DETERMINATION OF KNOWLEDGE, ATTITUDES, AND PRACTICES ABOUT BREAST CANCER AND SCREENING AMONG FEMALE HEALTHCARE AND NON-HEALTHCARE WORKERS IN SOMALILAND

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Nura AHMED OGLEH

ABSTRACT

Master Thesis

DETERMINATION OF KNOWLEDGE, ATTITUDES, AND PRACTICES ABOUT BREAST CANCER AND SCREENING AMONG FEMALE HEALTHCARE AND NON-HEALTHCARE WORKERS IN SOMALILAND

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Breast cancer-related deaths are higher in less developed countries like Somaliland. Early detection and treatment are crucial for preventing mortality. This is a descriptive cross-sectional study aimed to evaluate female healthcare and non-healthcare workers' knowledge, attitudes, and practices regarding breast cancer and screening in Hargeisa, Somaliland. Data were gathered between November 29, 2022, and April 20, 2023. The study's population comprised of 300 females (healthcare workers (n=150); non-healthcare workers (n=150)) aged 20 and over who gave written and verbal consent to participate in the study. A four-part questionnaire was used for data collection. The data were evaluated using descriptive statistics, non-parametric tests, and Spearman's correlation. Most of the female healthcare workers had good knowledge and a positive attitude. However, 34.7% of women performed breast self-examination (BSE), 22.0% had clinical breast examination (CBE), and only 5.3% had mammography. Regarding

non-healthcare workers, only 36.0% had good knowledge, 88.7% had a positive attitude, and 8.7% of women performed BSE, 7.3% had CBE and 3.3% had mammography. Significant associations were found between breast cancer knowledge, attitudes, and practices. Those with good knowledge, positive attitudes, and familiarity with screening methods were more likely to practice them. Education and a personal or family history are positively associated with participating in BSE, CBE, and mammography practices. This highlights the need for ongoing education campaigns to spread awareness, encourage the adoption of preventative measures for females in both groups, and track the behavioral changes because of the education.

Key Words : Breast cancer, Screening methods, Knowledge, Attitude, Practice, Healthcare worker, Non-Healthcare workers.

Science Code : 1032.08

ÖZET

Yüksek Lisans Tezi

SOMALİLAND'DA SAĞLIK ÇALIŞANI OLAN VE OLMAYAN KADINLARDA MEME KANSERİ VE TARAMAYA YÖNELİK BİLGİ, TUTUM VE UYGULAMALARIN BELİRLENMESİ

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Somaliland gibi az gelişmiş ülkelerde meme kanserine bağlı ölümler daha yüksektir. Mortaliteyi önlemek için erken teşhis ve tedavi önemlidir. Tanımlayıcı çalışmanın amacı, Hargeisa, Somaliland ‘de yaşayan sağlık çalışanı olan ve olmayan kadınların meme kanseri ve taramaya ilişkin bilgi, tutum ve uygulamalarını değerlendirmektir. Veriler 29 Kasım 2022- 20 Nisan 2023 arasında toplanmıştır. Çalışmanın evrenini çalışmaya katılmayı yazılı ve sözlü onam veren 20 yaş ve üstü 300 kadın (Sağlık çalışanı (n=150); sağlık çalışanı olmayan (n=150)) oluşturdu. Verilerin toplanmasında dört bölümden oluşan bir anket kullanıldı. Veriler, tanımlayıcı istatistikler, parametrik olmayan testler ve Spearman korelasyonu kullanılarak değerlendirildi. Kadın sağlık çalışanlarının çoğunluğu iyi bilgiye ve olumlu bir tutuma sahipti. Ancak kadınların %34,7'si kendi kendine meme muayenesi (KKMM), %22,0'si klinik meme muayenesi (KMM) ve sadece %5,3'ü mamografi yaptırmıştır. Sağlık çalışanı olmayanların ise

%36.0'ı iyi bilgiye, %88.7'si olumlu tutuma sahip ve kadınların %8.7'si KKMM, %7.3'ü KMM ve %3.3'ü mamografi çektirmişti. Meme kanseri bilgisi, tutumları ve uygulamaları arasında anlamlı ilişki bulundu. Bilgi puan ortalaması ve pozitif tutumlara sahip olan kadınların tarama yöntemlerine katılma olasılığı daha yüksekti. Eğitim, kişisel ya da aile öyküsü olma ile KKMM, KMM ve mamografi taraması yaptırma arasında pozitif yönde korelasyon bulundu. Veriler ışığında her iki grupta yer alan kadınlarda tarama yaptırma farkındalığı yaymak, tarama programlarına yönelik eğitim verilmesi ve eğitimlerin davranış değişikliği yapma durumunun izlenmesi önerilmektedir.

Anahtar Kelimeler : Meme kanseri, Tarama yöntemleri, Bilgi, Tutum, Uygulama, Sağlık çalışanı, Sağlık olmayan çalışanlar.

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SYMBOLS AND ABBREVITIONS INDEX

SYMBOLS

% : Percentage

> : Greater than

< : Less than

≥ : Greater than or equal to

≤ : Less than or equal to

ρ : Spearman coefficient

ABBREVITIONS

ACA : American Cancer Society

BC : Breast Cancer

BMI : Body mass index

BSE : Breast Self-Examination

CBE : Clinical Breast Examination

BCS : Breast-Conserving Surgery

DCIS : Ductal Carcinoma in Situ

IARC : International Agency for Research on Cancer

IDC : Invasive Ductal Carcinoma

ILC : Invasive Lobular Carcinoma

LCIS : Lobular Carcinoma in Situ

MRI : Magnetic Resonance Imaging

WHO : World Health Organization

PART 1

INTRODUCTION

Cancer is a major public health concern, yet its diagnosis and treatment in 2020 has been negatively impacted by the coronavirus (COVID-19) pandemic (Yabroff et al., 2021). According to the estimates of the World Health Organization (WHO), cancer incidence, mortality and morbidity rates are increasing globally (Sung et al., 2021; WHO, 2020). It is estimated that the number of new cancer cases worldwide in 2020 was 19.3 million and breast cancer constitutes 11.7% of all cancer cases. Breast cancer is the most diagnosed cancer in 159 countries (24.5% of total female cases) and is the leading cause of cancer-related death among women in 110 countries (15.5% of total cases) (Sung et al., 2021). Cancer is one of the top ten most common diseases and one of the top ten leading causes of mortality in Somalia. Since Somaliland is regarded as being a part of Somalia internationally, these statistics also apply there. The number of new cases reported to health institutions in 2020 was estimated to be 10,134, and breast cancer was reported to be the most frequently diagnosed cancer type in women (18.7% of total cases) (WHO, 2020). It is important to point that this country does not have a national cancer registry which means that the actual population-based cancer incidence is unknown (Tahtabasi, Abdullahi, et al., 2020).

Breast cancer (BC) is a type of cancer that occurs when cells in the breast tissue undergo changes and can be of diverse types. To distinguish breast cancer types, it is necessary to identify cancer cells in the breast. Breast cancer can spread outside the breast through the bloodstream and lymphatic vessels. Risk factors include increased age, genetic mutation, early menstrual cycle, delayed or absent pregnancy, menopause after age 55, inactivity, postmenopausal weight, or obesity, having dense breast tissue, use of hormonal therapy, birth control pills, and personal history of BC or noncancerous breast disease, family history of BC, radiation therapy and alcohol (CDC, 2020b, 2020c).

The mortality rate of breast cancer (BC) is higher in less developed countries. The findings of a study showed that many risk factors affect the incidence of BC, of which genetic factors, environmental factors, and lifestyle are the most important ones, and also many factors such as parities, lactation, and exercise play important roles in reducing the risk of this disease (Momenimovahed & Salehiniya, 2019).

Fortunately, screening methods come to the fore in early recognition of BC signs and symptoms. Mammography and breast self-examination (BSE) are two of these techniques, along with clinical breast examination (CBE). It is especially important for women to have sufficient information about these screening approaches to reduce BC morbidity and mortality (Andegiorgish et al., 2018). An essential technique for early diagnosis is the self-detection and quick diagnosis of breast abnormalities. Screening refers to the tests and examinations used to detect disease in individuals who do not have any symptoms. The goal is to screen the BC before symptoms appear. Women should be aware of their breasts and report any changes without delay. Most BSE-detected changes have benign causes, but some may indicate serious issues like breast cancer. Breast examination is a low-cost, low-risk method for early detection, which is critical to improving mortality. However, it remains controversial with unclear guidelines (ACS, 2022).

Numerus studies have highlighted the importance for women not only to have adequate knowledge of breast cancer and its risk factors, but it is also assumed that women should have at least basic knowledge of screening tools such as BSE, CBE, and mammography where it will help in the process of early detection of BC. But despite this, several studies have shown that women have low levels of knowledge and awareness, as evidenced, for example, by the results of a studies that examined women's levels of knowledge of BC, which was that they had little knowledge about it (Jothula & Sreeharshika, 2021; Mowa, 2016; Toan et al., 2019). Moreover, a review aimed to pinpoint the habits and contributing factors that lead to delays in BC detection in African women revealed that knowledge is a key factor in determining how often people use healthcare services. And the researchers identified knowledge gaps as a key contributing factor for late presentation and early detection strategies in sub-Saharan Africa (Akuoko et al., 2017).

Furthermore, a study aimed at ascertaining the level of awareness of early detection of breast cancer (BC) and the risks factors among Libyan women concluded that there is poor knowledge of BSE and BC risk factors. The researchers suggested that primary prevention and early detection education should be implemented as recommended to prevent BC (Ziuo et al., 2018). The overwhelmingly poor knowledge of BC among women especially in resource constrained countries can be explained by the notion that the healthcare systems of such countries have been exclusively focusing on communicable diseases so far and non-communicable diseases such as BC which poses a serious burden to the public have been ignored for years (Tesfay et al, 2013).

Healthcare professionals such as nurses' knowledge, attitudes, and practices can have an impact on society. However, they must first have sufficient knowledge in order to do so. In a study conducted in Eritrea in 2018, it was determined that nurses' knowledge of potential risk factors for BC was inadequate and their participation rate in BC screening was low. Furthermore, it was reported that the knowledge, attitudes, and practices of nurses with a family history of BC or breast disorder with higher professional experience were more desirable (Andegiorgish et al. 2018). In Ethiopia, a study evaluating knowledge of female healthcare professionals about BC screening methods was conducted, 66.8% participants had adequate knowledge and the best information about these methods was breast self-exam followed by clinical breast exam. Although it was determined that the source of information was mammography and the education they received at the university, the rate of regular BSE was found to be low (Shallo and Boru, 2019). Another research comparing the CBE knowledge and practice of healthcare workers in Nigeria found that the participants had high rates of practice and intermediate levels of CBE knowledge (Olanatar et al., 2019).

Several studies showed that knowledge of screening techniques is higher than practice. Poor mammography practices were found in countries such as Nigeria, Jordan, Saudi Arabia, and India, where less than 20% of female respondents underwent the procedure, regardless of whether they are healthcare workers or not (Abiodun et al., 2022; Al-Mousa et al., 2020; Heena et al., 2019; Fotedar et al., 2013).

