosed and registered. This fact has been revealed by the Iraqi Cancer Registry which shows that

younger women have been highly affected. It has become a significant hazard for all females' health in Iraq in the past two decades (Alwan, Al-Diwan, Al-Attar & Eliessa, 2012; Ahmed, Ruanduzy & Yousif, 2016; Abedalrahman, Al-Khalidy & Al-Hashimi, 2019). On the authority of WHO, BC is the first reason for mortality among women in Iraq. According to the Cancer Registry of Iraq in 2015 among an estimated population of nearly 32.5 million, the number of women who were registered to have BC was 4,115. This number is accounted for 19.5% of malignancies that had been newly diagnosed, 34% of women with BC diagnoses, and an incidence number which was 22 per 100,000 in the female population (Alwan et al., 2016; Alwan et al., 2017). In addition, according to GLOBOCAN in 2020 the rate is increasing to a total of 7,515 diagnosed cases in Iraq (GLOBOCAN, 2020)

In parallel, other diseases, mortality by BC can be reduced. This can be done by early diagnoses and treatment that so far are the two most effective ways. Early detection and screening program is very effective for increase BC outcomes and increasing a survival rate. Furthermore educating women about BC and launching early detection programs (WHO, 2018). The screening method consists of breast self-examination (BSE), clinical breast examination (CBE), and mammography. These methods are the most significant and effective methods that are being used in the early detection of BC (Andsoy & Gul, 2014; Ewaid, Shanjar & Mahdi, 2018)

In Iraq, there is a national program for early detection of BC, this program has been established since 2001. In the Iraqi provinces, there are mammography units in medical centers, particular clinics, and hospitals for early detection of BC in where they provide diagnostic mammography services. In 2012, a preliminary opportunistic BC screening trail was achieved at the primary referral center for cancer early detection in the Bagdad Medical city Teaching Hospital. The trial was carried out on 809 women who are more than 40 years old and without symptoms. Due to the fact that applying for organized screening programs in developing countries is not achievable at the current time. Also in Iraq, the nationwide programs for BC screening are inadequate especially for the high-risk group of women. Therefore, applying opportunistic screening can largely increase the early detection rate of BC and improve the awareness of BC in Iraq (Al-Gburi, Alwan, Al-Tameemi & Al-Dabbagh, 2021). On other hand according

to the Iraqi National Breast Cancer Research Program, Iraqi women should start screening by mammography after the age of 40 years preceded by annual CBE together with performing monthly BSE (Al Alwan, Al Attar & Al Mallah, 2016)

Many factors prevent women's BC screening programs, such as socio-demographic, religious, socioeconomic status, lack of knowledge and not having insurance, testing family members positive for BC, fear of underestimating risk and diagnosis, fear of pain and embarrassment with radiation (Parsa, Kandiah, Rahman& Zulkefli, 2006; Al-Attar, Sattar, Al Mallah & Wardia, 2016; Islam, Billah, Hossain & Oldroyd, 2017; Rasul, Cheraghi, & Moghdam, 2016). With this study planned in Iraq, these risk factors will be identified and support a review of health policies according to negative findings. The most recent surveys has been carried out to evaluate the knowledge, attitude, and practices towards BC, and screening methods. It was discovered that women had a low level of knowledge regarding BC, risk factors, awareness, and early detection. However, the studies determining the health behaviors of Iraqi women using these screening methods were also very limited (Salman & Abass, 2015; Alwan, Alattar, Al Mallah & Hassoun, 2017; Alwan, Tawfeeq & Mallah, 2019; Alwan, Tawfeeq, Sattar & Yihya, 2019; Shakor, Mohammed & Karotia, 2019)

The cultural factors influence Muslim Arab females' decisions toward BC and screening behavior. Compared to ethnocultural who live in Western countries, women who are citizens of the countries where the primary language is Arabic have the lowest rates of BC screening (Kwok, Endrawes & Lee, 2016; Petro-Nustas, Norton, Wilhauer & Connelly, 2012). The possible reason for low screening rates among women in Arab countries could be a lack of awareness to do health check-ups when they are not aware of the symptoms and signs of poor health. It has been reported by researchers that most females in Egypt felt no be in need of taking counsel from a physician until they are sick (Mamdouh et al., 2014). Perspectives can shape beliefs about health and sickness and about how Muslim women care about their children, families and make their life long health promotion (Jafari-Mianaeit, Atimohammadi, Banki-Poorfard & Hasanpoor, 2017). Beliefs in Islamic teachings may play an important role in religious women's lives, the religious beliefs and disgrace and shame may influence BC

screening and practices (Hatefnia et al., 2010; Islam et al., 2017; Padela et al., 2018; Zorogastuo et al., 2017). Also, there have been survived that highlighted certain barriers that can discourage women from BC screening programs in Arab countries. The barriers are fear of being diagnosed as cancer is a life threatening disease, and they don't have enough knowledge about the benefits of screening and self-care practices (Soskolne, Marie & Manor, 2007; Islam et al., 2017; Zorogastuo et al. 2017). Culture is a vital factor that affects breast cancer screening among Iraqi women. Also, there is a limited study to determine the relationship between Iraqi women's BC screening practice, behaviors and influence the culture on their participation in BC screening.

On the other hand, it has been observed that studies on the diagnosis, risks, and screening methods of women in Iraq focus very little on studies on BC, and more on clinical symptoms in Iraq (Alwan, Al-Diwan, Al-Attar, & Eliessa, 2012). Unfortunately, there are no exact statistics on BC in Iraq, only the data of GLOBOCAN is taken into consideration. The determination of information about BC, risk factors, and screening of women in Iraq will both guide the cancer screening programs of the country, and transfer data to WHO will be the most important, by creating awareness of BC in women, perhaps women's participation in screening programs (Karim, Ghalib, Mohammed, Fattah, 2015; Alwan et al., 2016; Abedalrahman, Al-Khalidy & Al-Diwan, 2019). Furthermore survival rates in Iraq are lower because of the delay stage of prognosis detection among patients when BC probable to be incurable, lack of early detection programs joined with inadequate diagnostic and treatment facilities, low socioeconomic status, and low levels of knowledge and incorrect beliefs about BC prevention (Alwan et al., 2016; Ahmed, Ruanduzy & Yousif, 2016; Alwan et al., 2018; Mutar, Goyani, Had & Mahmood, 2019; Alwan & Tawfeeq, 2019). Health professionals, especially nurses, have important duties and responsibilities in the effective implementation of BC screening programs and creating awareness among women. These responsibilities include training women toward BC, risk factors, early detection programs, determining the screening barriers of females, and the importance of BC (Teixeira et al., 2017; Association of Women's Health, Obstetric and Neonatal Nurses, 2017; Abdelaziz, Salem, Zaki & Atteya, 2015; Andsoy & Gul, 2014). For these reasons, this cross-sectional quantitative exploratory design study aimed to investigate Iraqi women's BC

screening practices and behaviors and to explain the influence of the culture on their participation in BC screening.

PART 2

LITERATURE REVIEW

2.1. OVERVIEW OF BREAST CANCER

Breast is an endocrine gland exists in pairs, one in each side in front of chest wall which considered greatly advanced and specified organ of the body. A main role of breasts is excreting milk and it is a most important part of the body for women's reproductive system (Khan &Sajjad, 2020). BC is defined as the development of the breast cells in a way that its control is impossible. This disease principally happens due to malignancy tumors arising within the cell of the breast. BC starts in two methods which include the ducts or cells of lobules and a less possible in the tissues of stromal. After a period of time, the cells of malignancy be able to attack the healthy tissue of the breast and reach to lymph nodes located below the arm and spread easily to different sites of the body. In addition each stage of BC indicates of which distance spreading the malignancy from the original tumor site (Breast Cancer Org, 2018, Feng et al., 2018)

The highest recurrent malignancy amongst females is BC, the incidence rate is increased to 2.3 million females and resulted from the highest rates of mortality that rated 685,000 in 2020. Also the 5 years survival rate of BC among women all over the world was approximate 6.8 million in 2018 (Harbeck et al., 2019; GLOBOCAN, 2020). In addition, these tumors happen worldwide which considered in relation to the environment, the structure of the population, lifestyle and factors of heredity which change largely the rate of mortality, incidence, and survival among various countries (WHO, 2018; Harbeck et al., 2019; Costantino et al., 2020). Besides to the highest incidence rate of BC and reduced mortality rate in recent years within developed country which is related to early detection, accessibility of BC screening methods specialty utility of mammography and effective

diagnose as well as treatment particularly among young age women (Momenimovahed & Salehiniya, 2019; Cardoso et al., 2019). Conversely in the developing country, the mortality rate of BC is highest in spite of low incidence due to lack of early detection awareness programs, insufficiency of BC screening methods especially mammography, deficiency of diagnosis and treatment approaches as well as late-stage diagnose of BC (Rivera-Franco & Leon-Rodriguez, 2018; Francies, Hull, Khanyile & Dlamini, 2020). Unfortunately women who survives form BC in developing countries suffers from a lot of problems related to chemotherapy such as body image, sexuality weakness and isolation form community (Ganz et al., 2013; Yılmaz & Gürler, 2020)

In Iraq, BC is the first cause of death related cancer among women. According to Cancers Register office of Iraq indicates which 4,115 cases of BC have been registered amongst an estimated population of approximately 32.5 million; accounting to 19.5% of newly diagnosed malignancies, 34% of female cancers and an incidence of 22 per 100,000 female populations in 2015 (Alwan et al., 2017). Similarly according to World health organization the incidence rate is increased to 7,515 (37.9%) new diagnosis cases in 2020 (GLOBOCAN, 2020)

2.2. ETIOLOGY AND RISK FACTORS

Etiology of breast cancer is consisting of many subordinate types of biological malignant tumor, and it is also dependent on a number of factors that include hereditary predisposition, environmental, hormones as well as alteration of gene progress (Deshpande, Pandey & Shyama, 2017; Angahar et al., 2017). For example, it is indicated in a study that women who have migrated from Asia which is low in the frequency of BC to the United States which is high in BC frequency, the incidence was high because of material and social environmental effects (White, Kavanaugh-Lynch, Davis-Patterson & Buermeyer, 2020)

2.2.1. Modifiable Risk Factors

2.2.1.1. Endogenous Hormone

The level of the high endogenous hormone have a positive association with BC, women who are at the postmenopausal stage have a high level of the endogenous hormone that increase two time chance for the risk of BC (The Endogenous Hormones and Breast Cancer Collaborative Group, 2002; American Cancer Society, 2019).

2.2.1.2. Fertility Drugs

The drugs that stimulate the ovarian to secrete more levels of progesterone and estrogen which affect breast and ovarian tissues, in the phase of proliferative cells collects random DNA alteration, as well as leads to cancer. Fertility drugs, increase the risk of BC by 2.3 % yearly (Marchbanks et al., 2002; Collins, Blake & Crosignani, 2005; Russo et al., 2014).