Insufficient knowledge regarding breast cancer (BC) is alarming, particularly among female healthcare workers because it can be a worrisome barrier to raising awareness of BC among women in the community. For this reason, it is important to train health professionals in this field, also to provide a well-planned educational campaign as these efforts can make a difference in helping women address their concerns and participate in screening programs more frequently (Heena et al., 2019).

Traditionally, Somali women are shy and shy to talk to male physicians about health issues they are experiencing in their private places. Somali culture, which places inviolability in a woman's body, fuels a cycle of silence about breast cancer, and deaths are increasing as the number of referrals declines because most oncologists are male. In Somali society, women tend not to cooperate when asked about their health status and consider health problems unimportant until they get worse. This may be due to problems with a different sex. On the other hand, it is stated that educated Somali women do not preclude visiting a male doctor. However, the first choice of Somali women are health workers. More importantly, it is not easy for women to ask questions and reach doctors in Somalia, and they tend to get information from nurses in general (AMISOM, 2015).

Somali women face high incidence and mortality rates from breast and cervix uteri (Cervical) cancer per 100,000 individuals, with breast cancer having the highest rates (41.7 and 27.2, respectively), and cervix cancer having the second-highest rates (25.1 and 20.2, respectively). It is critical to identify the underlying factors that may influence the rates of both cancers. Furthermore, incorrect assumptions about the nature of the illness and its stigma make early discovery much more difficult, and many individuals even think the illness is contagious. It is evident from research regarding cervical and breast cancer that was conducted in 2021 in Mogadishu, Somalia. This study found that healthcare professionals reported cases of patients refusing cancer screening due to fear of judgment, perceived embarrassment, or intrusive, or they are afraid of the pain associated with it (Hassan et al., 2022; IARC, 2020; Walz et al., 2021).

It is crucial to use stigma-reduction methods across the entire spectrum of cancer care. Particularly when surgery is advised, positive test results and subsequent treatment alternatives must be presented cautiously. A qualified healthcare professional can present a diagnosis and explain therapy in a way that is inviting of greater involvement rather than stigmatizing. To improve screening procedures, widespread educational and awareness campaigns are needed (Meacham et al., 2016). Healthcare professionals are the cornerstone of planning, implementing, guidelines, and strategies for early detection programs for breast cancer in the community. For this reason, assessment and training of health professionals' knowledge and attitudes is an integral part of developing health strategies (Saah et al., 2018).

Although there are several cross-sectional studies that have been conducted in Africa on this topic, regrettably, none have been done in Somaliland. For this reason, this study aims to determine female healthcare and non-healthcare workers' knowledge, attitudes, and practices related to breast cancer and screening methods in Somaliland. This study is also used to uncover what could hinder or prevent women from practicing the breast cancer prevention methods that promote the early detection and treatment of the disease. Hence, based on this study, recommendations for future applications could be generated.

In this study, answers to the following questions are sought:

- What is the knowledge level of female healthcare and non-healthcare workers about breast cancer, screening, and its risk factors?
- What is the attitude of the female healthcare and non-healthcare workers towards breast cancer and its screening methods?
- What are the practices of female healthcare and non-healthcare workers on breast cancer screening methods?
- Do the socio-demographic characteristics of both healthcare and non-healthcare workers affect their knowledge, views on breast cancer and practices of screening methods?

PART 2

LITERATURE REVIEW

2.1. OVERVIEW OF BREAST CANCER

Breast cancer (BC) poses a threat to women's health and lives. It leads the affected women to experience various emotions ranging from shock, fear, worries, grief, and denial which accompany the initial detection of a breast lump and the diagnosis of BC. Breasts have always been seen as a symbol of beauty and motherhood. Losing the breast or part of it devastates women because of the accompanying psychological, social, sexual, and body image effects (Maggie, 2015).

During the formation and development of the fetus, growth and maturation of cells occur, and after infection or any kind of injury, other normal biological processes known as tissue growth, repair, and remodeling take place. Cancer (CA) is defined by abnormal cell growth, which results in abnormal tissue structure development. These cells have the ability to invade other ordinary tissues either locally or they can spread throughout the body through the bloodstream and lymphatic system, in a process called metastasis. In spite of the fact that all types of cancer are classified based on their tissue of origin or their location, all of them actually share certain characteristics. However, there are still have significant differences in cellular changes, clinical manifestations, and disease course among patients with a particular type of cancer. The detection of a tumor by physical examination or imaging requires the presence of about one billion malignant cells in the body. The term "invasive" refers to the penetration of tissue boundaries. Invasive malignancies take months to years to develop, and the cancer is usually not detected until it has become invasive, sometimes with regional or distant metastases (Hammer & McPhee, 2014).

Breast cancer (BC) is a type of cancer that occurs when cells in the breast tissue undergo changes, and it can be of diverse types. It can start in one or both and occurs exclusively in women, but men can get BC too. Furthermore, it is important to be aware of the fact that most breast tumors are non-cancerous (benign) rather than cancerous (malignant). Noncancerous breast tumors are abnormal growths, but they do not spread beyond the breast. They are not life-threatening, but certain benign breast tumors may increase the risk of BC. Any growth or change should be checked out by a healthcare professional to see if it is a benign or malignant (cancerous) tumor and may affect the risk of developing cancer in the future (American Cancer Society, 2021; CDC, 2021). Regardless of the country's economic status, BC is the most common cause of death among women globally, placing a burden on prevention, diagnosis, and treatment (Francies et al., 2020).

2.2.1. Epidemiology of Breast Cancer

The coronavirus (COVID-19) pandemic has had a negative influence on cancer detection and treatment in 2020, despite the fact that cancer is a serious public health concern (Yabroff et al., 2021). The World Health Organization (WHO) predicted that cancer incidence, mortality, and morbidity rates are rising internationally (Sung et al., 2021; WHO, 2020). In 2020, there will be 19.3 million new instances of cancer worldwide, according to estimates. According to statistics, 2,261,419 women are diagnosed with breast cancer each year, which accounts for 11.7% of all cancer cases. In 159 nations, breast cancer is the most often diagnosed cancer (24.5% of all female cases), and in 110 countries, it is the main cause of cancer-related mortality for women (15.5% of all cases) (Sung et al., 2021). In 2020, the number of new cases reported to health institutions in Somalia was estimated to be 10,134, and breast cancer was reported to be the most frequently diagnosed cancer (18.7% of total cases) and since Somaliland is regarded as being a part of Somalia internationally, these statistics also apply there (WHO, 2020). It is important to point that this country does not have a national cancer registry which means that the actual population-based cancer incidence is unknown (Tahtabasi, Abdullahi, et al., 2020).

2.1.2. Clinical Manifestations of Breast Cancer

Although breast cancers can start developing in any part of the breast, the upper outer quadrant, where most of the breast tissue is situated, is where they are most frequently discovered. The lumps are often hard with uneven edges, fixed rather than mobile, and nontender. The vast majority of the time, benign breast cancer is linked to complaints of generalized breast soreness and tenderness during menstruation. Most women are seeking therapy at initial stages because of increasing mammography use. After disregarding warning and severe symptoms for a prolonged period, certain patients with severe conditions or advance stages seek out medical attention. Nipple retraction, skin ulceration, or skin dimpling are examples of advanced symptoms (Hinkle & Cheever, 2018). Breast cancer recurrence is the most prevalent complication. Recurrence can develop locally, regionally, or distantly. Widespread or metastatic disease refers to the spread of cancerous breast cells to distant parts of the body (most often involving the bone, lung, brain, liver). The lymphatics of the axilla are most frequently the lymphatics via which metastases spread. Yet metastatic disease might show up anywhere, placing a burden on prevention, diagnosis, and treatment (Dell, 2020; Francies et al., 2020).

2.1.3. Types of Breast Cancer

Breast cancer is not only single condition, but a range of diseases distinguished by diverse pathologic features and disease manifestations (Dell, 2020). The specific breast cells that develop into cancer dictate the type of breast cancer (ACS, 2021).

2.1.3.1. Ductal or Lobular Carcinoma

It is estimated that most of the breast cancer arises from epithelial cells lining organs and tissues. Breast adenocarcinoma is a more specific type of carcinoma that begins in the cells of the ducts or lobules, which means that ductal carcinoma affects the milk ducts whereas lobular carcinoma affects the milk glands (ACS, 2021).

2.1.3.2. Based on Invasiveness

Breast cancer's nature can indicate its potential spread. In situ breast cancer (BC) (ductal carcinoma in situ, or DCIS) is a form of pre-cancer that originates in the milk duct, which can't spread outside the breast. The phrase invasive (or infiltrating) breast cancer refers to any kind of breast cancer that has grown and spread (invaded) into the nearby tissues. Invasive breast cancers are classified into two: invasive ductal carcinoma and invasive lobular carcinoma. Invasive ductal carcinoma accounts for 80% of breast cancer cases, while invasive lobular carcinoma accounts for 10%-15%. (ACS, 2021). In contrast to invasive breast cancer, noninvasive BC is less common. Ductal carcinoma in situ (DCIS) and pure Paget's disease are examples (Dell, 2020).

2.1.3.3. Based on Hormone Receptor and Genetic Status

Depending on whether certain proteins are present in breast cancer cells, there are 3 diverse types of breast cancer. 70% of all cases of breast cancer are hormone receptor-positive, with either progesterone receptor (PR) or estrogen receptor (ER) protein present in the cancer cells. 15% to 20% of all incidences of breast cancer are ERBB2-positive, also known as HER2-positive, and have high quantities of the ERBB2 protein on the cancer cells. Triple-negative breast cancer, which makes up 15% of all occurrences, occurs when a patient's breast cancer tests negative for all three estrogen, progesterone, and HER-2 receptors (Waks & Winer, 2019).

2.1.3.4. Other Types

Inflammatory breast cancer is a severe rare form of breast cancer that causes blocked lymphatic arteries beneath the skin, giving the breast an "inflamed" appearance. It accounts for about 1% to 5% of all breast cancers. Less frequent forms include breast Paget disease, it begins in the breast ducts and subsequently progresses to the skin of the nipple and the areola, respectively. Breast tissue or skin can be affected by angiosarcoma, which develops in the cells that line lymphatic or blood vessels. Rare breast cancers called phyllodes tumors grow in the connective tissue of the breast; the most of these tumors are benign, but certain types are malignant (ACS, 2021).

2.2. RISK FACTORS OF BREAST CANCER

Anything that increases a person's chance of developing a disease is defined as a risk factor (Thompson et al., 2002). Furthermore, it been proven over the decades that's breast cancer is a complicated multifactorial disease brought on by of genetic, reproductive, environmental, and lifestyle risk factors working together (Zendehdel et al., 2018). The risk factors are cumulative and interconnected. As a result, the presence of variety of risk factors may raise overall risk, which is especially apparent for people with a family history (Dell, 2020).

2.2.1. Demographic Factors

2.2.1.1. Gender

The female gender is the most significant risk factor for breast cancer. Men account for 0.5-1% of all cases of breast cancer. Male breast cancer treatment is similar to female breast cancer treatment (Breast Cancer, 2021).

2.2.1.2. Age

Age is the second strongest risk factor after female gender and has a significant relationship with the development of BC (Thakur et al., 2017). The incidence rate of BC increases to an extent which is clearly noticeable with age and peaks at the age of menopause, and then gradually decreases or stabilizes later (Kim et al., 2015).

2.2.1.3. Blood Group

Epidemiological findings demonstrate that blood group "A" has a high incidence of BC and blood group "AB" has a minimal incidence of BC. In addition, the " Rh positive " blood group has a high incidence, and the "Rh negative " blood type has a lower incidence of BC (Meo et al., 2017).

2.2.2. Reproductive Factors

2.2.2.1. Age of Menarche

An additional established risk factor is early menarche which has been proven by studies such as the results of a case-control study concluded that early menstruation doubled the risk of breast cancer (Thakur et al., 2017). Also, this has been confirmed by another study in China with a large population, which concluded that women with an early age of menarche that is equal to or less than 14 years in comparison to other women have an increased risk of BC that is estimated to be 2-fold (WU et al., 2006).

2.2.2.2. Menstrual Cycle Patterns

According to a cohort study of 61,617 women, regular menstrual cycles were linked to a high incidence of fibroadenoma at premenopausal ages as compared to irregular cycles. A history of regular cycles was nevertheless linked to a lower risk of fibroadenoma at postmenopausal ages. For all of the investigated age groups, no significant correlations were found between monarchal age or menstrual cycle length and the risk of benign breast diseases (Johansson et al., 2021).

2.2.2.3. Late Onset of Menopause

Advancing age at menopause is also one of the strongest risk factors that have been identified by studies. In India, the average age of natural menopause is 44 years, which may be early compared to the United States, which is 55, possibly due to lifestyle factors like urbanization and dietary changes (Thakur et al., 2017).

2.2.2.4. Full-Term Pregnancy and Age at First Birth

Early full-term pregnancy has been well established in the literature as a protective factor (Thakur et al., 2017). This is supported by the findings of a study that found nulliparous women were more likely to be diagnosed with breast cancer than multiparous women with more than three children (Balekouzou et al., 2017).

Furthermore, a meta-analysis found that each birth reduces the risk of ER+(estrogen receptor) and PR+(progesterone receptor) cancer by approximately 11%. While older women have a 27% increased risk of developing BC compared to younger women at the time of their first childbirth (Ma et al., 2006).

2.2.2.5. Lactation Duration

Because it helps to restore ovulation, breastfeeding is recognized as a protective factor against breast cancer. As a result, breastfeeding for longer periods of time has a greater protective effect (Laamiri et al., 2016).

2.2.3. Hormonal Factors

2.2.3.1. Ovulation-Stimulating Drugs

Studies have examined the link between ovulation-stimulating medications and breast cancer risk, but it does not appear that this is the case as has been demonstrated by studies and one of them being a case-control study with 928 cases and 928 controls found no statistically significant link between them, with the exception of women who had used fertility drugs for more than six months, who had a significantly higher risk of the disease (Taheripanah et al., 2018).

2.2.3.2. Postmenopausal Hormonal Therapy

For postmenopausal women, hormone replacement therapy has the advantage of alleviating symptoms including hot flashes, depression, and sleep difficulties, but it also raises the risk of breast cancer. In both premenopausal and postmenopausal women, high endogenous estrogen levels raise the risk of breast cancer, particularly hormone-positive breast cancer. For women under the age of 60 who have not had breast cancer and have been menopausal for up to 10 years, hormone therapy for menopause may be a safe alternative. On the other hand, women with intact uteruses who get combination hormone therapy at menopause are at a higher risk of developing ER-positive breast cancer (Bălălău et al., 2022).

2.2.4. Hereditary Factors

2.2.4.1. Genetic Factors

BRCA1 and BRCA2 have long been recognized as breast and ovarian cancer susceptibility genes. Furthermore, other genes have been identified as having a low-to-intermediate risk of breast or ovarian cancer, which include PALB2, BRIP1, ATM, CHEK2, BARD1, RAD51C, RAD51D, NBN, NF1, and MMR (Angeli et al., 2020).

2.2.4.2. Positive Family History of Breast

Family history of breast cancer increases the risk of breast cancer, but the majority of women diagnosed with BC do not have a known family history of the disease. Lack of a known family history does not necessarily mean that a woman is at reduced risk (Breast Cancer, 2021).

2.2.5. Breast Related Factors

2.2.5.1. Breast Density

Breast density, as visible on a mammography, is a measurement of the ratio of a woman's breasts' glandular and fibrous tissue to their fatty tissue (CDC, 2022b). Generally speaking, both premenopausal and postmenopausal women who have persistently dense breasts have an increased risk of developing breast cancer. On the other hand, as dense breasts regressed, the risk of breast cancer decreased (E. Y. Kim et al., 2020). Women, especially those with a suspicious screening mammography or a family history, are more likely to develop breast cancer if they have dense breast tissue. It was suggested that a promising, rapid, non-invasive strategy for enabling sensible surveillance of females at higher risk of cancer would be to screen for breast tissue density (Duffy et al., 2018).

2.2.5.2. Benign Breast Disorder

If a woman reported receiving a previous diagnosis of a benign breast disease, the diagnosis is considered when determining whether she has a history of prior breast disease with a benign outcome (Román et al., 2017). The findings of a cohort study revealed that benign breast diseases are linked to an increased risk of both ER-positive and ER-negative invasive breast cancer, but the intensity of the association varies by age. This finding supports the notion that benign breast diseases are one of the risk factors for breast cancer (Kerlikowske et al., 2016).

2.2.6. Lifestyle Related Factors

2.2.6.1. Obesity and Overweight

Body mass index (BMI) is a weight-to-height ratio used to classify weight. It is calculated by dividing an individual's weight by their height (kg/m^2). Obesity and overweight are both characterized by abnormal or excessive fat accumulation, which could be harmful to one's health. A BMI of 25 or more indicates overweight, while a BMI of 30 or above indicates obesity (WHO, 2021b). The link between obesity and breast cancer is complex, as obesity creates a hostile environment linked to metabolic syndrome, persistent systemic inflammation, and altered estrogen and adipokine production. Increased estrogens levels, hyperinsulinemia, insulin resistance, insulin-like growth factor 1 (IGF-a) activity, inflammatory cytokine secretion, adipokine overproduction, and imbalance caused by an abundance of adipocytes contribute to the mitogenic environment that promotes tumor growth (Gershuni et al., 2016).

2.2.6.2. Alcohol Consumption

There is considerable epidemiological evidence linking alcohol use to an increased risk of breast cancer. Women who regularly drink alcohol are at a higher risk of developing breast cancer, which raises the possibility of carcinogenesis. In most nations around the world, drinking alcohol within the advised limits is common and socially acceptable (Lam et al., 2021).

2.2.6.3. Smoking

Compared to non-smokers, smokers have a greater chance of developing breast cancer. Due to the failure of cancer screening efforts, the diagnosis of late-stage breast cancer was often greater in patients with a past or present smoking history. Current smokers also had a significantly higher chance of receiving a late-stage cancer diagnosis among those whose previous mammography was more than 2 years ago (Eng et al., 2020). This is in line with a study that found that women exposed to 2nd hand smoking from parents had a 11% higher risk of breast cancer compared to those who did not. The study also found that 1 out of 14 cases of breast cancer could have been prevented if parents prevented secondhand smoke (Gram et al., 2021).

2.2.7. Other Factors

2.2.7.1. Night Work Shift

Shift work, particularly at night, negatively impacts women's health, with research showing a slightly higher risk of developing BC in overnight workers, particularly those who have worker for ≥20 years (Benabu et al., 2015; Szkiela et al., 2021).

2.2.7.2. Socioeconomic Status

Due to delayed diagnosis or the possibility of less frequent follow-up, patients with low socioeconomic status are more likely than those with high socioeconomic status to receive a poorer diagnosis and a later stage of breast cancer (Orsini et al., 2016).

2.2.7.3. Diabetes

Breast cancer tends to be more common in those with diabetes, especially postmenopausal women, and is strongly linked to obesity. Postmenopausal, diabetic, and overweight women make up a high-risk category for breast cancer. According to the studies' findings, postmenopausal women and those with higher BMI had a higher chance of developing BC if they have diabetes (Tabassum et al., 2016).

2.2.7.4. Vitamin D

Vitamin D is essential for calcium homeostasis, bone metabolism, and the activities of the immunological, cardiovascular, and reproductive systems. Retrospective and prospective epidemiologic studies have found that vitamin D insufficiency is linked with an increased risk of breast cancer (Atoum & Alzoughool, 2017).

2.2.7.5. Radiation

Exposure to radiation dramatically raises the risk of breast cancer, particularly in women >50 and those who use electric gadgets like computers and phones (Shih et al., 2020). Furthermore, research emphasized the importance of addressing the mortality linked to breast cancer after childhood cancer as is evidenced by a study concluded that women who survived childhood cancer and were given few to large radiation doses had a considerable risk of breast cancer (Moskowitz et al., 2014).

2.2.7.6. Smart Phone Use

Excessive smartphone usage significantly raised the risk of breast cancer, particularly among those with smartphone addiction, and have the tendency of using the smartphone before sleeping. Also, a closer proximity between the phone and the breasts while using the smartphone resulted in a 1.59-fold increase in risk. Furthermore, in comparison to individuals who carry their phones just below the waist, individuals who hold their phones close to their breasts or waist had risks that are 5.03 and 4.06-fold greater, respectively (Shih, Hung, et al., 2020).

2.2.7.7. Bra Use

A population-based case-control study of postmenopausal women revealed no evidence that any aspect of bra usage is linked to the likelihood of either invasive ductal carcinoma or invasive lobular carcinoma breast cancer, as well as the risk not differ by the daily duration of wearing a bra, age when started wearing a bra, bra cup size, or whether or not women wore a bra with an underwire (Chen et al., 2014).

2.3. DIAGNOSTIC METHODS OF BREAST CANCER

When it comes to the diagnosis of breast cancer (BC), the disease is discovered when a woman or physician feels an unusual lump in the breast while performing a physical exam. Mammography is, however, commonly used to screen for BC and to confirm the diagnosis. Less commonly, abnormalities in the breast's skin or nipple might be the initial indication of BC. Breast cancer cells may only be identified in the breast tissue, in the lymph nodes under the arm, or in other locations further from the breast at the time of diagnosis. Breast cancer is categorized into stages, ranging from I to IV, depending on where it is discovered. Breast cancer at stage IV, commonly known as metastatic breast cancer, has progressed beyond the breast and axillary lymph nodes, and has spread to throughout the body (Waks & Winer, 2019).

2.3.1. Radiological Studies

Mammography is a technique for examining the internal anatomy of the breast. This screening method can find tumors that are not palpable and developments in imaging technology reduce radiation exposure. Mammograms taken in the past and present can be compared to detect early tissue changes. Because certain malignancies only gradually spread, early diagnosis by mammography enables earlier therapy and metastasis control. The increasing density of breast tissue in younger women makes mammography less sensitive, which causes more false-negative results (Dell, 2020). Ultrasonography is used in conjunction with mammography to assist differentiate fluid-filled cysts from other tumors and produces no radiation at all. Although it can diagnose cysts with great accuracy, it cannot conclusively rule out malignant lesions. Mammography has been usefully supplemented by the extremely sensitive diagnostic technique known as magnetic resonance imaging (MRI). Gadolinium, a contrast dye, is injected intravenously to enhance visibility. Breast MRI can be used to evaluate contralateral disease, invasive lobular cancer, and chemotherapy reaction. The expensive expense of MRI, variability in technique and interpretation, and the possibility of patient claustrophobia are also downsides. False positive results could happen because this method cannot always tell the difference between benign and malignant breast diseases (Hinkle & Cheever, 2018).