2.2.1.3. Obesity and Physical Inactivity

One of the important risk factors to cause most diseases is obesity and physical inactivity, especially BC. The increased risk of BC due to excess body weight and physical inactivity particularly among postmenopausal women resulted in poorer diagnosis and the highest death compared to women who are physically active and have healthy body weight in low risk for BC (Kamińska et al., 2015; Gershwin, Ahima, & Tchou, 2016)

2.2.1.4. Alcohol

Another risk factor for BC among women is the consumption of alcohol because of high level of Estrogen and other hormones which affects breast cell and lead to malignancy (Boyle & Boffetta, 2009; Sader et al., 2009; Angahar, 2017).

2.2.1.5. Tobacco

Smoking tobacco is carcinogenic substances that increase the risk of many cancers, one of them ,BC which is the most common cancer among women Females who begun smoking at teen-age or before menstruation ages have a high chance of growing BC (Jones et al., 2017; Angahar et al., 2017).

2.2.1.6. Radiation

The females who exposure to radiation of the chest at an early age of life have an increased risk for BC, especially women's who treated for Hodgkin lymphoma by chest radiation therapy have the highest chance of developing BC raised from 4 – 56 times compared to women with non-receiving treatment for Hodgkin lymphoma (Hill et al., 2005; Inskip et al., 2009).

2.2.1.7. Nightly Shift Work

The employees who work at night shift exposure to light are more likely to develop BC especially nurses and flight attendant because of disruption of sleep mechanism which related to melatonin secretion, the function of melatonin is preventing the growth of small tumors from developing to cancer (Hunter & Figueiro, 2017; Jones et al., 2019).

2.2.2. Non-Modifiable Risk Factors

2.2.2.1. Age

The risk for BC rises with age, which increases two times until menopause. Also, the rate of BC is highest among women who reach menopause and the most diagnosis cases with BC at age 50 or more in addition to lesser diagnosis below 40 age (Moorthie et al., 2017; Momenimovahed & Salehiniya, 2019).

2.2.2.2. Family History

One of the important risk factor to develop BC is family history, approximately 13% to 19% of females who are positive for BC have first degree family member with BC which include mother, sister, daughter (Shiyanbola et al., 2017; Bojanic et al., 2020).

2.2.2.3. Genetic Predisposition

The most recurrent cancers among females are breast and ovarian cancer, as well as genetic predisposition has emerged as one of the main risk factors for developing breast and ovarian malignancies. The most identified genes related to genetic breast and ovarian cancer are BRCA1 and BRCA2. Although the latest advances discovered several new genes which cause breast and ovarian malignancies (De Silva, Tennekoon & Karunanayake, 2019; Angeli, Salvi & Tedaldi, 2020).

2.2.2.4. Personal History

One of the important factor to develop new BC is female's personal history of BC which malignancy happens in the same site or the other site of the breast. Females who received treatment of BC have more chance to increasing risk for new cancer in treated breast or other breast (Shah, Rosso & Nathanson, 2014; Angahar et al., 2017).

2.2.2.5. Benign Breast Disease

Non-cancerous breast conditions which divided to non- proliferative, proliferative without atypia, and atypical hyperplasia. Proliferative and atypical hyperplasia considered as a significant factor to increase the risk for BC which can be happen in both breast of women (Hartmann et al., 2005; Louro et al., 2020).

2.2.2.6. Breast Density

One of the strongest identified risk factor to develop BC is breast density which measured by dense or white parts of breast that diagnosis by mammogram. Females who diagnosis to more than 75 % of breast density have chance of 4.6 times for developing BC when compared to females who have little mammographic density (Wang, Vachon, Brandt & Ghosh, 2014; Moran et al., 2019).

2.2.2.7. Menstrual Cycles

Women who began early menstruation before the age of 11 years old have more chance to increasing the risk of BC. Also, females who had late menopause after 55 or older have a greater chance to develop BC (Eaton et al., 2002; Surakasula, Nagarjunapu & Raghavaiah, 2014; Khalis et al., 2018).

2.2.2.8. Bone Mineral Density (BMD)

Another risk factor to developing BC is high bone mineral density especially among postmenopausal women because of higher endogenous hormone levels which increase the chance of BC from 60% to 80% when compared to women with a low bone mineral density who have less risk (Zain, Vilashni, Dore Lim & Chelliah, 2016; American Cancer Society, 2019).

2.3. DIAGNOSIS METHODS

The diagnosis of BC can be detected by a woman or physician by feels a tumor or the changes that happen in the skin or nipple of the breast. BC cells during diagnosis could be found in tissue, lymph nodes located in the axillary, or metastasis to other sites of the body. Depending on where the cancer is discovered. The stage of BC is determined, from I to IV (Zhang et al., 2012; Waks & Winer, 2019).

2.3.1. Diagnostic Mammography

One of the important method is diagnostic mammography by x-ray examination used to diagnosis uncommon breast changes such as pain, lump, and any fluid or liquid that come out from the nipple of breast, skin changes in addition to nipple which turns to inner side of breast (Barlow et al., 2002; Badu-Peprah & Adu-Sarkodie, 2018).

2.3.2. Ultrasound

The principal imaging techniques that safe and not need radiation is an ultrasound of the breast. It is use of sound waves to create images of the inner structure of breast which diagnosis breast diseases. Also, it is used for females less than 30 years old to examine sensible lesions and to afford additional description of mammography with abnormal outcomes. In addition to detecting BC cells which are smaller (Evans et al., 2018; Rapelyea & Marks, 2018).

2.3.3. Magnetic Resonance Imaging (MRI)

MRI is one of the more accurate modal quality used to detect and description of breast tumors. In recent years recognized that magnetic resonance imaging with intravenous gadolinium contrast was a high critical implement to separating cancer from tissue, and in specific the new blood vessels and abnormal micro vascular permeability which accompanies a tumor (Schoub et al., 2018; Radhakrishna et al., 2018).

2.3.4. Fine Needle Aspiration Biopsy (FNA)

Another approach which used broadly for last years to diagnosis BC is fine-needle aspiration biopsy which done by a cytologist, this method is done by removing fluid or cells from the tumor for cytological investigation (Vega Bolívar et al., 2011; Ahmadinejad et al., 2017).

2.3.5. Core Needle Biopsy (CNB)

It is an important method for suspected breast abnormality during screening or examination, and one of the types of biopsy that diagnosis breast lump more accurately. It is done by removes a large part of breast tissue for examination to detect cancer cells. CNB is widely used because of safety, have no complication, cost-effective assessment. For that reason, the combination of core needle biopsy with a guide of mammography or ultrasonography is particularly greater in non-notable lumps (Oyama, Koibuchi & McKee, 2004; Vega Bolívar et al., 2011; Bick et al., 2020).

2.3.6. Surgical Biopsy

One of the most used methods nowadays especially in developing countries is open surgical biopsy which called the gold standard. It is used for women with suspected breast lumps which done in operating theatre. There are two types of surgical breast biopsy, excisional and incisional biopsy. Excisional biopsy is done by remove of the whole tumor and normal surrounding tissue. However, incisional biopsy involves removing the portion of the tumor for tissue examination. Surgical breast biopsy have a little chance for incorrect diagnosis but a greater risk for side effects like infection, pain, and bleeding at the site of biopsy (Buccimazza et al., 2010; Calhoun & Anderson 2014; Isikhuemen 2018).

2.4. TREATMENTS

2.4.1. Surgery

The main aim of surgical approach is to remove the cancer cells from breast. There are many types of surgical methods which include mastectomy, lumpectomy. Mastectomy done by complete remove of the breast. However, lumpectomy is remove of the breast malignancy cell and surrounding normal tissue. Mastectomy and lumpectomy commonly done together for remove lymph nodes to decide if the malignancy has been metastasis. In addition, a number of BC cases may need a comprehensive operation of

lymph nodes. Another type of surgical method is bilateral mastectomy for women who are positive with BC which involve remove of unaffected breast to prevent cancer from recurrence (American Cancer Society, 2019; Riis et al., 2020).

2.4.2. Radiation Therapy

One of the effective approach to treat BC at every phase is radiation therapy. Nowadays the crucial step to treat BC at early stage especially after operation of removing cancer and surrounding normal tissue of breast. In progressive BC radiation therapy play an important role on raising local control of malignancy and survival rates of women particularly in metastasis cases (Mikulandra, Božina & Beketić-Orešković, 2016; Akram, Iqbal, Daniyal & Khan, 2017).

2.4.3. Chemotherapy

The most important method to treat BC and prolong patient's survival. Chemotherapy is a drug that target and attack cancer cells in the body. Also it is inter to cell division phase and functioning firstly at cells which fast in division. The patients who received chemotherapy suffer from complications which experience particular levels of behavioral problem while handling sign and symptoms (Smoot, Wampler & Topp, 2009; Ikhuoria, & Bach, 2018).

2.4.4. Targeted Therapy

The new and more efficient approach to treat BC is target therapy which works only on specified cancer cells without damage the normal cells of the breast, it is a medication that prevents the development of cancer metastatic through entering to particular molecules participated of progress, growth, and metastasis of BC cell to other sites of the body. One of the approved medication called Trastuzumab, is antibody acts on protein human epidermal growth factor receptor 2 used to treat types of BC (Karale, Karale & Utikar, 2018; American Cancer Society, 2019).

2.4.5. Endocrine Treatment

Treatment of BC with endocrine or hormonal therapy which is sensitive to hormones works through reducing the body's making of hormones or thru inhibition of hormones to receptors attaching within the cells of malignancy. These medications increase the survival rate, reduce death, and enhanced the prognosis. One of the most used drugs is Tamoxifen which used for more than thirty years to treat BC with hormone receptor-positive (Fan, Chang, & Fu, 2015; Cheung et al., 2018).

2.4.6. Immunotherapy

One of the developed parts in the treatment of BC is immunotherapy medication which efficiently motivates a patient's immune system to identified and devastate the malignancy cells. One of the types of immunotherapy is checkpoint inhibitor which used to treat BC, a medications' role is to target this inhibitor support for return immune system reaction in opposition to malignancy cells of the breast (Dine et al., 2017; American Cancer Society, 2019).

2.5. PREVENTIVE APPROACH IN BREAST CANCER

2.5.1. Primary Prevention

Breast cancer prevention determined by risk factors which is divided into modifiable and non-modifiable. Non-modifiable risk factors which involve genetic alteration, older age, benign breast disease, family and personal history, those factors cannot be changed and powerfully increase the risk for BC. Modifiable risk factors can be prevented by a correct lifestyle. In addition, decreasing exposure to endogenous hormones, reduce of oral contraceptive and hormonal replacement therapy for a long time. Other changeable risk factors are obesity, non-healthy regimen, alcohol consumption, and physical inactivity. These factors can be reduced by physical activity, healthy food (intake of more vegetables and fruits also less eating of animal fat and proteins), normal body mass index, especially after menopause, all of them

mention factors powerfully related to reducing the level of estrogen which lead to decrease the risk of BC (Sauter et al., 2018; Costantino et al., 2020).