2.3.2. Biopsies

The standard of care for detecting anomalies discovered through clinical breast examination or imaging tests includes minimally invasive breast biopsies. Fine-needle aspiration (FNA), core (core needle), vacuum-assisted, and excisional biopsies are all types of biopsies that are used to obtain a conclusive diagnosis of a concerning site. FNA biopsy requires placing a needle into a lesion to collect fluid from the cyst, remove cells from intercellular gaps, or sample cells from a solid mass. The breast area is first sedated before being operated on. The fluid and cells are sucked into a syringe after the needle is inserted into the breast. In case the results of a lesion are negative, another biopsy can be done. Core needle biopsy (CNB) is a procedure that involves extracting tiny samples of breast tissue with a hollow "core" needle. This is done for palpable lesions by fixing the lesion with one hand and executing a needle biopsy with the other. Nonpalpable lesions are treated with stereotactic mammography, ultrasound, or magnetic resonance imaging (MRI) image guidance. Based on mammograms, stereotactic mammography employs computers to locate the exact position of the tumor. The ultrasound is used to direct the needle to the area of concern by watching it on the ultrasound display. Core biopsy requires repeated needle insertions in order to retrieve multiple sample tissue and is much more precise than a FNA because of this. Vacuum-assisted biopsy is a type of biopsy in which the tissue sample is collected using a suction technique and only requires a single needle insertion and allows the needle to be rotated (Dell, 2020).

2.4. TREATMENT

When the disease is detected early on, breast cancer treatment can be successful, with survival probability of 90% or higher. Surgery and radiation therapy are typically used as part of treatment to cure and/or prevent the spread of the illness to the lymph nodes, breast, and adjacent areas (locoregional control). Systemic therapy also includes anti-cancer medications administered intravenously or orally (metastasis). Endocrine (hormone) therapy, chemotherapy, and occasionally targeted biologic therapy are anti-cancer medications (antibodies) (WHO, 2021).

2.4.1. Surgery

The location and extent of the mass, as well as the patient's preference, influence the decision. Clear histological margins surrounding the malignancy are critical for cure, and surgical options in early disease include wide local excision (removal of the tumor and some normal tissue around it) and segmental mastectomy with breast conservation for masses <3 cm in diameter; for larger tumors, mastectomy (complete removal of the breast) with or without reconstruction is utilized (Lewis et al., 2021). Bilateral oophorectomy as a preventive measure can lower the incidence of breast and ovarian cancer in women who have BRCA1 or BRCA2 mutations. Removing the ovaries lowers the risk for breast cancer as they are the primary source of estrogen in premenopausal women, whereas it does not in postmenopausal women as they are not estrogen producers. Women with BRCA mutations are more likely to be diagnosed with BC in the unaffected breast. They might therefore opt for a preventative bilateral mastectomy, just like any other woman who has a high chance of developing breast cancer, in consultation with their doctor and genetic counselor (Dell, 2020).

2.4.2. Radiation Therapy

To achieve the same level of local control as a mastectomy, all individuals who have undergone breast-conserving surgery for initial stages require postoperative radiotherapy. Chest wall and local nodes must also get radiotherapy in patients having mastectomy for disease that is close to the resection margins. Axillary nodes are not exposed to radiotherapy to prevent arm lymphoedema after axillary dissection; however, the supraclavicular nodes are, and internal mammary node irradiation is occasionally utilized in certain higher-risk cases (Lewis et al., 2021).

2.4.3. Chemotherapy

Cancer cells are eliminated during chemotherapy by the application of cytotoxic medicines. Combination therapy is the most effective because the medications have diverse mechanisms of action and operate at various stages of the cell cycle.

Chemotherapy is frequently administered for 3-6 months in the neoadjuvant and adjuvant settings. However, when a patient develops metastases, chemotherapy may be administered for longer periods of time (Dell, 2020).

2.4.4. Hormonal Therapy

If breast cancer cells are ER positive, estrogen can accelerate their growth. Hormone therapy can inhibit estrogen's action and source, promoting tumor regression. Women whose cancers have estrogen and progesterone receptors have a significantly higher chance of tumor regression; estrogen receptor (ER) and progesterone receptor (PR) status assays can help decide whether hormone therapy is an option. The removal or suppression of the ovaries may be beneficial for premenopausal women with ER positive cancer. Ovarian ablation can be accomplished surgically or with luteinizing hormone-releasing hormone analogs such as goserelin or leuprolide. By blocking the enzyme required for the synthesis of estrogen, aromatase, hormone treatment can either block ERs or reduce estrogen production (Dell, 2020).

2.4.5. Targeted Therapy and Immunotherapy

As more information about the genetic alterations in breast cancer has been known, medications that selectively target the cells with changed gene expression have been created. The overexpression of HER-2 is one of these genetic alterations. Overexpressed HER-2 tumors are frequently more aggressive and prone to recurrence. An anti-HER-2 monoclonal antibody is trastuzumab (Herceptin). When an antibody binds to an antigen, it prevents signals that instruct cancer cells to multiply. It could be applied alone or in conjunction with other chemotherapeutic drugs. The flu-like symptoms, nausea, vomiting, diarrhea, and infusion responses are the most frequent adverse effects. Breast cancer medications from various classes include Everolimus (Afinitor), the CDK 4 and 6 inhibitors Palbociclib (Ibrance), and Abemaciclib (Verzenio). Everolimus acts by inhibiting mTOR, a protein that promotes cell growth and division normally. Inhibitors of CDKs 4 and 6 stop cells from dividing, which slows the cancer's progression (Dell, 2020).

2.5. SCREENING MEETHODS OF BREAST CANCER

Two of the most crucial methods for preventing breast cancer fatalities are early detection and initial treatment. Early-stage cancer that is tiny and has not spread is simpler to treat successfully. The most reliable method of detecting cancer early is by getting routine screening tests (ASC, 2022). Screening aims to identify early-stage cancer in healthy, asymptomatic patients to reduce the risk of negative outcomes, increase survival rates, and eliminate the need for intense therapies. Screening tests include both advantages (such better health outcomes) and disadvantages (e.g., cost, anxiety, inconvenience, false-positive results, and other test-specific harms such as overdiagnosis and overtreatment). Mammography has been used alone or in conjunction with breast self-examination, clinical breast examination, and other methods to screen for breast cancer. Generally, more thorough screening tracks more abnormalities. By combining screening techniques, extending screening to a wider age range, or performing the screening test more frequently, screening intensity can be improved. However, repeated administration of the same screening test leads to decreasing returns (i.e., the test is not twice as effective when administered twice as often) and a higher incidence of screening-related hazards. Finding the right balance between benefits and dangers is necessary to decide on the best screening method combination, the age at which to begin screening, the age at which to discontinue screening, and the frequency of screening tests (Practice Bulletins—Gynecology et al., 2017).

2.5.1. Mammography

The coronavirus (COVID-19) pandemic has had a negative influence on cancer detection and treatment in 2020, despite cancer being a serious public health concern (Yabroff et al., 2021). Most international guidelines, including those of the World Health Organization (WHO), European Society for Medical Oncology (ESMO), American College of Physicians, Australian Government, Brazilian College of Radiology and Diagnostic Imaging (CBR) issued by developed countries, contained nearly the same guidelines on cancer screening age, methods, and intervals.

Most guidelines recommended mammographic screening for individuals with an average risk between the ages of 40 and 74, while strongly suggested women between the ages of 50 and 69 as the ideal age group for screening. According to recommendations, the age at which screening should stop ought to be considered based on the health of the women, for instance, ceasing screening for women whose life expectancy is less than 5-7 years or 10 years. The majority of guidelines agreed that annual MRI or mammography screenings for women at higher risk should be conducted, and that the beginning age should be lower than that of women at average risk (Ren et al., 2022). Mammography screening was recommended by the American Cancer Society to be done once a year for women 40 to 54 years old and every 1–2 years for those 55 years and older (Oeffinger et al., 2015). According to the findings of a prospective population-based cohort analysis, patients who had never had a mammogram were twice as inclined to receive a diagnosis of late-stage breast cancer as those who had. More particular, the odds of receiving a diagnosis of late-stage breast cancer were greater in patients with a past or present history of smoking (Eng et al., 2020). The majority of population-based mammography screening systems, like the Danish program, approach screening as a "one-size-fits-all" strategy where age is the only factor. It is quite probable that participation rates are not best predicted by age. One-size-fits-all mammography screening programs might be replaced by personalized mammography screening that uses risk-based screening recommendations. High participation is necessary for the screening to be as effective as possible. Since age is no longer a stratifying factor, more individualized mammography screening could be a wider choice than standardized, one-size-fits-all programs (Pett et al., 2023).

2.5.2. Breast Self-Examination

Women may inspect the entire breast and armpit region by applying gentle, medium, and intense pressure with the tips of her three middle fingers. It is recommended that every month, women should feel both breasts for any lumps, thickening, knots that have stiffened, or other changes. The same procedure may be used in other settings with subtle variations, such as in front of a mirror, where the woman might hold her arms at her sides or elevate them far above her head to visually assess her breasts.

Women might be able to detect any changes in the nipple's shape, any swelling or dimpling of the skin, or any changes in the contour from this stance. After that, she puts her palms on her hips and squeezes hard to contract her chest muscles. For the majority of women, the left and right breasts will not exactly resemble one another. It is advised that adult women of all ages conduct breast self-exams at least once per month (NBCF, 2022a). Regular physical breast checks, whether performed by women themselves (breast self-exams) or by professionals (clinical breast exams), have not been proven to have any significant benefits. Women should be aware of how their breasts typically feel and look, and they should notify a professional of any changes right away. This is because, in the majority of cases, when breast cancer is found due to signs like a breast lump, women discover these signs while engaging in regular activities like bathing or dressing (ACS, 2022).

2.5.3. Clinical Breast Examination

A medical expert with the training to spot a wide range of abnormalities and warning indicators conducts a clinical breast examination. A healthcare professional, such as a family doctor or gynecologist at a medical facility, will do this exam. The medical professional inspects the woman's breasts while performing the examination. She might be asked to put her hands against her hips, hang her arms by her sides, or lift them above her head. These positions enable the medical professional to check for variations in the woman's breasts' size or shape. Breast skin is examined for any odd rashes, dimpling, or other symptoms. It is possible to inspect her nipples to see if they leak fluid when lightly pinched. When a lump is found, the healthcare professional will take note of its size, shape, texture, and whether it moves readily. Although benign lumps frequently feel different from cancerous ones, any lump that is discovered will need to be further evaluated using diagnostic procedures. (NBCF, 2022). The majority of guidelines' strategies for clinical breast examination (CBE) and ultrasound varied in specifics. For instance, the National Comprehensive Cancer Network still advises asymptomatic, average-risk women aged between 25 and 39 to have a CBE every one to three years, and those between the ages of 40 and older to have one annually (Practice Bulletins—Gynecology et al., 2017; Ren et al., 2022).

CBE was not recommended as a main screening technique by the America Cancer Society. This does not imply, however, that these examinations should never be performed. Healthcare workers may continue perform CBE in specific circumstances, notably for women who are at higher-than-average risk, while also offering counseling on risk and early detection. CBE crucial in economically deprived regions, as it replaces standard screening methods (ACS, 2022).

2.5.4. Importance of Screening Methods

Breast screening is a low-cost, low-risk method for early detection, which is critical to improving mortality. However, it remains controversial with unclear guidelines. A 2019 study analyzed medical records of women with breast tumors, analyzing clinical examinations and self-exams for malignancy detection or positive ultrasound findings. The result of the study was that about 85% of the breast tumors were recognized by the patients. Upon further evaluation of these masses, 69 ultrasound results were revealed to be positive with 26 being cancer and 10 being classified as early stage (stage 0 and 1). Patients reported most cancers and ultrasound findings (96% and 81.2%). This indicates that breast self-exam is important and detects cancer. Despite controversial guidelines, women should continue to perform breast cancer self-examinations for early detection of breast cancer. Although there are guidelines encourage to implement BSE, not all examinations are done equally. CBE from physicians, especially from breast surgeons and gynecologist, are more effective than those from mid-level healthcare professionals (Huang et al, 2022).

The American College of Radiology and American Cancer Society recommend yearly screening mammography starting at age 40 years and strongly recommend annual mammography screening for women aged 45–54 years and biennial mammography screening starting at age 55 years. As regards to the practice of screening methods, results from studies conducted in other developing countries have not been very encouraging either (Heena et al., 2019; Ren et al., 2022).

2.5.5. Barriers to Screening Methods

Sociodemographic factors such as age, educational and financial level, marital status, alcohol consumption, smoking status, family, and personal history, have an effect on the attitude towards the effectiveness of medical exams. Age is a crucial factor influencing the likelihood of undergoing a breast examination, it appears that women around the 65 or older were less likely to undergo it compared to those in their 40s, despite the increased risk of breast cancer with increased age. In addition, the more education a woman receives, the more likely she is to undergo breast cancer screening and vice versa. Moreover, good financial standing and positive attitude towards effective medical examinations also plays a vital role (Lee et al., 2010).

A review aimed to identify habits causing delays in breast cancer detection in African women and identify contributing factors found that knowledge is a key factor in determining how often people use healthcare services. And the researchers identified knowledge gaps as a key contributing factor for late presentation and early detection strategies in sub-Saharan Africa (Akuoko et al., 2017).

Lack of knowledge is a significant barrier in many countries, limiting women's participation in screenings. Furthermore, cultural norms and belief, women having negative cultural (cancer fatalism), and fear of embarrassment or cancer were less likely to undergo mammography than women have not. Cancer fatalism is the belief that a cancer diagnosis means that death is inevitable. Cultural taboo and women's fear of losing a breast were identified as barriers to screening (Basem, 2020).

Awareness plays a vital role in early detection and optimal treatment of breast cancer. The knowledge level of healthcare professionals and their attitudes towards screening methods for breast cancer are important determinants of the practice of these methods by their patients. However, a study conducted at a public hospital where the target population were health professionals resulted in negative attitude towards breast cancer screening methods and the reason could be due to lack of knowledge in this study population. Women would prefer to undergo BSE in the privacy at their homes than to reach out to health care services for mammography, which is also as they

considered an embarrassing and uncomfortable procedure. Also, most of the participants had heard of CBE and believed that it is a useful tool. However, only quarter of the participants had undergone it. The results were similar for mammography as well with most being aware of mammography as a screening tool but only a few opting for it (Heena et al., 2019).

Stigma is a significant obstacle that hampers early detection and treatment of breast cancer. The use of screening and diagnostic services as well as participation in care for breast cancer patients is significantly hampered by stigma. Public stigma related to breast cancer led to internalized stigmatization in research from Ethiopia and Uganda, delaying care involvement (De Ver Dye et al., 2011; Koon et al., 2013; Meacham et al., 2016). Breast cancer patients deal with a great deal of stigma surrounding losing a breast and the associated humiliation of not being a "complete" woman. Screening is discouraged by the stigma accompanying mastectomy and even biopsy. Additionally, husbands frequently desert their wives who have breast cancer due to the apparent certainty of their death or are even urged to abandon them by the community itself. The stigma that could harm their marriage and family is a major factor in why women put off seeking medical help due to their fear of abandonment, humiliation, being left alone, and looked down upon (Meacham et al., 2016).

According to a study conducted in Nigeria to identify sociodemographic characteristics and causes related with breast cancer presentation delays, most patients waited more than three months before seeking their first medical consultation. Pre-menopause, primary level of education, no history of benign breast illness, and single women were all linked to a greater risk of delayed diagnosis. According to the women, the main causes of the delay included not understanding the nature of the illness, dread of a mastectomy, and belief in spiritual healing and herbal treatments (Ibrahim & Oludara, 2012). It may be challenging to receive a diagnosis and treatment due to access issues, travel lengths, and living in remote places. Living in a rural place means traveling farther and spending more money on transportation to receive healthcare services is another barrier (Akuoko et al., 2017).

2.6. SOMALILAND

2.6.1. General Information

In the nineteenth century, European nations colonized Somalia. The British and the Italians each colonized a different region of what is now Somalia. In the year 1960, the area colonized by Britain and the Italians both achieved independence and The Federal Republic of Somalia was eventually formed by the union of the two territories. The Republic of Somaliland, a self-proclaimed state since 1991, is internationally recognized as a Somalia autonomous region. Its three official languages are Somali, Arabic, and English; it is situated in northwest Somalia (UNICEF, 2016). The population was estimated to be 3.6 million in 2014 and is expected to expand to 4.2 million by 2020 at a pace of 2.93 percent, with the majority of its citizens living in urban areas (SLHDS, 2020).

2.6.2. Breast Cancer in Somaliland

Somalia is now making progress after a horrific civil war that lasted 30 years. All of the nation's hospital facilities were destroyed during this battle, and the nation has not been able to rebuild its healthcare infrastructure since. The nation's cancer care has been impacted by this healthcare system. Only UNISO Hospital in Mogadishu, Somalia, provides cancer treatment for the entire nation. Only surgical and chemotherapy therapies are offered at this clinic. This facility does not provide radiation therapy services. Cancer patients and their families are responsible for paying for the private cancer care coverage. After receiving a cancer diagnosis from local diagnostic facilities, the majority of Somalis seek treatment abroad. India, Turkey, Malaysia, China, Thailand, Egypt, and Saudi Arabia are among the top destinations for medical care (Hassan et al., 2022).

There is no nationwide cancer prevention system right now. Only a few volunteer organizations, such the Somali Cancer Society, the Hagarla Institute, and others, are trying to offer helpful services to the community. Women are urged to perform breast self-examination starting at age 20 and to consult a doctor if they discover any

suspicious lumps or unusual swelling. In Somalia, cancer screening initiatives are still in their initial stages. Some healthcare facilities have begun performing cancer screenings on people for malignancies like breast and cervical (Hassan et al., 2022).

Effective screening programs cannot be launched or implemented in Somalia due to a variety of challenges. The population-based cancer incidence is unknown and without a national registry system, it is challenging to comprehend the epidemiology of malignancies like breast cancer and other cancers and create programs for cancer control and prevention in Somalia. For successful cancer control, it is thus required to start the creation of a regional cancer registry system as it will enable tracking the trends of cancer incidence (Tahtabasi, Abdullahi, et al., 2020). To tackle cancer in Somalia, the government and its institutions lack the necessary financial and human resources. The projects are only being led by a few private nonprofit groups and concerned people. A sizable portion of Somalis are unaware of the illness' implications. The public has to be well-informed about the illness and how it affects life and the nation's economy. Even if there are screening programs, the general population is unaware of their importance or benefits or due to financial reasons. Thus, they are unaware of the significance of getting a diagnosis as soon as possible, which leads to cancer is being discovered at a later stage (Hassan et al., 2022).

Furthermore, incorrect assumptions about the nature of the illness and its stigma make early discovery much more difficult, and many individuals even think the illness is contagious. It is evident from research regarding cervical and breast cancer that was conducted in 2021 in Mogadishu, Somalia. This study discovered that healthcare professionals reported cases where patients had refused cancer screening. The reasons given included fear of judgment from friends or family because they believed it would cause them to develop cancer, as well as because they found the procedure embarrassing, intrusive, or they are afraid of the pain associated with it (Hassan et al., 2022; Walz et al., 2021). Another research focused on the awareness of BC among Somali immigrant women in the United State found that among the obstacles to breast cancer screening, includes the refusal to discuss the subject. They were like this in Somalia and continued to be so. Plans to get screened were impeded by lack of physician guidance, lack of knowledge, gender discrepancy with providers, and fear

of pain. The findings suggest that if suggested by their medical professionals, women would undergo screening (Al-Amoudi et al., 2015).

It is important to conduct strategies that reduce stigma along the entire cancer care continuum. Widespread educational and advocacy initiatives are required to enhance screening practices. These programs could be strengthened by victim testimonies and guided by ongoing research in the field. To guarantee that women complete therapy, further assistance with patient guidance and sufficient counseling are required. Last but not least, healthcare professionals require training so that they may improve patient education regarding breast self-examination, do clinical breast exams, and delicately deliver a breast cancer diagnosis. Positive test findings and subsequent treatment options must be disclosed carefully, especially when surgery is recommended, given the stigma connected with the diagnosis and the burden of stigma. A skilled health practitioner can communicate a diagnosis and discuss therapy in a way that is not stigmatizing, but rather inviting of better involvement by having a better grasp of the impact such a diagnosis may have on a patient (Meacham et al., 2016).

PART 3

METHODOLOGY

3.1. RESEARCH DESIGN

This is a descriptive cross-sectional study aimed to evaluate female healthcare and non-healthcare workers' knowledge, attitudes, and practices regarding breast cancer and screening in Hargeisa, Somaliland.

3.2. SETTING OF THE STUDY

This study was conducted in Hargeisa the capital of Somaliland. The biggest and the only public hospital in Hargeisa, is the Hargeisa Group Hospital (HGH), which was constructed in 1951 by the British governance. Over the course its establishment, it has served not only the people of Hargeisa but also a sizable number of people from the surrounding districts and other areas due to the quality and affordable services it offers to citizens (Bile, 2023). Hargeisa International Hospital (HIH), which is a private hospital offers services to the population of Hargeisa and its surrounding regions, is another widely known hospital in Somaliland. Despite being a modest facility, the hospital receives a lot of visitors because its renown for having experts in obstetrics and gynecology, orthopedics, and other fields (gHealth, 2020).

3.3. STUDY SAMPLE

The population of the study consisted of female healthcare professionals in the chosen hospitals. The total number of female healthcare professionals (doctor, midwife, nurse, laboratory technician, etc.) in HGH is approximately 400. Because the hospital is modest, the overall number of female healthcare workers employed by the HIH is

around 35. The population of the study consisted of all the female healthcare professionals working in a total of 2 hospitals (N= 435).