2.5.2. Chemoprevention

The medications that are used to decrease the risk of BC is chemoprevention. At the present time the Food, Drug Administration approved two available medications that help to reduce the risk of BC among highest-risk group of women which include raloxifene and tamoxifen. Chemoprevention medication acts by inhibiting the Estrogen hormone within the body's tissue, as well as works like estrogen hormone in other tissues (Khaliq & Visvanathan, 2012; Pruthi, Heisey, & Bevers, 2015; American Cancer Society, 2019).

2.5.3. Preventive Surgery

One of the preventive ways to reduce the risk of BC among females who are at the highest risk (genetic alteration of BRCA1 and BRCA2) can undergo surgical removal of breasts for reducing the risk by more than 90%. Particularly a lot of females who undergo preventive surgery will not have the risk of developing BC (American Cancer Society, 2019; Franceschini et al., 2019).

2.6. BREAST CANCER SCREENING

2.6.1. Mammography

The most important method for BC screening is mammogram. The mammography is low dosage of x-ray which imaging the tissue of breast and used in the early diagnosis of BC. There are various advantage of mammography which include decrease the BC death and increasing the treatment choices. Women have to start yearly screening among the ages of 40 and 44, whilst for age group 45- 54 must have screened yearly, 55 of age or above must screening every 2 years according to American Cancer Society. In addition to advantages of mammography there is also disadvantage which is false positive result especially among women who have screening at first time

(Oeffinger et al., 2015; American Cancer Society, 2019; Shen, Winget & Yan Yuan, 2017).

2.6.2. Clinical Breast Examination (CBE)

One of essential methods of BC screening especially for low income countries that have inadequate access to costly medical technologies like mammography is clinical breast examination. The CBE is a physical examination method performed by the professional health care to identify the various conditions of breast abnormalities. CBE recommended by breast cancer foundation every 3 years between the ages of 20-39, in addition, once a year after the age of 40 which recommended by the American College of Obstetricians and Gynecologists and the American College of Radiology (Saslow et al., 2004; Mango et al., 2018; Veitch et al., 2019).

2.6.3. Breast Self –Examination (BSE)

The manual examination of breasts by women considered a vital method of BC screening to detect early cancer. The method of BSE is cost-effective, simple to perform, harmless, requiring no instrument or device, and not causing pain. The BSE techniques include looking and feeling in standing and lying position in front of the mirror for any breast lumps, pain, skin changes, dimpling, nipple discharge, pulled-in nipple, change in size, shape, similarity, redness. The BSE should start at the age of 20 and should be performed once a month. Additionally, the BSE is essential for raising awareness of breast health which helps to discover abnormality among females who find it difficult to access health services and laboratories for recently developed BC diagnostic approaches (Doshi, Reddy, Kulkarni & Karunakar, 2012; Shrivastava, Shrivastava & Ramasamy, 2013; Ayran et al., 2017; Dagne, Ayele & Assefa, 2019; Getu, Wudu Kassaw, Tlaye, & Gebrekiristos, 2018).

2.6.4. Breast Cancer Screening in Iraq

In Iraq, the incidence of BC among women is high, they are presenting at advance stage of cancer especially at younger age groups, and the most cases which diagnosed

for BC are premenopausal females. There is a national program for early detection of BC, this program has been established since 2001. In the Iraqi provinces, there are mammography units in medical centers, particular clinics and hospitals for early detection of BC where they provide diagnostic mammography services. In 2012, a preliminary opportunistic of BC screening trail was achieved at the primary referral center for cancer early detection in the Bagdad Medical city Teaching Hospital. The trial was carried out on 809 women who are more than 40 years old and without symptoms. Due to the fact that applying organized screening programs in developing countries is not achievable at the current time. Also in Iraq, the nationwide programs for BC screening is inadequate especially for high risk group of women. Therefore, applying opportunistic screening can largely increase the early detection rate of BC and improve the awareness towards BC in Iraq (Al-Gburi, Alwan, Al-Tameemi & Al-Dabbagh, 2021). On other hand according to the Iraqi National Breast Cancer Research Program, Iraqi women should start monthly BSE at the age 20 which is an important method to detect breast abnormalities. The better time to practice BSE is 7- 10 days after menstruation cycle. The CBE should star at the age 20 and checking every 2- 3 years, in addition to yearly check up at the age 30 or over. Mammography screening method should began at age 40 years, also after the age of 40 years must done once a year. For high risk women screening of mammography start at age of 30 and checking once a year (Al Alwan & Mualla, 2014, Al Alwan et al., 2015; Al Alwan, Al Attar & Al Mallah, 2016; Alkhazrajy & Souza, 2018; Shakor & Mohammed, 2018; Al-Alwan et al., 2019 ; Al Ameen, Rajab, Ali & Al Diwan, 2020).

2.6.5. Importance of Breast Cancer Screening and Nursing Approach

Breast cancer screening is very important because it detect cancer at early stage when it is easy to treat and less expensive. The early diagnosis and efficient therapy is vital because help to decrease morbidity, death, cost of care, increased the survival rate and enhanced quality of life. Female's information and a positive attitude to BC screening methods is essential about significance of BC diagnosis at early stage. BC screening regularly doing it prevent the cancer form spread to the body's other site (Heidari, Mahmoudzadeh-Sagheb & Sakhavar, 2007; Jin et al., 2014; Momenimovahed et al., 2020; Ginsburg et al., , 2020).

Breast cancer screening play a vital role for the early diagnosis of cancer and effective treatment. There are various common important factors that affect women's participation in BC screening which involve cost and insurance, knowledge, feeling, sociodemographic factors, cultural factors, belief, pain, and embarrassment, fear, religious, psychological factors, communications, social support and access, and time constraint (O'Hara et al., 2018). Also, it has been revealed that a small percentage around 20% of women use the health facility programs for early detection. Different factors have been identified for low participation such as cultural attitudes towards screening methods. For example, feeling shameful to show their breasts to others, while if they are not screened for early detection, their survival rate might be lower. Regarding death from BC, there are different results of the underutilization of BC screening programs. This includes various impacts of health and well-being such as social distress, psychological suffering, and malfunction, role performance reduction. Also, the individual's emotional adversity, increasing costs in medical and health facilities can be reduced by early detection, treatment, and care (Momenimovahed et al., 2020; Suwankhong & Liamputtong, 2018; Hwang et al., 2016).

The cultural factor play an important role on influencing Muslim Arab females' decisions regarding BC, and screening behavior. Compared to ethno cultural who live in Western countries, women who are citizens of the countries in where the primary language is Arabic have the lowest rates of BC screening (Kwok, Endrawes & Lee, 2016; Petro-Nustas, Norton, Wilhauer & Connelly, 2012). The possible reason to low screening rates among women in Arab countries could be a lack of awareness to do health check-ups when they are not aware of the symptoms and signs of poor health. It has been reported by researchers that most females in Egypt felt no be in need of take counsel from a physician until they are sick (Mamdouh et al., 2014). Perspectives can shape beliefs about health and sickness and about how Muslim women care about their children, families and make their life long health promotion (Jafari-Mianaeit, Atimohammadi, Banki-Poorfard & Hasanpoor, 2017). Beliefs in Islamic teachings may play an important role in religious women's lives, the religious beliefs and disgrace and shame may influence BC screening and practices (Hatefnia et al., 2010; Islam et al., 2017; Padela et al., 2018; Zorogastuo et al., 2017). Also, there have been survives that highlighted certain barriers that can discourage women to BC screening

programs in Arab countries. The barriers are fear of being diagnosed as cancer is a life threatening disease, and they don't have enough knowledge about the benefits of screening and self-care practices (Soskolne, Marie & Manor, 2007; Islam et al., 2017; Zorogastuo et al. 2017). Cultural is a vital factor which affect breast cancer screening among Iraqi women. Also there is a limited study to determine relationship between Iraqi women's BC screening practice, behaviors and influence the culture on their participation of BC screening. For these reasons, this cross-sectional quantitative exploratory design study aimed to investigate Iraqi women's BC screening practices and behaviors and to explain influence the culture on their participation of BC screening.

The role of nurse in health promotion and prevention of BC should have a part of nursing's aim of practice. The role of nurse in BC is to identify risk factors, and have the communication and teaching skills to work with women to change behaviors to reduce risk factors. Nurses have many responsibilities to improve health promotion, to achieve this essential aim, to perform BC screening program, to educate, provide and increase awareness among women. To improve results, prevention must be coupled with screening and early detection measures. Early detection of BC reduces the overall costs of cancer treatment. In addition, nurses can educate the women about BC, to improve awareness and appropriately refer for further evaluation. Further, nurses can increase adherence to screening guidelines because they are viewed as trusted members of their society. Also, the nurse role is very important to reduce the barriers of women towards BC screening methods. As a result, nurses can act more efficiently as guides and can decrease delay in care (Vogel et al., 2003; Abdelaziz, Salem, Zaki & Atteya, 2015, Challinor et al., 2016). In Iraq, however, nowadays a little women have information about BC and breast cancer screening. Unfortunately, a standard follow-up for screening tests cannot be fully implemented. Also, there are not special educated nurse for oncology patient. Nurses' role is not clear and there is no academic research in nursing field. Prevention program for BC is poor because of lack of training, centers and educated nurse for this field. The need for overall knowledge about BC is essential to plan and perform control programs for the deadly BC which may be useful to prevention, early detection and treatment.

PART 3

MATERIAL AND METHODS

3.1. RESEARCH DESIGN

A descriptive, cross-sectional exploratory study was conducted to assess women's knowledge, attitude, practice towards breast cancer and screening, and to explain the influence of the Arab culture specific barriers on women's participation in breast cancer screening.

3.2. SETTING OF THE STUDY

The study was conducted in Sulaymaniyah city in north of Iraq during the period of March 2019 to February 2020. Sulaymaniyah is a governorate located in North of Iraq, and placed in the East by Iran and the Iraqi provinces of Erbil, Kirkuk, Salah Al-Din, and Diyala to the North, West, and South separately. The majority of the population in Sulaymaniyah city is ethnic Sunni Muslim Kurds, Arabs, Shiite and a number of Chaldean Christian (Zakaria et al., 2013; Ahmed et al., 2016; Inter-Agency Information and Analysis Unit of Iraq, 2020). The population of Iraq is 40,800,438 based on Worldometer detailing of the latest United Nations data (Accessed date 15 March 2021). The total population of Sulaymaniyah city is 723,170 based on Worldometer elaboration of the latest United Nations data of Iraq Population (Accessed date 15 March 2021). In Iraq, the women population is 20,562,885 according to Countrymeters estimates based on the latest United Nations data (Accessed date 15 March 2021). The population of women in Sulaimaniyah city according to 2012 data is 464,259 between 20 and 70 years old (Majid et al., 2017)

3.3. STUDY SAMPLE

The sample of the study were women who live in Sulaymaniyah city. The inclusion criteria were age 20 – 70 year's old, female's gender and who able to read and write, while exclusion criteria were age ≤ 20 years and ≥ 70 years, and female who are having difficulty in communication, Kurds and Christian women. In the calculation of the sample size of the study, 1066 Iraqi women are included according to the sample size formula with a known population ($N = 464,259$) (Majid et al., 2017) used, and it was calculated that at least 295 women between the ages of 20 and 70 should be included. The sample size used in the calculation formula:

$$n = \frac{N t^2 p^*q}{d^2 (N-1) + t^2 p^*q}$$

$N=464,259$

$t = 1.96$

$d =$ effect size (taken as 0.05 in the study)

$p=$ from previous studies found as 0.26 (Al-Attar, Abdul Sattar, Al Mallah & Wardia, 2016)

3.4. MEASUREMENTS

Data were collected through the four following instruments.

Socio-demographic characteristics of the women Survey: This part is created by relevant literature (WHO, 2018; GLOBOCAN, 2018). The Socio-Demographic Characteristics of Women Survey was used to determine socio-demographic characteristics (e.g., age, education, profession, ethnic, marital status, socioeconomic situation, marriage age, presence of child, age of first birth, contraceptive use, exercise, nutrition, breastfeeding, smoke cigarettes, age of first menstrual period, previous breast problems, and breast cancer-related variables (i.e., family history of breast cancer, heard about BC and sources. This survey consisted of 21 items.

The women's knowledge about Breast Cancer, risk factors and Breast Cancer Screening Survey: This survey is created by relevant literature (WHO, 2018; GLOBOCAN, 2018). The women's knowledge about breast cancer, risk factors and Breast Cancer Screening survey was used to determine the knowledge about breast cancer, risk factors, and breast cancer screening. This survey included a total of 35 items. The correct answer scored 1 while false or I don't know answer scored 0. Breast cancer and risk factors knowledge consisted of 22 items. Women's breast cancer and risk factors knowledge level were 8.45 ± 9.32 (0-22). Breast cancer screening methods (BSE, CBE, and Mammography) knowledge consisted of 13 items. Women's knowledge score of breast cancer screening was found 5.09 ± 5.44 (0-13)

The women's Breast Cancer Screening Practices: The women's Breast Cancer Screening Practices survey was used to determine the practices of women toward breast cancer screening (BSE, CBE, and Mammography). This survey included a total of 17 items which divided to three parts, breast self-examination (7), clinical breast examination (5) and mammography (5).

Arab Culture-Specific Barriers to Breast Cancer Questionnaire (ACSB) (Cohen & Azaiza, 2008): Permission was obtained from authors to utilize the scales. The Arab Culture-Specific Barriers to Breast Cancer Questionnaire (ACSB) was developed by Cohen and Azaiza (2008). This tool is composed of 21 items and five sub-scales (exposure barriers, social barriers, religious beliefs concerning cancer, environmental barriers and uneasiness with own body). All items have five response choices ranging from strongly agree (1 point) to strongly disagree (5 points). A low score indicates a high level of cultural obstacles related to breast cancer screening behaviour. Cohen and Azaiza reported Cronbach's alpha ranged from 0.76 to 0.90. In this study, Cronbach's alpha ranged from 0.86 to 0.96.

3.5. DATA COLLECTION

Data collection was conducted from March 2019 to February 2020. After explaining the study objectives and assuring confidentiality and privacy of the data, verbal and written informed consent was obtained from each women. All documents, including

surveys, consent forms were made available in Kurdish, English and Arabic. A researcher translated the English materials into Arabic and checked the translations for accuracy. Data were collected by researcher by face to face interview. Data collection averaged about 20 minutes per woman.

3.6. STATISTICAL ANALYSIS

Data were analyzed using SPSS® (SPSS Inc., Chicago, IL) version 21.0 for® Windows® (Microsoft Corporation, Redmond, WA). Descriptive statistics (percentage, mean, and standard deviation) were calculated to find the distribution of the socio-demographic characteristics of the women, practices about breast health, knowledge of breast cancer screening methods and risk factors, and Arab culture-specific breast cancer screening barriers. Logistic regression analysis was conducted because of the use of categorical dependent variables (performed BSE, attended CBE, had a mammogram). Categorical variables (age, education, marital status, has information about BSE, CBE and mammogram) and numerical variables (knowledge score, sub-scales of Arab culture-specific barriers to breast cancer screening) were taken as covariates. A backward stepwise (conditional) regression method was used. The significance of each independent variable in the bivariate model was assessed by a Wald-type chi-square test. The statistical significance was set at 0.05 for all analyses.

3.7. ETHICAL CONSIDERATION

Approval was obtained from the ethical committee at Karabuk University with the project-wide variety (77192459-050.01.04-E.11637) at the date of (05/03/2020). Formal administrative approval was obtained from the Sulaymaniyah General Directorate of Health with the project number (12006) on (07/12/2020), Department of Planning and Health Research for conducting this study.

3.8. LIMITATION OF THE STUDY

During the targeted time of data collection, the coronavirus (COVID-19) pandemic reached Iraq. Data collection was delayed due to complete lockdown and curfew. Also, there were difficulties to communicate with people because of the virus risks.

PART 4

RESULTS

In this part, the result of Iraqi women's knowledge, attitude, practice towards breast cancer and screening methods is shown, and the influence of the Arab culture specific barriers on women's participation in breast cancer screening is explained.

4.1. DESCRIPTIVE CHARACTERISTICS OF THE WOMEN

Table 4.1 shows that socio-demographic characteristics of the women were 36.5% aged 50 years and above. The mean age of women was 45.20 ± 14.069 , 35.5% of women had university or above, 60.9% were housewife, all of participants were Arabs, 65.5% of women were married, and (53.0%) had medium socioeconomic.

Table 4.1. Socio-demographic characteristics of the women.

Variables	n (%)	
Age	20-29	221 (20.7%)
	30-39	203 (19.0%)
	40-49	254 (23.8%)
	50+	388 (36.5%)
M \pm SD	45.20 \pm 14.069 (21- 69)	
Education	No formal education	92 (8.6%)
	Primary - Secondary	368 (34.5%)
	High School	228 (21.4%)
	University or above	378 (35.5%)
Level of Education	Employees	324 (30.4%)
	Retired	93 (8.7%)
	Housewife	649 (60.9%)
Ethnic	Arabic	1066 (100%)
Marital status	Married	698 (65.5%)
	Single	368 (34.5%)
Socioeconomic situation	Low	139 (13.0%)
	Medium	565 (53.0%)
	High	362 (34.0%)
Total	1066 (100%)	

Table 4.2 shows that information about breast cancer and risk factors identified by the women were 52.5% married at age (18 – 30), 44.6% of the women had above four children, and 43.8% had less than three, 58.7% of women were within the (18- 30) age group in first birth. Regarding to contraceptive use, 68.7 % of women were not use contraceptive, 15.5% of women were perform breastfeeding. The majority of women regard to first menstrual period age 86.8% were above 11 years old, and 82.6% of women did not have any previous breast problems, (72.4%) of women did not have any family history of breast cancer.

Table 4.2. Information about BC and risk factors identified by the women.

Variables	n (%)
Marriage age	<18 278 (31.5%)
	18-30 464 (52.5%)
	>30 141 (16.0%)
Presence of child	None 102 (11.6%)
	Less than 3 386 (43.8%)
	4 and above 393 (44.6%)
Age of first birth	<18 233 (29.9%)
	18-30 457 (58.7%)
	>30 89 (11.4%)
Contraceptive use	Yes 273 (31.3%)
	No 599 (68.7%)
Breastfeeding	Yes 162 (15.5%)
	No 886 (84.6%)
Age first menstrual period	<11 141 (13.2%)
	11< 925 (86.8%)
	No 772 (72.4%)
Previous breast problems	Yes 186 (17.4%)
	No 880 (82.6%)
Family history of breast cancer	Yes 294 (27.6%)
	No 772 (72.4%)

Table 4.3 reports that all of women heard about breast cancer, and the majority 65.8% source of information was media.

Table 4.3. Information of women regarding breast cancer and sources.

Variables	n (%)
Have you heard about breast cancer?	Yes 1066 (100.0%)
Source of Information (n= 1066)	
Media	701 (65.8%)
Friends	110 (10.3%)
Health care provider	235 (22.0%)
Conference + Seminar	20 (1.9%)

Table 4.4 reports that information about lifestyle identified by women 49.9% of women never do exercise, while 16.3% do exercise once a week, 56.4% consume low fiber, high protein, and fat, 43.6% consume many fruits and vegetables, 85.2% were non-smokers.

Table 4.4. Information about lifestyle identified by women.

Variables	n (%)
Exercise	Never 531 (49.9%)
	Sometimes 238 (22.3%)
	Once a week 174 (16.3%)
	Three times a week 123 (11.5%)
Nutrition	Many fruits and vegetables 465 (43.6%)
	Low fiber, high protein and fat 601 (56.4%)
Smoke cigarettes	Yes 158 (14.8%)
	No 908 (85.2%)

Table 4.5 shows practice of women toward breast cancer screening which includes (BSE, CBE, and Mammography). 491 (46.1%) of women's have information about BSE and the majority source of information 258 (52.5%) were health care providers, followed by mass media 215 (43.8%). Source of information about performing BSE 362 (77.2%) were doctors, and 27 (5.8%) were nurses.

Table 4.5 shows majority of the women's 619 (58.1%) did not practice BSE. Only 447 (41.9%) practiced BSE. Women's who practiced BSE, 303 (67.6%) were regular, 60

(13.4%) were irregular, 85 (19.0%) were as they think about it. The reasons of women who not practiced BSE, majority of them 431 (69.7%) not having a breast complaint, 141 (22.8%) were afraid to discover a tumor, 30 (4.8%) were not having time, 17 (2.7%) were lack of information.

Table 4.5 shows 468 (43.9%) of women heard about CBE and the majority source 283 (60.5%) were health workers, 177 (37.8%) were media, and 8 (1.7%) were friends. Majority of women 666 (62.5%) not had CBE while 400 (37.5%) of them had it. Women's had CBE, 291 (72.7%) were in the last 2 years, 63 (15.8%) were in the last 5 years, 46 (11.5%) they don't remember. The reasons of women who not had CBE, majority of them 443 (66.5%) not having breast complaints, followed by 124 (18.7%) they afraid of the procedure and the bad results, 40 (6.0%) they didn't find it necessary, 26 (3.9%) were "ashamed", 14 (2.1%) were afraid of pain and discomfort, 13 (1.9%) were "nobody suggests", 6 (0.9%) "They have never heard of it".

Table 4.5 shows 461 (43.2%) of women have information about mammography and the majority source 277 (60.2%) were health workers, 176 (38.1%) were media, and 8 (1.7%) were friends. Majority of women 692 (64.9%) not had mammography while 374 (35.1%) of them had it. Women's had mammography, 286 (76.5%) were in the last 2 years, 52 (13.9%) were in the last 5 years, 36 (9.6%) they don't remember. The reasons of women who not had mammography, majority of them 491 (70.9%) not having breast complaints, followed by 116 (16.8%) they afraid of the procedure and the bad results, 53 (7.7%) they didn't find it necessary, 23 (3.3%) said mammography cannot be accessed, 9 (1.3%) were ashamed.

Table 4.5. Practice of women toward Breast Cancer Screening.