Without choosing a specific sample technique in the study, all female healthcare and non-healthcare workers who consented to participate are included. The researcher sought to ensure accurate representation of the population by finding more participants and eliminating those not filling at least till the 3rd section. A total of 397 female respondents agreed to participate in the study; however, 300 met these criteria, and the rest were eliminated. Total 150 healthcare workers who were willing to participate were included in this study and filled all the survey questions. Those who are on leave, not present for any other reason at the time of the study, and who do not volunteer to participate are all excluded. As for those who are not healthcare workers, if they are present at the time the study was being conducted in the selected hospital either for appointments, examinations, or visitations and are willing to participate they were included and they totaled 150 as well. Both groups of the study were ≥20, and have no communication or psychiatric problems, and have willing to participate in the study.

3.4. DATA COLLECTION

Data were gathered between November 2022 and April 2023. The consent from each woman was obtained after being informed of the study's goals and having the privacy and confidentiality of their information assured. The papers confirming the hospital administration's approval to conduct the research was presented to the healthcare professionals. The survey approach was used to reach out to the two target populations at the designated hospitals. The questionnaire was accessible in Arabic, Somali, and English, and data was collected through face-to-face interviews for non-healthcare professionals and self-filled for healthcare workers. Data collection time varied based on participants' awareness levels.

3.5. MEASUREMENTS

To ascertain the knowledge, attitudes, and practices of women in both groups regarding breast cancer, a questionnaire developed within the framework of the

literature (CDC, 2020a, 2020b, 2020c; Ferreira et al., 2020; Heena et al., 2019) was used and adjusted to suit this study and it can be divided into 4 parts (Appendix D, E, and F, respectively).

Part I: Socio-demographic characteristics: This part comprises of questions about participants' characterization, such as age, level of education, social status, and experience. Respondents had a total of 7 questions to answer, with defined options to choose from.

Part II: Knowledge aspects: This section had 37 questions about breast cancer knowledge (risk factors, signs and symptoms, and diagnostic and screening methods). The answers to the section were split into two subcategories. Respondents in the first group had the choice between three answers: "True," "False," or "I don't know," with True being the correct response. Alternatively, they may choose from the options provided or contribute their own response if it was not one of those provided in the other group but none of them did. The incorrect and "I don't know" responds received 0 points, while the correct answer received 1 point. All the questions followed this pattern, except for one question about when mammography is recommended, where the answers "Yearly for the recommended age group" and "When a lump/mass is found during a breast examination" were each given 1 point, and the answer "both of the above" was given 2 points, bringing the maximum attainable score to 38. Scores were classified into the following categories: scores less than 19 (<50%) of the maximum score were deemed low/inadequate knowledge, and scores ≥average were regarded high knowledge (Ahmed, 2020; Ramathebane et al., 2022). For this section, the Cronbach's alpha value was found to be 0.895 (Table 3.5).

Table 3.1. Cronbach's alpha coefficient.

Sections	Number of items	Cronbach's alpha value
Risk factors	13	0.859
Signs and symptoms	7	0.718
Diagnostic methods	6	0.866
Screening methods	11	0.701
Total knowledge	37	0.895

Part III: Attitude aspects: This part includes 11 questions concerning the participants' attitudes (opinions, views, beliefs about breast cancer and screening methods) and this section had "Agree", "Disagree", "Not sure" responses. This part was utilized to evaluate whether women had a good or unfavorable perception of breast cancer and its screening procedures as well as their desire to employ breast cancer screening procedures. 1 point was assigned for each appropriate response that was considered as a positive attitude and 0 was given for both what is considered as a negative attitude and uncertain responses and the total scores for this section ranged from 0 to 11. Scores below the average were regarded as a negative, whereas scores ≥ average were regarded positive/favorable attitude (Doan et al., 2022). For this section, the Cronbach's alpha value was found to be 0.739.

Part IV: Practice aspects: The participants' practices were assessed in the last part with 10 questions that revolved around breast self-exam, clinical breast exam, and Mammography. The choices were predefined; however, the participants can provide their own response if it was not one of the answers already given. However, none of them did. The outcome was divided into the following groups: those who had never had BSE, CBE, or mammography were grouped together; and those who had were referred to as one group. The implementation of the Cronbach's alpha test was not feasible in this section due to the small number of items thus no scores were allocated.

3.6. STATISTICAL ANALYSIS

The data were analyzed by using the Research Statistical Package for the Social Sciences 25.0 (SPSS 25.0) program. The data from the respondents were reported as frequencies and percentages to show how the sociodemographic traits of the respondents were distributed. Kolmogorov-Smirnov and Shapiro-Wilk tests were performed, and the both the tests indicated statistically significant result (sig.= 0.000, which is < 0.05) and the histograms looked skewed, which confirmed that the data significantly deviated from a normal distribution. Hence non-parametric Chi-square (X^2), Mann-Whitney U test, and Kruskal Wallis H test were implemented. The Kruskal-Wallis H test (KW) was used to compare more than two independent groups, while the Mann-Whitney U test (U) was used to compare two independent groups.

Furthermore, Spearman correlation test was utilized to identify the strength of relationship between the study variables. The following are the acceptable cutoffs for Spearman's correlation coefficient (ρ) strength: A correlation was deemed weak if it was less than 0.4, moderate if it was between 0.4 and 0.7, and high if it was greater than 0.7. Considering both the distinctive features of the data and research aims, the implementation of these nonparametric approaches in this study enables an analysis that produces reliable results. The accepted statistical significance level was $p<0.05$.

3.7. ETHICAL CONSIDERATION

The research was approved by Karabuk University's Research Ethics Committee (No: E-77192459-050.99-67356) (Appendix A), and institutional permits were obtained from the administrations of HGH (Ref: HGH/0.1/0328/23) and HIH (Appendix B, and C, respectively). After briefly explaining the study's purpose and assuring each participant that their information would remain private and confidential, each participant's consent was obtained. Both groups were given the assurance of anonymity and were free to leave at any moment.

3.8. LIMITATION OF THE STUDY

This study has limitations, including adopting a self-administered survey, which may be subject to bias. Comparing knowledge, attitudes, and practices to breast cancer and screening methods among diverse groups is challenging due to different methodologies used in the available literature as these methods are not standardized. This study, which focuses on healthcare and non-healthcare professionals, is the first comprehensive review of women's knowledge, attitudes, and practices concerning breast cancer and screening methods in Somaliland. Data collection was postponed due to delays in obtaining authorization for the research at designated hospitals. Throughout the time when data was being collected, Healthcare professionals were busy, making it difficult for them to participate and expressed dissatisfaction with the length and quantity of the questionnaire's questions. The same could be stated for the other research group, given that the non-healthcare workers, who visited the hospitals for appointments or visits, may have been impacted by unfavorable news or urgent

need to leave, and that the extra time needed for the survey was undoubtedly not in their plans, which resulted in affecting their decision-making.

PART 4

RESULTS

4.1. PARTICIPANTS' SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 300 individuals participated in this study, with half of them being healthcare workers (HCWs) and the other half being non-healthcare workers (NHCWs). The HCWs had a mean age of 28.78 (±5.158) years, and NHCWs had a mean age of 33.64 (±10.554) years. Most HCWs and NHCWs were between the ages of 20 and 29 years (62.6%; 38.0%, respectively). Also, 63.3% of HCWs had a bachelor's degree and 78.0% had ≤5 years of experience, whereas most NHCWs (28.7%; 86.7%, respectively) did not receive formal education, and are unemployed. Most HCWs were single (77.3%), while NHCWs were married (62.7%). 90.7% and 86.7% of HCWs and NHCWs have no breast disorder history, respectively. 89.0% of HCWS and 91.3% OF NHCWs have no family history of breast cancer (Table 4.1).

Table 4.1. Socio-demographic characteristics.

Items	Variables	HCWs n=150 n (%)	NHCWs n=150 n (%)	TOTAL n (%)
Age	20-29	94(62.6%)	57(38.0%)	151(50.4%)
	30-39	46(30.7%)	51(34.0%)	97(32.3%)
	40-49	10(6.7%)	27(18.0%)	37(12.3%)
	≥50	-	15(10.0%)	15(5.0%)
Level of Education	No formal education	-	43(28.7%)	43(14.3%)
	Primary school	-	25(16.7%)	25(8.3%)
	Middle school	-	7(4.7%)	7(2.3%)
	High school	-	28(18.7%)	28(9.3%)
	associate degree	42(28.0%)	16(10.7%)	58(19.3%)
	Bachelor's degree	95(63.3%)	30(20.0%)	125(41.7%)
	Postgraduate degree	13(8.7%)	1(0.5%)	14(4.8%)
Years of Experience	I do not work	-	130(86.7%)	130(43.3%)
	≤5 years	117(78.0%)	14(9.3%)	131(43.7%)
	6-10 years	26(17.3%)	4(2.7%)	30(10.0%)
	11-15 years	4(2.7%)	2(1.3%)	6(2.0%)
	≥16 years	3(2.0%)	-	3(1.0%)
Marital status	Single	116(77.3%)	56(37.3%)	172(57.3%)
	Married	34(22.7%)	94(62.7%)	128(42.7%)

Table 4.1. (more).

Hx of breast Disorder	No		272(90.7%)	130(86.7%)	272(90.7%)
	Yes		28(9.3%)	20(13.3%)	28(9.3%)
Hx of BC in the family	No		267(89.0%)	137(91.3%)	267(89.0%)
	Yes		33(11.0%)	13(8.7%)	33(11.0%)
Age	**Mean**	**Median**	**Standard deviation**	**Minimum**	**Maximum**
HCWs	28.78	28.00	5.158	21	48
NHCWs	33.64	31.00	10.554	20	75

*HCWs: healthcare workers, NHCWs: Non-healthcare workers, Hx: history, BC: Breast cancer

4.2. PARTICIPANTS' KNOWLEDGE OF BREAST CANCER AND SCREENING METHODS

4.2.1. Knowledge of Breast Cancer Risk Factors

The majority of female healthcare workers could identify the vast majority of breast cancer risk factors, which may be summed up as follows; early menstrual period (56.0%), growing older (73.3%), late or no pregnancy (56.0%), late onset of menopause after age 55 (61.3%), being overweight or obese after menopause (57.3%), race or ethnicity (61.3%), large breasts (55.3%), oral contraceptives use (62.0%), using combination hormonal therapy (70.7%), exposure to radiation (87.3%), and personal/family history of breast cancer or non-cancerous breast disease (89.3%). However, only 26.0% and 30.0% of the respondents correctly recognized a high-fat diet and a lack of physical activity as risk factors, and almost half of them, 48.7% and 45.3%, respectively, were unaware of this (Table 4.2).

Concerning the responses from non-healthcare workers, the risk factors identified by non-healthcare workers are as follows: early menstrual period (60.7%), growing older (58.7%), late or no pregnancy (40.0%), late onset of menopause after age 55 (49.3%), high fat diet (32.7%), lack of physical activity (23.3%), being overweight or obese after menopause (56.0%), race or ethnicity (66.0%), large breasts (19.3%), oral contraceptives use (22.7%), using combination hormonal therapy (24.0%), exposure to radiation (75.3%), and personal/family history of breast cancer or non-cancerous breast disease (78.0%) (Table 4.2).