Breast self-examination	Yes		No	
	n	(%)	n	(%)
Have information about breast self-examination	491	(46.1%)	575	(53.9%)
Sources (n= 491)				
Media	215	(43.8%)		
Friends	18	(3.7%)		
Health care providers	258	(52.5%)		
Get information about performing BSE	469	(44.0%)	597	(56.0%)
Sources (n= 469)				
Family	55	(11.7%)		
Doctor	362	(77.2%)		
Nurse	27	(5.8%)		
Friend	25	(5.3%)		
Practicing of BSE	447	(41.9%)	619	(58.1%)
If Yes (n=447)				
Regular	302	(67.6%)		
Irregular	60	(13.4%)		
As I think about it	85	(19.0%)		
If No, reason (n= 619)				
I'm afraid to discover a tumor.	141	(22.8%)		
I don't have a breast complaint.	431	(69.7%)		
I don't have the time	30	(4.8%)		
I don't have enough information.	17	(2.7%)		
Clinical breast examination				
Have you ever heard a clinical breast examination?	468	(43.9%)	598	(56.1%)
Sources (n=468)				
Media	177	(37.8%)		
Friends	8	(1.7%)		
Health workers	283	(60.5%)		
Had a clinical breast examination	400	(37.5%)	666	(62.5%)
When (n= 400)				
In the last 2 years	291	(72.7%)		
In the last 5 years	63	(15.8%)		
I don't remember	46	(11.5%)		
If No, reason (n= 666)				
I've never heard of it.	6	(0.9%)		
Nobody suggests	13	(1.9%)		
I'm afraid of the procedure and the bad results	124	(18.7%)		
I didn't find it necessary.	40	(6.0%)		
I didn't have any complaints.	443	(66.5%)		
I was afraid of pain and discomfort.	14	(2.1%)		
Ashamed	26	(3.9%)		
Mammography				
Have information about mammography	461	(43.2%)	605	(56.8%)
Sources (n= 461)				
Media	176	(38.1%)		
Friends	8	(1.7%)		

Table 4.5. (more).

Health care provider		
Had a mammography	374 (35.1%)	692 (64.9%)
If Yes, when (n =374)		
In the last 2 years	286 (76.5%)	
In the last 5 years	52 (13.9%)	
I don't remember	36 (9.6%)	
If No, reason (n =692)		
Mammography cannot be accessed	23 (3.3%)	
I'm afraid of the procedure and the bad results	116 (16.8%)	
I didn't find it necessary.	53 (7.7%)	
I didn't have any complaints.	491 (70.9%)	
Ashamed	9 (1.3%)	

Table 4.6 shows that half of women's information about breast cancer were below 50 % similarly to risk factors.

Table 4.6. Information of women about Breast Cancer and Risk Factors.

Information on breast cancer	Yes	No
	n (%)	n (%)
Breast cancer is the most common cancer in women worldwide.	511 (47.9%)	555 (52.0%)
Breast cancer can be treated.	517 (48.5%)	549 (51.5%)
Breast cancer can be treated if detected at an early stage.	504 (47.3%)	562 (52.7%)
Early diagnosis of breast cancer is the best chance to control the disease and provides effective treatment.	504 (47.3%)	562 (52.7%)
Seeking medical attention for breast changes, regular breast control is essential for success in treating breast cancer.	502 (47.1%)	564 (52.9%)
Breast cancer can affect elderly and young women.	498 (46.7%)	568 (53.3%)
Breast cancer can affect women of all races.	497 (46.6%)	569 (53.4%)
Breast cancer can affect women of all economic classes.	494 (46.3%)	572 (53.7%)
Breast cancer is not an infectious disease.	496 (46.5%)	570 (53.5%)
Participation in breast cancer screening may reduce the risk of death from breast cancer.	492 (46.2%)	574 (53.9%)
Information on risk factors		
Breast cancer risk increases with age.	446 (41.8%)	620 (58.1%)
Women with family history of breast cancer have a risk of developing breast cancer.	447 (41.9%)	619 (58.1%)
An unhealthy lifestyle is a risk factor for breast cancer.	428 (40.2%)	638 (59.8%)
Increased risk of breast cancer in women who have never given birth.	270 (25.3%)	796 (74.7%)
Late menopause (over 55 years of age) increases the risk of breast cancer.	248 (23.3%)	818 (76.7%)

Table 4.6. (more).

Early menarche (under 11) increases the risk of breast cancer.		
Removing ovaries in women reduces the risk of breast cancer.	246 (23.1%)	820 (77.0%)
Obesity increases the risk of breast cancer in the post-menopausal period.	252 (23.6%)	814 (76.4%)
Exposure to radiation at a young age in women may increase the risk of BC.	296 (27.8%)	770 (72.3%)
Estrogen increases the risk of breast cancer.	253 (23.7%)	813 (76.3%)
No alcohol use, healthy nutrition, healthy weight, regular exercise, no hormone therapy, avoiding exposure to radiation and environmental pollution are important in preventing breast cancer.	423 (39.7%)	643 (60.3%)
Swelling of the whole or part of the breast, darkening of the skin (such as orange peel), breast or nipple pain, nipple retraction (inward rotation), nipple skin red, dry, flaking or thickening, nipple discharge, size or changes in the form of breast cancer symptoms.	447(41.9%)	619 (58.0%)
Knowledge Score of Breast Cancer and risk factors 8.4 ± 9.32 (0- 22)		

Table 4.7 shows women's information about breast cancer screening methods which include (BSE, CBE, and mammography), the correct answers which are chosen by women were below 50 %, but only 813 (76.3%) of women answered correct regarding if discovered a mass during the breast self-examination, the physician should be consulted

Table 4.7. Information on Breast Cancer Screening Methods.

Information on Breast self-examination	Yes		No	
	n	(%)	n	(%)
Breast cancer screening self-examination, clinical breast examination and mammography are performed needs to be done.	447	(41.9%)	619	(58.1%)
Self-breast examination should start at the age of 20 and should be performed once a month.	313	(29.4%)	753	(70.6%)
The best time to perform a breast self-examination is 3 to 5 days after the end of menstruation.	350	(32.8%)	716	(67.2%)
Self-breast examination is manual examination of breasts in front of the mirror and standing position.	474	(44.5%)	592	(55.6%)
The position of lying in front of the mirror is started, the circular operations that will start from the nipple are controlled from the point of view of all breasts and armpits.	473	(44.4%)	593	(55.7%)

Table 4.7. (more).

If there is a mass recovered during the examination, the physician should be consulted.		
Information on Clinical Breast Examination		
Clinical Breast Examination is a manual examination method performed by the physician.	468 (43.9%)	598 (56.1%)
Clinical breast examination is performed every 3 years between the ages of 20-39.	299 (28.0%)	767(71.9%)
Clinical breast examination is performed once a year after the age of 40.	301 (28.2%)	765 (71.8%)
Information on Mammography		
Mammography is the method used in the early diagnosis of breast cancer.	467 (43.8%)	599 (56.2%)
Mammography is a method used for imaging the breast using a low dose × ray of the breast.	442 (39.6%)	644 (60.4%)
Women without risk factors for breast cancer should undergo a mammography scan after age 40.	304 (28.5%)	762 (71.5%)
Mammography should start every two years until the age of 50 and be done once a year after the age of 50.	301 (28.2%)	765 (71.8%)
Knowledge Score of Breast Cancer Screening 5.09 ± 5.44 (0- 13)		

Table 4.8 Shows barriers and facilitators of breast cancer screening practices. Age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, environment barriers, and uneasiness barriers were found to be statistically significant (Cox & Snell $R^2 = .353$, $-2 \log\text{-likelihood} = 1007.527^a$, $X^2 = 95.794$; $df=8$, $p=000$) on women's BSE practice. Women were more likely to perform BSE if they knew about BC and risk factors (OR=1.172, CI=1.105-1.244), had knowledge about breast cancer screening (OR=1.574, CI=1.402 – 1.768), exposure barriers of BSE (OR=.545, CI=.440-.674), and environment barriers (OR=.571, CI=.464-.703), and uneasiness barriers (OR=.736, CI=.557 - .974). Barriers to BSE increase, the tendency of women to perform BSE decreases.

Table 4.8 shows age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, and environment barriers were found to be statistically significant (Cox & Snell $R^2 = .342$, $-2 \log\text{-likelihood} = 1015.929^a$, $X^2 = 94.765$; $df=8$, $p=000$) in predicting whether women would undergo a CBE. Women were more likely to have CBE if they knew about BC and risk factors (OR=1.161, CI=1.092-1.234), and had knowledge about breast cancer screening (OR=1.474, CI=1.332-1.632). Women

were have increase in exposure barriers (OR=.553, CI=.447 - .684) and environment barriers (OR=.585, CI=.474 - .722), the odds of women to use CBE decrease.

Table 4.8 shows age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, environment barriers, and uneasiness with own body barriers were found to be statistically significant in women's mammography use (Cox & Snell R2 =.367, -2 log-likelihood = 893.249^a, X² =105.536; df=8, p=000). Women were more likely to have a mammography if they had knowledge about BC and risk factors (OR=1.194, CI=1.120-1.274) and knew about breast cancer screening (OR=1.486, CI=1.339-1.648). When exposure barriers (OR=.324, CI=.251-.419), environment barriers (OR=.636, CI=.500- .809), and uneasiness barriers (OR=.644, CI=.464-.893) increase, women are less likely to have a mammogram.

Table 4.8. Barriers and Facilitators of Breast Cancer Screening Practices.

Variables	B(S.E.)	p	Wald	OR	95% CI	-2 Log Likelihood	Cox & Snell R ²
Breast Self-Examination							
Age	.011	.212	1.559	1.014	.992 – 1.036	1007.527 ^a	.353
Knowledge scores BC and risk factors	.030	.000	28.064	1.172	1.105 – 1.244		
Knowledge scores BCS	.059	.000	58.925	1.574	1.402 – 1.768		
Exposure.B	.109	.000	31.164	.545	.440 - .674		
Social.B	.150	.809	.058	1.037	.773 - 1.390		
Religious.B	.128	.372	.796	.892	.694 - 1.147		
Environment.B	.106	.000	27.911	.571	.464 - .703		
Uneasiness.B	.143	.032	4.603	.736	.557 - .974		
$X^2=95.794$ df. 8 p. 000							
Clinical Breast Examination							
Age	.011	.000	39.806	1.074	1.051-1.099	1015.929 ^a	.342
Knowledge scores BC and risk factors	.031	.000	22.660	1.161	1.092-1.234		
Knowledge scores of BCS	.052	.000	56.083	1.474	1.332-1.632		
Exposure.B	.109	.000	29.613	.553	.447 - .684		
Social.B	.152	.773	.083	.957	.710 - 1.290		
Religious.B	.127	.442	.591	.907	.706 - 1.164		
Environment.B	.107	.000	24.918	.585	.474 - .722		
Uneasiness.B	.145	.086	2.941	.780	.587 - 1.036		
$X^2=94.765$ df. 8 p. 000							
Mammography							
Age	.014	.000	69.196	1.126	1.095-1.158	893.249 ^a	.367
Knowledge scores BC and risk factors	0.33	.000	28.956	1.194	1.120-1.274		
Knowledge of scores BCS	0.53	.000	55.765	1.486	1.339-1.648		
Exposure.B	.131	.000	74.411	.324	.251 - .419		
Social.B	.175	.291	1.115	1.203	.854 - 1.694		
Religious.B	.136	.270	1.215	1.162	.890 - 1.516		
Environmental.B	.123	.000	13.588	.636	.500 - .809		
Uneasiness.B	.167	.008	6.963	.644	.464 - .893		
$X^2=105.536$ df. 8 p. 000							
BCS: Breast cancer screening; B: Barriers; BC: Breast cancer							

PART 5

DISCUSSION

Breast cancer is the highest recurrent malignancy amongst females, the incidence rate is increased to 2.3 million females and resulted from the highest rates of mortality that rated 685,000 amongst females in 2020 (Harbeck et al., 2019; GLOBOCAN, 2020). In Iraq, BC is the first cause of death-related cancer among women (Alwan et al., 2017). BCS is effective for early BC diagnosis and survival in women. However, in Iraq, the nationwide programs for BC screening are inadequate. Therefore, BCS opportunistic screening can largely increase the early detection rate of BC and improve the awareness of BC (Goodarz et al., 2020; Al-Gburi, Alwan, Al-Tameemi & Al-Dabbagh, 2021). The present study was carried out among Iraqi women to assess women's knowledge, attitude, practice towards breast cancer and screening, and to explain the influence of the Arab culture-specific barriers on women's participation in breast cancer screening.

In this study, the majority of women heard about BC and the most important source of information 65.8% from the media (Table 4.3). Similar to our study, in a study that is conducted in Turkey, it was found that 67.2% of women heard about BC from media (Yıldırım & Özaydın, 2014), on the contrary, in a study by Liu et al. (2018), it is found that friends were the main source of information about BC. On the other hand, it is reported that in some studies that health professionals were the most source of information (Dündar et al., 2006; Alharbi et al., 2012).

In the present study, about 491 (46.1%) of women have information about BSE (Table 4.5), while 61.1% in Saudi Arabia (Alomair et al., 2020), and 30.5 % in Cameroon and Ghana (Nde et al., 2015). In our study, the majority source of information about BSE 258 (52.5%) were health care providers, followed by mass media 215 (43.8%) (Table 5).

Mass-media played an important role as the vital source of information about BSE, which reported 47% in Iraq (Ewaid, Shanjar & Mahdi, 2018), while 39.8% in Saudi Arabia (Alomair et al., 2020), 52.1% in Eritrea (Kifle et al., 2016), and 50.8% in India (Sideeq, Ayoub & Sailm Khan, 2017). Similar to our study, another study from Iraq revealed that the main source of information about BSE 18.4% were doctors and 11.6% the awareness campaign of the Iraqi National Breast Cancer Research Programs (Alwan et al., 2012). According to our findings, the most source of information about performing BSE, 77.2% was doctor, also similar study in Iraq showed that 14% was getting information about performing BSE from mass media (Galary, Abdullah & Majid, 2020). Another study from Ethiopia reported that the main source of information about performing BSE were health care providers (Dinegde, Demie & Diriba, 2020). In our study and other studies shown that media and health care providers such as doctors and nurses have a significant role as the main source of information about BSE. In our study, the majority of the women 619 (58.1%) did not practice BSE (Table 4.5), while 64.2% in Malaysia (Sheikh Alaudeen & Ganesan, 2019), 37 % in Iraq (Al-Alwan et al., 2019), and 30% in Turkey (Bilge & Keskin, 2013). 447 (41.9%) of women in our findings practiced BSE, only 302 (67.6%) were regular, 60 (13.4%) were irregular, 85 (19.0%) were as they think about it (Table 4.5). It is reported in the studies from Iraq about the practice of BSE among women were 30.3% (Hasan et al., 2015), 53.9% (Alwan et al., 2012), 57.4% (Alwan, Al-Diwan, Al-Attar & Eliessa, 2012), 48.3% (Alwan et al., 2012), 27.6% irregular (Salman & Abass, 2015), 18.0% regular (Shakor, Mohammed & Karotia, 2019), and 6.5% regular, 16.5% irregular (Galary, Abdullah & Majid, 2020). A similar study done in Turkey found that 81.3 % of women practice BSE, only 27.3 % regularly (Akpınar et al., 2011). Another study from Malaysia showed that 47.2% of women practice BSE regularly (Al-Naggar, Bobryshev & Al-Jashamy, 2012). The reason for the different rate is related to the large population in our study. However, shown that the practice of BSE is low, it is below 50%, especially practice of BSE on an irregular basis. In this study, the reason of women who not practiced BSE, majority of them 431 (69.7%) not having a breast complaint, 141 (22.8%) were afraid to discover a tumor, 30 (4.8%) were not having time, 17 (2.7%) were lack of information (Table 4.5). Similar to our study, the study from Iraq found that 42% were lack of knowledge and 39.5% lack of confidence in their ability to perform BSE (timidity, lack of time, or fear of discovering cancer

(Alwan et al., 2012). Another study done in Turkey found that 45.8 % of women not find it necessary (Akpınar et al., 2011). There is a study from Iran, discovered that 64% was due to the fact that they did not know how to do BSE (Montazeri et al., 2008). Our study and other studies that have been conducted in this regard, have shown that practice of BSE is low which is related to different reasons. We found that Iraqi women have low information, and practice towards BCS especially BSE, our finding is also supported by the other previous studies.

In the current study, 468 (43.9%) of women heard about CBE (Table 4.5), while in the study from China was 70%–90% (Kwok & Fong, 2014), and 85.8% in Saudi Arabia (Heena et al., 2019). In this study, the majority source 283 (60.5%) were health workers, 177 (37.8%) was media, and 8 (1.7%) were friends (Table 4.5). In a study from Saudi Arabia, sources of information were educational campaigns and media (AL-Mulhim et al., 2018). Another study from Nepal was Radio/TV (Shrestha et al., 2012), a similar study done in Iran, showed that 48 % was media (Montazeri et al., 2008). It seems that Iraqi women's heard about CBE was lower than other studies' rates. In our study and other studies have shown that the most source of information about CBE were media and health workers which play a vital role to increase awareness of women regarding BCS especially CBE. In the current study, the majority of women 666 (62.5%) not had CBE (Table 4.5), similar to a study in Taiwan, showed that more than 50% of women did not have CBE (Chen & Wu, 2017), 44.8% in the United Arab Emirates (Elobaid, Aw, Grivna & Nagelkerk, 2014), and 81.9% in Kuwait (Alharbi et al., 2012). The majority of women who not had CBE may be related to young age or not having breast problems. 400 (37.5%) of women in our study had CBE, women's who had CBE, 291 (72.7%) were in the last 2 years, 63 (15.8%) were in the last 5 years, 46 (11.5%) they don't remember (Table 5), while 0.9% in Tanzania (Morse, Maegga, Joseph & Miesfeldt, 2014), 40.2% in Iraq (Amin, Babakir-Mina, Mohialdeen & Gubari, 2017), 24.8% in Turkey (Akpınar et al., 2011), 37.8% annually in China (Kwok & Fong, 2014), and 46.6% in Ethiopia (Wurjine, Bogale & Menji, 2017). In this study, the reason of women who not had CBE, majority of them 443 (66.5%) not having breast complaints, followed by 124 (18.7%) they afraid of the procedure and the bad results, 40 (6.0%) didn't find it necessary, 26 (3.9%) were ashamed, 14 (2.1%) were afraid of pain and discomfort, 13 (1.9%) were nobody

suggests, and 6 (0.9%) were they have never heard of it (Table 4.5). Similar to our study findings, it was reported in the studies that most reasons of women who not had CBE were not having breast complaints, followed by fear of the bad results, lack of knowledge, and they didn't find it necessary (Elobaid, Aw, Grivna & Nagelkerk, 2014; Islama et al., 2016; Izanloo et al., 2018; Amin, Babakir-Mina, Mohialdeen & Gubari, 2017). The other studies and our study findings showed that women's rate of BCS was low which is probably related to having wrong information about CBE, religious factors, and cultural factors such as shame and embarrassment.

In our study, about 461 (43.2%) of women have information about mammography (Table 4.5), while 95.1% in Palestine (Nazzal et al., 2016), 7.4% in Brazil (Marinho, Cecatti, Osis & Gurge, 2008), and 46.8% in Iraq (Mohammed et al., 2018). In this study, the majority source of information about mammography 277 (60.2%) were health workers, 176 (38.1%) was media, and 8 (1.7%) were friends (Table 4.5). While, 23.9% was media in Egypt (Manzour & Eldin, 2019), and 27.8% in Saudi Arabia (AL-Mulhim et al., 2018). Another study from Nigeria, reported that newspapers and magazines were most important sources of information about mammography (Obajimi et al., 2013). In our study findings showed that Iraqi women may have insufficient knowledge about mammography or what they thought. In our study majority of women 692 (64.9%) not had mammography (Table 4.5), while, 44.1% in the United Arab Emirates (Elobaid, Aw, Grivna & Nagelkerk, 2014), and 12.8% in Saudi Arabia (Al-Mulhim et al., 2001), also in a similar study in Taiwan, showed that most of women not had mammography screening (Chen & Wu, 2017). In the present study, 374 (35.1%) of women had mammography, the women who had mammography, 286 (76.5%) were in the last 2 years, 52 (13.9%) were in the last 5 years, 36 (9.6%) they don't remember (Table 5), while 10.1% in Turkey (Akpınar et al., 2011), 50% in Palestine were had at least one mammogram, only 21% had regularly (Nazzal et al., 2016), 35.7% in Brazil (Marinho, Cecatti, Osis & Gurge, 2008), 70% in the US, among immigrant Muslim at least once, only 52% within the past 2 years (Hasnain, Menon, Ferrans & Szalacha, 2014), 35% in Turkey, 42% were in the last 2 years (Özmen et al., 2016), 40% in Saudi Arabia (Al-Wassia, Farsi, Merdad & Hagi, 2017), 7.8% in China (Kim et al., 2011), 4.5% in India was in the last one year (S, Kollipaka & R, 2015), and 0.9 % regularly in Iraq (Mohammed et al., 2018). In this study, the

reasons of women who not had mammography, majority of them 491 (70.9%) not having breast complaints, followed by 116 (16.8%) they afraid of the procedure and the bad results, 53 (7.7%) didn't find it necessary, 23 (3.3%) said mammography cannot be accessed, and 9 (1.3%) were ashamed (Table 4.5). Also similar to study in Iraq, the most reason was not having breast complain (Al Alwan, Al Attar, Al Mallah, 2016), while 46.7% were busy, followed by the lack of perceived susceptibility 41.5% in Palestine (Nazzal et al., 2016), and 81.8% in Brazil, was lack of referral by physicians working at the health center (Marinho, Cecatti, Osis & Gurge, 2008). Another study from Uganda was lack of information (Elsie et al., 2010). In a study from Turkey, 75% was they didn't know it was necessary (Özmen et al., 2016), which is consistent with a study in china (Kim et al., 2011). In a similar study conducted in Egypt, 77% were unwilling to have a mammogram until it was recommended by the doctor, lack of privacy, and 64.6% blamed the cost of services (Mamdouh et al., 2014). Another study from Turkey was no health insurance and lived in a district or a village (Ersin & Polat, 2015). Women's not having any breast problems may be the cause to not have a mammogram screening.