Table 4.2. Participants' knowledge of breast cancer risk factors.

Risk factors		HCWs		NHCWs	
		N	(%)	N	(%)
Early menstrual period	True	84	56.0%	91	60.7%
	False	40	26.7%	25	16.6%
	I do not know	26	17.3%	34	22.7%
Growing older	True	110	73.3%	88	58.7%
	False	29	19.3%	18	12.0%
	I do not know	11	7.4%	44	29.3%
Late or no pregnancy	True	84	56.0%	60	40.0%
	False	45	30.0%	24	16.0%
	I do not know	21	14.0%	66	44.0%
Late onset of menopause after age 55	True	92	61.3%	74	49.3%
	False	35	23.4%	19	12.7%
	I do not know	23	15.3%	57	38.0%
High fat diet	True	39	26.0%	49	32.7%
	False	38	25.3%	15	10.0%
	I do not know	73	48.7%	86	57.3%
Lack of physical activity	True	45	30.0%	35	23.3%
	False	37	24.7%	16	10.7%
	I do not know	68	45.3%	99	66.0%
Being overweight or obese after menopause	True	86	57.3%	84	56.0%
	False	34	22.7%	18	12.0%
	I do not know	30	20.0%	48	32.0%
Race or ethnicity	True	92	61.3%	99	66.0%
	False	37	24.7%	24	16.0%
	I do not know	21	14.0%	27	18.0%
Large breasts	True	83	55.3%	29	19.3%
	False	45	30.0%	33	22.0%
	I do not know	22	14.7%	88	58.7%
Oral contraceptives use	True	93	62.0%	34	22.7%
	False	25	16.7%	14	9.3%
	I do not know	32	21.3%	102	68.0%
Using combination hormonal therapy	True	106	70.7%	36	24.0%
	False	23	15.3%	16	10.7%
	I do not know	21	14.0%	98	65.3%
Exposure to radiation	True	131	87.3%	113	75.3%
	False	9	6.0%	7	4.7%
	I do not know	10	6.7%	30	20.0%
Personal/family history of breast cancer or non-cancerous breast disease	True	134	89.3%	117	78.0%
	False	11	7.4%	9	6.0%
	I do not know	5	3.3%	24	16.0%

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers

4.2.2. Knowledge of Breast Cancer Signs and Symptoms

Regarding table 4.3, healthcare workers' responses revealed that 90.0% acknowledged that pain in the breast is one of breast cancer's signs, as is a mass in the breast or under the arm (92.7%). The majority of respondents also recognize other signs, which can be summed up as the following: any nipple discharge, including blood, other than

breast milk (87.3%), retraction of the nibble (72.7%), any change in the shape of the nipple or breast (61.3%), swelling or enlargement of the nipple or breast (88.0%), and weight loss (80.7%).

According to the responses from non-healthcare workers in table 4.3, 84.6% of them agreed that a breast pain is an indication of BC, and 84.9% stated the same about the mass in the breast/under the arm. The remaining symptoms, in accordance with those who correctly identified them, are as follows: any nipple discharge other than breast milk with (74.7%), nipple retraction (46.7%), any change in nipple/breast shape (30.7%), swelling of the nipple/breast (60.0%), and weight loss (68.0%) (Table 4.3).

Table 4.3. Participants' knowledge of breast cancer signs and symptoms.

Signs and symptoms		**HCWs**		**NHCWs**	
		N	**(%)**	**N**	**(%)**
Pain in the breast	True	135	90.0%	127	84.6%
	False	9	6.0%	4	2.7%
	I do not know	6	4.0%	19	12.7%
A mass in the breast or under the arm	True	139	92.7%	127	84.9%
	False	8	5.3%	4	2.4%
	I do not know	3	2.0%	19	12.7%
Any nipple discharge, including blood, other than breast milk	True	131	87.3%	112	74.7%
	False	8	5.3%	10	6.6%
	I do not know	11	7.4%	28	18.7%
Retraction of the nipple	True	109	72.7%	70	46.7%
	False	19	12.6%	10	6.6%
	I do not know	22	14.7%	70	46.7%
Any change in the shape of the nipple/breast	True	92	61.3%	46	30.7%
	False	17	11.4%	14	9.3%
	I do not know	41	27.3%	90	60.0%
Swelling or enlargement of the nipple/breast	True	132	88.0%	90	60.0%
	False	5	3.3%	6	4.0%
	I do not know	13	8.7%	54	36.0%
Weight loss	True	121	80.7%	102	68.0%
	False	9	6.0%	2	1.3%
	I do not know	20	13.3%	46	30.7%

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers

4.2.3. Knowledge of Breast Cancer Diagnostic Methods

Most healthcare workers knew the correct answers. breast self-exam, clinical breast exam, and mammography were all agreed upon as methods of detecting breast cancer by 85.4%, 84.7%, and 82.0% of respondents, respectively. MRI, ultrasound, and biopsy were identified as procedures utilized in breast cancer diagnosis by 71.3%, 77.3%, and 90.6% of the respondents, respectively. As for the responses of non-healthcare workers, 70.0% and 45.3% of them seemed to be aware that breast self-exam and clinical breast exam, are used to diagnose breast cancer, respectively. However, they were unable to accurately identify the remaining methods of diagnosis, which can be summed up as follows: mammography (22.7%), ultrasound (16.0%), MRI (14.7%), and biopsy (14.0%) (Table 4.4).

Table 4.4. Participants' knowledge of breast cancer diagnostic methods.

Diagnostic methods		**HCWs**		**NHCWs**	
		N	**%**	**N**	**%**
Breast Self-Examination (BSE)	True	128	85.4%	105	70.0%
	False	11	7.3%	6	4.0%
	I do not know	11	7.3%	39	26.0%
Clinical Breast Examination (CBE)	True	127	84.7%	68	45.3%
	False	14	9.3%	5	3.4%
	I do not know	9	6.0%	77	51.3%
Mammography	True	123	82.0%	34	22.7%
	False	13	8.7%	6	4.0%
	I do not know	14	9.3%	110	73.3%
Ultrasonography	True	107	71.3%	24	16.0%
	False	18	12.0%	13	8.7%
	I do not know	25	16.7%	113	75.3%
Magnetic Resonance Imaging (MRI)	True	116	77.3%	22	14.7%
	False	18	12.0%	11	7.3%
	I do not know	16	10.7%	117	78.0%
Biopsy	True	136	90.6%	21	14.0%
	False	7	4.7%	8	5.3%
	I do not know	7	4.7%	121	80.7%

*HCWs: Healthcare workers. NHCWs: Non-healthcare workers

4.2.4. Knowledge of Breast Screening Methods

Table 4.5 shows the participants' knowledge of the three types of screening procedures: breast self-examination, clinical breast examination, and mammography.

Regarding breast self-exam (BSE), most healthcare workers (86.0%) had heard of BSE and 73.0% thought it is an effective approach. Only 32.7%, however, knew that it was self-administered, and 49.3% knew that it is a monthly recommended procedure. When it came to non-healthcare workers, 74.0% had heard of BSE before and 69.3% believed it was a good technique. Only 24.0% and 13.3% were aware that the individual performs it and is monthly recommended, respectively.

As for clinical breast exam (CBE), when it comes to healthcare workers, 87.3% were familiar with it, while 12.7% were not. The majority (66.0%) believe it is an effective approach, with 56.0% knew that healthcare professionals perform it. 32.7% believed that CBE should be done yearly, while 41.3% are unsure. Non-healthcare workers, however, less than half (48.7%) have heard of CBE and 42.7% and 22% believe it is an effective tool and healthcare workers preform it, respectively. Yet most of them (84.7%) were unsure of how frequently this exam should be performed.

When it comes to mammography, 83.3% of healthcare workers have heard of it, and 72.7% of them agreed that it is a reliable method for detecting breast cancer. 6.0% believed it should be done yearly for recommended age, 25.2% indicated it should be done whenever a lump is found during examinations, and 30.7% stated that it is a combination of the aforementioned answers, and 36.7% said they were not sure. On the other hand, only 28.0% of non-healthcare employees had heard of mammography, and only 24.0% thought it was an effective tool. The majority of respondents (80.0%) were unsure when it is advised to be done (Table 4.5).

Table 4.5. Participants' knowledge of breast cancer screening methods.

Breast cancer screening methods		HCWs		NHCWs	
		N	%	N	%
Breast self-examination (BSE) knowledge					
I heard/learned about BSE	Yes	129	86.0%	111	74.0%
	No	21	14.0%	39	26.0%
BSE is an effective method to detect breast cancer early	True	110	73.3%	104	69.3%
	False	-	-	6	4.0%
	I do not know	40	26.7%	40	26.7%
Who can perform BSE?	Individual	49	32.7%	36	24.0%
	Healthcare professional	18	12.0%	7	4.7%
	All	52	34.7%	11	7.3%
	I do not know	31	20.6%	96	64.0%
How frequently should a BSE be performed?	Weekly	9	6.0%	4	2.7%
	Monthly	74	49.3%	20	13.3%
	Yearly	19	12.7%	16	10.7%
	I do not know	48	32.0%	110	73.3%
Clinical breast examination (CBE) knowledge					
I heard/learned about CBE	Yes	131	87.3%	73	48.7%
	No	19	12.7%	77	51.3%
CBE is an effective method to detect breast cancer early?	True	99	66.0%	64	42.7%
	False	6	4.0%	6	4.0%
	I do not know	45	30.0%	80	53.3%
Who can perform CBE?	Individual (by myself)	20	13.3%	3	2.0%
	Healthcare professional	84	56.0%	33	22.0%
	All	11	7.3%	20	13.3%
	I do not know	35	23.4%	94	62.7%
How frequently should a CBE be performed?	Monthly	39	26.0%	4	2.6%
	Yearly	49	32.7%	19	12.7%
	I do not know	62	41.3%	127	84.7%
Mammography knowledge					
I heard/learned about Mammography	Yes	125	83.3%	42	28.0%
	No	25	16.7%	108	72.0%
Mammography is an effective method to detect BC early	True	109	72.7%	36	24.0%
	False	3	2.0%	6	4.0%
	I do not know	38	25.3%	108	72.0%
How frequently should a mammography be performed?	Monthly	2	1.4%	-	-
	Yearly for recommended age	9	6.0%	2	1.4%
	When breast exam reveals a mass	38	25.2%	20	13.3%
	Combination of the aforementioned	46	30.7%	8	5.3%
	I do not know	55	36.7%	120	80.0%

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers, BC: Breast cancer

4.2.5. Healthcare and Non-Healthcare Workers' Knowledge Scores

In table 4.6, data shows that healthcare workers have a mean risk factor score of 7.86±3.219. They have a mean signs and symptoms score of 5.73±1.550. Diagnostic and screening methods scores are 4.91±1.423 and 7.32±2.60, respectively. The total knowledge mean score is 25.82±6.92, with a median of 27.00. Non-healthcare workers

have a mean risk factor score of 6.06±3.131, with a median of 7.00. They have a mean signs and symptoms score of 4.49±1.969, with a median of 5.00. Diagnostic and screening methods scores are 1.83±1.527 and 3.84±2.873, respectively. The total knowledge mean score is 16.22±6.75, with a median of 16.00.