In our study, it is revealed that half of the women's information about breast cancer was below 50 % similar to risk factors (Table 4.6). Similar to our study finding, it was reported in the studies that women had low knowledge about BC and risk factors (Subramanian et al., 2013; Elsie et al., 2010; Gangane, Ng & Sebastián, 2015). However, this was inconsistent with our findings with a study from Abu Dhabi revealed that women's had a high level of knowledge about BC and risk factors (Al Blooshi et al, 2019). The findings of the present study for information of women's about breast cancer screening methods which include (BSE, CBE, and mammography) showed that the correct answers which are chosen by women were below 50 % (Table 4.7), similar to our study findings, it was reported in the study by Heena et al. (2019), low level of women's knowledge regard breast cancer screening, however inconsistent to our findings, it was reported in the studies that women's had a high level of knowledge (Safarpour et al., 2018; Gemici et al., 2020). On the other hand in our study, only 813 (76.3%) of women answered correctly regarding if discovered a mass during the breast self-examination, the physician should be consulted (Table 4.7), which was consistent with the results of a study conducted by Gilani et al. (2010), which reported

the majority of women >90% intended to see a doctor immediately if they ever felt a breast mass. On the other hand, another study from Iraq reported that only 0.8% of women thought that having breast lump does not draw attention (Al-Eessa & Al-Attar, 2018).

Breast self-examination is the manual examination of breasts by women considered a vital method of BC screening to detect early breast cancer (Dagne, Ayele & Assefa, 2019). This study's results indicate that age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, environment barriers, and uneasiness with own body barriers were found to be statistically significant on women's BSE practices (Table 8). Women were more likely to perform BSE if they had knowledge about BC and risk factors, and knowledge about breast cancer screening. Similar to our findings, a study from the UK among South Asian females revealed a lack of knowledge of women influence BSE practice (Karbani et al., 2011). According to our findings exposure barriers, environment barriers, uneasiness with own body barriers influence Iraqi women to perform BSE (Table 4.8). Exposure barriers, environment barriers, and uneasiness own body barriers to BSE increase, the tendency of women to perform BSE decreases. Consistent with our study results, it was reported in the study from Indonesia among non-Arab Muslim women showed that exposure barriers were an important factor of women which affect the practice of BSE, and this feature may make the belief that the breast is an intimate, private organ, not to be openly talk about it. These features might lead to protecting thoughts and hesitancy to think about performing BSE, for that reason, it is considered a not comfortable method (Dewi, Massar, Ruitter & Leonardi, 2019). Consistent with our study results, it was reported in the studies (Karbani et al., 2011; Al-Attar, Abdul Sattar, Al Mallah & Wardia, 2016) that environment barriers was affected women's practice which involves communication problems with healthcare professionals and within the family, limited resources and lack of access to medical facilities, concern about personal safety during traveling to medical centers, difficulty in reaching the medical centers, and cost of the examinations. It means related to culture, it is very significant to women and societies. The influence of culture on opinions and performances with regard to screenings for early detection of BC. Researchers at a previous documented the importance of the learning about the particular effects of

culture on health and health behavior and of cultural populations, in order to improve professionals' cultural performances and consequently decrease health disparities. Similar to our study finding, it was reported in the studies (Akhtari-Zavare et al., 2015; Das & Moharana, 2019) that uneasiness own body barriers which involve embarrassment at looking and touching their body in addition, not having enough privacy to examine their body were the most important barriers to not practicing BSE.

Clinical breast examination is one of the essential methods of BC screening and it is a physical examination method performed by professional health care to identify the various conditions of breast abnormalities (Veitch et al., 2019). In our study results indicate that age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, and environment barriers were found to be statistically significant in predicting whether women would undergo CBE (Table 4.8). Women were more likely to have CBE if they knew about BC and risk factors and had knowledge about breast cancer screening. According to our study results exposure barriers, environment barriers influence Iraqi women toward undergo of CBE (Table 4.8). Women had an increase in exposure barriers and environment barriers the odds to use CBE decrease. Consistent with our study findings, it was reported in the studies (Kawar et al., 2013; Alwan, Alattar, Al Mallah & Hassoun, 2015; Kwok, Endrawes & Lee, 2016) that exposure barriers were the important barriers of women to not had CBE, women commonly have embarrassment due to modesty regarding an exam by a male physician, refuse to expose their breasts, and need to cover their body or breast. Similar to our study results, it was reported in the studies (Banning et al., 2009; Kawar et al., 2013) that environment barriers were important barriers that expressed being difficult to understand the language when it includes medical words, distance and accessibility of the clinics, and financial issues. In our study findings, environment barriers were influence women to had CBE but in another study among Iraqi women, refugees showed that environment barriers were not influenced women to had CBE such as language problems, no health insurance, and transportation (Saadi, Bond & Percac-Lima, 2012). Another barrier not found in our study was religious barriers among women which frequently look for help from religious scholars when they have a tumour in their breast instead of examination by health care providers. Religious scholars supply women a spiritual instruction and reading religious writings which

assist in healing (Banning et al., 2009). Another barrier which not found in our study findings were social barriers, it is one of the essential barriers of women to not had CBE which involve common themes were BC is a taboo issue, a shame, and BC in the family had ramifications about the likelihood of the future event occurring on children's when getting married and might be reason to a breakdown of marriage life (Karbani et al., 2011). Another study related to social barriers of women conducted by Abdel-Aziz et al. (2017) showed that the social stigma of BC turned about a failure of BC understanding, afraid of BC screening participation, especially CBE may lead to getting the illness (BC), and bring embarrassment to the family.

Mammography screening is the most important method for BC screening and considered the international gold standard for detecting early BC (Shen, Winget & Yan Yuan, 2017). Our findings indicate that age, knowledge of BC and risk factors, knowledge about breast cancer screening, exposure barriers, environment barriers, and uneasiness with own body barriers were found to be statistically significant in women's mammography screening (Table 4.8). Women were more likely to have mammography if they had knowledge about BC and risk factors and knew about breast cancer screening. Similar to our study findings in the study conducted by Azaiza et al., (2010) showed that lack of knowledge influence women's participation in mammography screening. According to our study results that exposure barriers, environment barriers, and uneasiness with own body barriers increase, women are less likely to have a mammography screening. Consistent with our study results, it was reported in the studies that exposure barriers influence women's participation in mammography screening (Crawford, Frisina, Hack & Parascandalo, 2015; Vahabi, Lofters, Kumar & Glazier, 2015). Similar to our study findings, it was reported in the studies (Azaiza, Cohen, Awad, & Daoud, 2010; Crawford, Frisina, Hack & Parascandalo, 2015; Tuzcu & Bahar, 2015) that environmental barriers by the women which influence mammography screening included transportation problems, inaccessibility of the mammography facility, cost of examination, difficulty reaching, and insufficient health insurance. Consistent with our study results, it was reported in the studies that uneasiness with own body by women which breasts are seen as an organ that would be hidden and not talk clearly. Women do not want to talk or check their breasts because they feel embarrassed, not comfortable, and shy when discussing

them which is an impression deep-seated in women's mind to not touch their bodies needlessly which are taught about it from childhood (Banning et al., 2009). In our study, religious barriers were not found but it was reported in the studies (Azaiza, Cohen, Awad, & Daoud, 2010; Kavar et al., 2013) that religion barriers, which involves harbored fatalistic opinions about relating BC to God's willpower. Women powerfully thought that BCS participation especially mammography will not protect them or change their future from BC, conversely, would rank them nonbelievers in Allah's power and wisdom for that reason they described that screening was not a part of their health care behaviors and they did not perceive the essential to go to health care providers for screening when there are no symptoms thus these beliefs keep them from participating in screening. In another study from Ghana showed that Muslim females were found to have low participation in BC screening when compared to Christian females, which highlights how religious belief play an significant role in deciding a female's breast health and the need to consider how religious and cultural habits in subpopulations may influence a female's consultation for breast health and BCS participation (Gyedu et al., 2018). Another barriers were social barriers which not found in our study findings while found in a study among Pakistani women, reported that women which do not make known a diagnosis of BC to persons who are out of the close-knit family, furthermore, BC is frequently observed as a socially not acceptable illness which may result in a negative reaction from family memberships. As a result, females might be frustrated from looking for medical therapy for the BC or they may try to hide the diagnosis as the disease will influence all family members for that reason they are not participating in mammography screening (Banning et al., 2009). On the other hand a study from Iraq showed that 47 % of women reported that being anxious about separation if diagnosed with BC, as a result they are afraid to participate in mammography screening (Al-Attar, Abdul Sattar, Al Mallah & Wardia, 2016).

PART 6

CONCLUSION

The present study was conducted to assess women's knowledge, attitude, practice towards breast cancer and screening, and to explain the influence of the Arab culture-specific barriers on women's participation in breast cancer screening. The results of this study revealed that the level of knowledge about BC, risk factors, and BCS were low, and their practice was unsatisfactory. In our study findings, the barriers among Iraqi women for not practicing BSE included exposure barriers, environment barriers, and uneasiness with own body barriers. The main barriers for not performing CBE involve exposure barriers and environment barriers. In addition, the major barriers for not having mammography screening consist of exposure barriers, environment barriers, and uneasiness with own body barriers.

We recommend to increase knowledge and participate in BCS programs, healthcare providers may reach women in doubling their lack and incorrect knowledge regard BC and screening and, organizing training programs to highlight the importance of BCS, also media can have a vital role in regard to that as it is the most useful and accessible tool for women. Also culturally sensitive educational campaigns with the help of media should be organized and led by healthcare professionals for spreading information about BC and screening and the importance of early detection among Iraqi women to promote BCS.

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APPENDIX A.

KARABUK UNIVERSITY ETHICAL COMMITTEE APPROVAL FORM



T.C.
KARABÜK ÜNİVERSİTESİ REKTÖRLÜĞÜ
Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu

Sayı : 77192459-050.01.04-E.11637
Konu : 199 Nolu Etik Kurul Kararı

05/03/2020

Sayın Doç. Dr. Işıl IŞIK ANDSOY

Girişimsel Olmayan Klinik Araştırmalar Etik Kurulumuza sunmuş olduğunuz "İRAKLI KADINLARIN MEME KANSERİ, RİSK FAKTÖRLERİ VE TARAMAYA YÖNELİK BİLGİ, TUTUM VE UYGULAMALARI" başlıklı araştırma projeniz amaç, gerekçe, yaklaşım ve yöntemle ilgili açıklamaları açısından Girişimsel Olmayan Etik Kurulu yönergesine göre incelenmiştir. Etik açıdan bir sakınca olmadığına oy çokluğu ile karar verilmiş ve uygun görülmüştür.

Bilgilerinize rica ederim.

e-imzalıdır
Dr. Öğr. Üyesi Zafer LİMAN
Kurul Başkanı

Adres: Karabük Üniversitesi Demir Çelik Kampüsü Merkez/Karabük
Telefon: (370) 418 9446
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Bilgi için: Simge ACAR TURGUT
Unvanı: Sürekli İşçi

Bu belge 5070 sayılı Elektronik İmza Kanununun 5. Maddesi gereğince güvenli elektronik imza ile imzalanmıştır.

APPENDIX B.

**SULAYMANIYAH GENERAL DIRECTORATE OF HEALTH FORMAL
ADMINISTRATIVE APPROVAL**

إقليم كوردستان – العراق مجلس الوزراء وزارة الصحة المديرية العامة لصحة السليمانية التخطيط و التطوير الصحي الشعبة البحث العلمي	 Kurdistan Regional Government Council of Ministers Ministry of Health	هاريمنى كوردستان – عيراق نامجوماني ووزيران ودياردي تاندروستي بهريو ديارهاريمني گشتي تاندروستي سلیماني بهشي پلان و گمشاپيداني تاندروستي هۆبهی تويزينهوهی زانستی
No: 12006		زمانه /
Date : 9/12/2020		پزیکموت / 2020 /

Subject/ Proposal approval

KARABUK UNIVERSITY RECTORATE

Ethical code: 3

This is to confirm that the Sulaymaniyah Directorate of Health/Ethical committee has approved the proposal of master student (Shadan Shkur Aziz) under the title (Knowledge, Attitude and Practice toward Breast Cancer Among Iraqi Women) with a condition that the project in a accordance with the tenets of the Helsinki declaration and the national ethical guideline for medical research.

Approval is guaranteed of the conditions outline below

- 1- Approval is given for one year project which have note commenced with one year of original approval must be resubmitted the ethics committee
- 2- Prior approval from ethics committee is recurred before implementing any changes in the consent documents or any changes in the protocol unless those changes are required urgently for subjects.
- 3- Student must complete and return report from when the research is completed.

APPENDIX C.

QUESTIONNAIRE FORM

SECTION 1. Socio-demographic Properties	
1. Age	
2. Education	<input type="checkbox"/> No formal education <input type="checkbox"/> Primary-Secondary <input type="checkbox"/> High School <input type="checkbox"/> University or above
3. Level of Education	<input type="checkbox"/> Employees <input type="checkbox"/> Retired <input type="checkbox"/> Housewife
4. Ethnic	<input type="checkbox"/> Kurdish <input type="checkbox"/> Arabic <input type="checkbox"/> Turkmen
5. Marital status	<input type="checkbox"/> Married <input type="checkbox"/> Single
6. Economical situation	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
7. Marriage age	<input type="checkbox"/> <18 <input type="checkbox"/> 18-30 <input type="checkbox"/> >30
8. Presence of child	<input type="checkbox"/> None <input type="checkbox"/> Less than 3 <input type="checkbox"/> 4 and above
9. Age of first birth	<input type="checkbox"/> <18 <input type="checkbox"/> 18-30 <input type="checkbox"/> >30
10. Contraceptive use	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Exercise	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Once a week <input type="checkbox"/> Three times a week
12. Nutrition	<input type="checkbox"/> Many fruits and vegetables <input type="checkbox"/> Low fiber, high protein and fat
13. Breastfeeding	<input type="checkbox"/> Yes <input type="checkbox"/> No
14. Smoke cigarettes	<input type="checkbox"/> Yes <input type="checkbox"/> No
15. Age first menstrual period	<input type="checkbox"/> <11 <input type="checkbox"/> >11
16. Family history of breast cancer	<input type="checkbox"/> Yes <input type="checkbox"/> No

17. Previous breast problems	<input type="checkbox"/> Yes <input type="checkbox"/> No		
18. Have you heard about breast cancer?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
19. If yes, from which source did you learn your information about breast cancer?	Media <input type="checkbox"/> Yes <input type="checkbox"/> No Friends <input type="checkbox"/> Yes <input type="checkbox"/> No Health care provider <input type="checkbox"/> Yes <input type="checkbox"/> No Conference+ Seminar <input type="checkbox"/> Yes <input type="checkbox"/> No		
SECTION 2. Information of women about Breast Cancer and Risk Factors		Yes	No
Breast cancer			
1. Breast cancer is the most common cancer in women worldwide			
2. Breast cancer can be treated			
3. Breast cancer can be treated if detected at an early stage			
4. Early diagnosis of breast cancer is the best chance to control the disease and provides effective treatment			
5. Seeking medical attention for breast changes, regular breast control is essential for success in treating breast cancer			
6. Breast cancer can affect elderly and young women			
7. Breast cancer can affect women of all races			
8. Breast cancer can affect women of all economic classes			
9. Breast cancer is not an infectious disease			
10. Participation in breast cancer screening may reduce the risk of death from breast cancer			
Risk factors			
11. Breast cancer risk increases with age			
12. Women with family history of breast cancer have a risk of developing breast cancer			
13. An unhealthy lifestyle is a risk factor for breast cancer			
14. Increased risk of breast cancer in women who have never given birth			
15. Late menopause (over 55 years of age) increases the risk of breast cancer			
16. Early menarche (under 11) increases the risk of breast cancer			
17. Removing ovaries in women reduces the risk of breast cancer			
18. Obesity increases the risk of breast cancer in the post-menopausal period			
19. Exposure to radiation at a young age in women may increase the risk of BC			
20. Estrogen increases the risk of breast cancer			
21. No alcohol use, healthy nutrition, healthy weight, regular exercise, no hormone therapy, avoiding exposure to radiation and environmental pollution are important in preventing breast cancer			
22. Swelling of the whole or part of the breast, darkening of the skin (such as orange peel), breast or nipple pain, nipple retraction (inward rotation), nipple skin red, dry, flaking or thickening, nipple discharge, size or changes in the form of breast cancer symptoms.			
SECTION 3. Information on Breast Cancer Screening Methods			
Information on Breast self-examination			
1. Breast cancer screening self-examination, clinical breast examination and mammography are performed needs to be done		Yes <input type="checkbox"/>	No <input type="checkbox"/>

2. Self-breast examination should start at the age of 20 and should be performed once a month.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. The best time to perform a breast self-examination is 3 to 5 days after the end of menstruation.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4. Self-breast examination is manual examination of breasts in front of the mirror and standing position	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5. The position of lying in front of the mirror is started, the circular operations that will start from the nipple are controlled from the point of view of all breasts and armpits.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6. If there is a mass recovered during the examination, the physician should be consulted.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Information on Clinical Breast Examination		
1. Clinical Breast Examination is a manual examination method performed by the physician.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. Clinical breast examination is performed every 3 years between the ages of 20-39	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. Clinical breast examination is performed once a year after the age of 40	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Information on Mammography		
1. Mammography is the method used in the early diagnosis of breast cancer.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. Mammography is a method used for imaging the breast using a low dose x ray of the breast	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. Women without risk factors for breast cancer should undergo a mammography scan after age 40	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4. Mammography should start every two years until the age of 50 and be done once a year after the age of 50.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
SECTION 4. Practice of women toward Breast Cancer Screening		
Breast Self-Examination		
1. Do you have information about breast self-examination?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. Have you been get information about performing BSE?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4. If yes, source	<input type="checkbox"/> Family <input type="checkbox"/> Doctor <input type="checkbox"/> Nurse <input type="checkbox"/> Friend	
5. Do you practice BSE?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6. If yes;	<input type="checkbox"/> Regular <input type="checkbox"/> Irregular <input type="checkbox"/> As I think about it	
7. If No, reason	<input type="checkbox"/> I'm afraid to discover a tumor. <input type="checkbox"/> I don't have a breast complaint. <input type="checkbox"/> I don't have the time. <input type="checkbox"/> I don't have enough information.	
Clinical Breast Examination		
1. Have you ever heard a clinical breast exam?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. If yes, source	<input type="checkbox"/> Media <input type="checkbox"/> Friends <input type="checkbox"/> Health workers	
3. Have you ever had a clinical breast examination?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4. If yes, when	<input type="checkbox"/> In the last 2 years <input type="checkbox"/> In the last 5 years <input type="checkbox"/> I don't remember	

5. If no, reason	<input type="checkbox"/> Nobody suggests <input type="checkbox"/> I'm afraid of the procedure and the bad results <input type="checkbox"/> I didn't find it necessary. <input type="checkbox"/> I didn't have any complaints. <input type="checkbox"/> I was afraid of pain and discomfort. <input type="checkbox"/> Ashamed
Mammography	
1. Do you have information about mammography?	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. If yes, source	<input type="checkbox"/> Media <input type="checkbox"/> Friends <input type="checkbox"/> Health care provider
3. Have you ever had a mammography?	Yes <input type="checkbox"/> No <input type="checkbox"/>
4. If Yes, when	<input type="checkbox"/> In the last 2 years <input type="checkbox"/> In the last 5 years <input type="checkbox"/> I don't remember
5. If No, reason	<input type="checkbox"/> Mammography cannot be accessed <input type="checkbox"/> I'm afraid of the procedure and the bad results <input type="checkbox"/> I didn't find it necessary. <input type="checkbox"/> I didn't have any complaints. <input type="checkbox"/> Ashamed

SECTION 5. Arab Culture-Specific Barriers to Breast Cancer Questionnaire (ACSB) (Cohen & Azaiza, 2008)					
Factor 1: Exposure Barriers	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Disagree (4)	Strongly disagree (5)
1. A male physician examining my breast embarrasses me.					
2. A female physician examining my breast embarrasses me.					
3. Body exposure is forbidden by religion.					
4. I fear being seen at the clinic.					
Factor 2: Social Barriers					
1. Fear pity by others.					
2. Fear disrespect by my family.					
3. Fear losing my job.					
4. Fear my husband's detachment, resentment.					
5. Fear neglecting by my family.					
6. Fear losing my friends.					

Factor 3: Religious beliefs concerning cancer					
1. Cancer is a way of punishment by God.					
2. Cancer is a way of atonement for bad deeds by God.					
3. Cancer is a trial by God.					
4. Reading religious writings assists healing.					
Factor 4: Environmental barriers					
1. Language and communication.					
2. Distance and accessibility of the clinic.					
3. Cost of the examinations.					
Factor 5: Uneasiness with own body					
1. I feel embarrassed looking at my body.					
2. I feel embarrassed touching my body.					
3. I have no privacy to examine my body.					
4. I do not know my body sufficiently to recognize changes in it.					

RESUME

Shadan Shkur Azeez was born in Iraq. She has achieved her primary and secondary degrees in the same governorate. She has studied and achieved high school certificate at Zahra High School in Erbil governorate. Then she started undergraduate program and obtained her bachelor degree in Sulaimani University, Department of Nursing in 2016. She started working as a Nurse in Faruk Medical City in Sulaimani in 2018. To complete M. Sc. education, she moved to Karabük University.