Table 4.6. Participants' knowledge scores.

Knowledge items	HCWs	NHCWs
	Mean ± Standard deviation Median (Min-Max)	Mean ± Standard deviation Median (Min-Max)
Risk factors scores	7.86±3.219 9.00(0-13)	6.06±3.131 7.00(0-13)
Signs &symptoms scores	5.73±1.550 6.00(0-7)	4.49±1.969 5.00(0-7)
Diagnostic methods scores	4.91±1.423 5.00(0-6)	1.83±1.527 2.00(0-6)
Screening methods scores	7.32±2.60 8.00(0-12)	3.84±2.873 4.00(0-11)
Total knowledge scores	25.82±6.92 27.00(1-36)	16.22±6.75 16.00(0-33)

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers, U: Mann Whitney U test

4.3. PARTICIPANTS' ATTITUDES

Table 4.7 displays the attitudes of the participants. 56.0% of healthcare workers do not believe that all women are at risk of breast cancer, while 77.3% believe it can be prevented and treated. 80.7% believe they need a breast exam, and 82.7% would screen for it if informed of its benefits. 58.0% mind having a male healthcare worker examine them, and 68.0% believe a checkup is needed even if no issues are found. 39.3% of respondents thought that screening procedures were useful, 67.3% believed that personal hygiene is a protective measure, and 92.0% recommend breast exams. When abnormalities are found, 2.7% do nothing, while 97.3% seek medical help.

Regarding non-healthcare workers, 65.3%, do not believe all women are at risk and 84.0% believe it is both preventable and treatable. 80.0% of the respondents believe they need a breast exam, and 86.7% stated they would screen for breast cancer if they were aware of the benefits. 48.7% of participants said they do not mind a male healthcare worker to examine them, and 63.3% said they would still need a checkup even if there were no problems with their breasts. only 24.7% thought that screening

methods are effective, and 75.3% believed that good hygiene is a preventative measure. Most of them (91.3%) advise women to have a breast exam, and 6.0% do nothing when abnormalities are found, while 91.3% seek medical attention (Table 4.7).

Table 4.7. Participants' attitudes.

Attitude items		HCWs		NHCWs	
		n	%	n	%
Every woman is at risk of developing breast cancer	True	59	39.3%	35	23.3%
	False	84	56.0%	98	65.3%
	I do not know	7	4.7%	17	11.4%
It is possible to prevent and cure breast cancer	True	116	77.3%	126	84.0%
	False	24	16.0%	7	4.7%
	I do not know	10	6.7%	17	11.3%
I do not need a breast exam or scan	True	21	14.0%	19	12.7%
	False	121	80.7%	120	80.0%
	I do not know	8	5.3%	11	7.3%
I would screen for BC if I knew the benefits	True	124	82.7%	130	86.7%
	False	17	11.3%	8	5.3%
	I do not know	9	6.0%	12	8.0%
I do not mind male HCW to examine my breast if necessary	True	58	38.7%	67	44.7%
	False	87	58.0%	73	48.7%
	I do not know	5	3.3%	10	6.6%
There is no need for doctor's check-up If there is no issue with the breasts	True	45	30.0%	43	28.7%
	False	102	68.0%	95	63.3%
	I do not know	3	2.0%	12	8.0%
Early detection approaches have no effect on the treatment	True	85	56.7%	72	48.0%
	False	59	39.3%	37	24.7%
	I do not know	6	4.0%	41	27.3%
Good personal hygiene lowers the risk of breast cancer	True	101	67.3%	113	75.3%
	False	33	22.0%	12	8.0%
	I do not know	16	10.7%	25	16.7%
I recommend breast examination to women	True	138	92.0%	137	91.3%
	False	6	4.0%	2	1.3%
	I do not know	6	4.0%	11	7.4%
When some abnormalities are detected in my breasts, I do nothing	True	4	2.7%	9	6.0%
	False	146	97.3%	141	94.0%
	I do not know	-	-	0	0.0%
When some abnormalities are detected in my breasts, I seek medical attention	True	146	97.3%	137	91.3%
	False	4	2.7%	13	8.7%
	I do not know	-	-	-	-

Total attitude Scores	HCWs		NHCWs	
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)
	7.80±1.630	8.00(0-11)	7.59±1.894	8.00(0-11)

*HCWs: Healthcare workers. NHCWs: Non-healthcare workers, BC: Breast cancer

4.4. PRACTICES OF BREAST CANCER SCREENING METHODS

Table 4.8 shows the participants' practices for the three types of screening procedures: breast self-examination, clinical breast examination, and mammography.

Only 34.7% of female healthcare workers practice breast self-examination (BSE), while 65.3 do not. Of those who practice BSE, 38.5% do so on a monthly basis. Half of these women perform BSE to keep track of their health regularly. Almost half (41.8%) of those who had never practiced BSE said they did not know how to do it. On the contrary, only 13 (8.7%) of the non-healthcare workers reported that they practice BSE. However, only 3 (23.1%) of them practice BSE monthly. In addition, 53.8% of them practice BSE because they like to check on their health routinely. 38.0% of respondents did not know how to perform BSE, and 23.4% had never heard of it.

When it comes to clinical breast exam (CBE), only 22.0% of female healthcare workers underwent CBE. 42.4% had their breasts examined because they keep track of their health. 33.4% of those who have never practiced CBE stated that they are remarkably busy. 7.3% of non-healthcare workers had previously undergone a CBE and 36.3% do so because they want to regularly track their health. 43.9% of those who never practiced CBE stated that they were unaware of this examination.

As for mammography practice, most (94.7%) of healthcare workers indicated that they had never had a mammography screening, whereas 8 (5.3%) reported they had. 50.3% had mammograms due to a professional or friend's advice. 18.3% thought they were ineligible due to age and 18.3% were too busy. According to the non-healthcare, the majority (96.7%) had never had a mammogram, but only 3.3% had. Over half (60.0%) of them had the screening done because of advice. As for those who have never had this screening, 37.9% had never heard of it (Table 4.8).

Table 4.8. Participants' practices of screening methods.

Practice of breast cancer screening methods		HCWs		NHCWs	
		n	%	n	%
Breast self-examination (BSE) practice					
I did BSE	Yes	52	34.7%	13	8.7%
	No	98	65.3%	137	91.3%
If yes, how often?	Rarely	18	34.6%	4	30.8%
	Occasionally	14	26.9%	6	46.1%
	Monthly	20	38.5%	3	23.1%
And why?	Recommended by friends/HCW	18	34.6%	3	23.1%
	Because of my personal concerns	8	15.4%	3	23.1%
	I routinely check my health	26	50.0%	7	53.8%
If no, why?	I have never heard of it before	21	21.4%	32	23.4%
	It is not necessary	7	7.1%	9	6.6%
	I worry about negative results	7	7.1%	11	8.0%
	I am afraid of the procedure	-	-	24	17.5%
	I do not know the procedure	41	41.8%	52	38.0%
	I do not have time/I am busy	22	22.6%	9	6.5%
Clinical breast examination (CBE) practice					
I have had a CBE before	Yes	33	22.0%	11	7.3%
	No	117	78.0%	139	92.7%
If yes, why?	Recommended by friends/HCW	10	30.3%	4	36.4%
	Because of my personal concerns	9	27.3%	3	27.3%
	I routinely check my health	14	42.4%	4	36.3%
If no, why?	I have never heard of it before	21	17.9%	61	43.9%
	It is not necessary	12	10.3%	5	3.6%
	I worry about negative results	15	12.8%	15	10.8%
	I am afraid of the procedure	30	25.6%	25	18.0%
	I do not have time/I am busy	39	33.4%	33	23.7%
Mammography practice					
I have had a mammogram	Yes	8	5.3%	5	3.3%
	No	142	94.7%	145	96.7%
If yes, why?	Recommended by friends/HCW	4	50.0%	3	60.0%
	Because of my personal concerns	1	12.5%	1	20.0%
	I routinely check my health	3	37.5%	1	20.0%
If no, why?	I am not included in the recommended age for mammogram screening	26	18.3%	10	6.9%
	Financial reasons (expensive)	9	6.3%	14	9.7%
	Mammography is not available	11	7.7%	7	4.8%
	I do not see any reason to do this scan	22	15.5%	17	11.7%
	I am afraid of the procedure	18	12.7%	7	4.8%
	I worry about negative results	11	7.7%	14	9.7%
	I have never heard of it before	19	13.5%	55	37.9%
	I do not have time/I am busy	26	18.3%	21	14.5%

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers

4.5. PARTICIPANTS' KNOWLEDGE, ATTITUDE AND PRACTICE LEVEL

Most female healthcare workers have a good knowledge level (86.0%) and positive attitude (91.3%). Only 36.% of non-healthcare workers had good knowledge whereas majority of them (88.7) had a positive attitude. HCWs and NHCWs do not practice

breast self-exam (34.7%; 8.7%, respectively), clinical breast exam (22.0%; 7.3%, respectively) and mammography regularly (5.3%; 3.3%, respectively) (Table 4.9).

Table 4.9. Participants' knowledge, attitudes, and practices level.

Items		HCWs	NHCWs
		n (%)	n (%)
Level of knowledge	Low	21 (14.0%)	96 (64.0%)
	High	129 (86.0%)	54 (36.0%)
Level of Attitude	Negative	13 (8.7%)	17 (11.3%)
	Positive	137 (91.3%)	133 (88.7%)
Breast self-exam practice	Does not practice	98 (65.3%)	137 (91.3%)
	Practice	52 (34.7%)	13 (8.7%)
Clinical breast exam practice	Does not practice	117 (78.0%)	139 (92.7%)
	Practice	33 (22.0%)	11 (7.3%)
Mammography practice	Does not practice	142 (94.7%)	145 (96.7%)
	Practice	8 (5.3%)	5 (3.3%)

*HCWs: Healthcare workers, NHCWs: Non-healthcare workers

4.6. ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND KNOWLEDGE, ATTITUDE AND PRACTICE SCORES

4.6.1. Association Between Overall Knowledge Scores and Respondents' Socio-Demographic Characteristics

Table 4.10 shows that there were no statistically significant differences between healthcare workers' age groups, educational levels, experiences, the existence of breast disorders and family histories of breast cancer, and overall knowledge scores ($p>0.05$).

Table 4.10. Healthcare workers' characteristics and overall knowledge association.

Items	Knowledge level		Statistics		
	Low	High	Mean ±	Median	Tests
Age					
20-29	15(16.0%)	79(84.0%)	25.24±7.26	26.50(1-36)	KW=1.637
30-39	5(10.9%)	41(89.1%)	26.54±6.58	28.50(1-34)	P= 0.441
40-49	1(10.0%)	9(90.0%)	27.90±4.46	29.00(18-33)	
≥50	-	-	-	-	
Level of education					
Associate D	5(11.9%)	37(88.1%)	26.71±6.46	28.00(1-35)	KW=1.558
Bachelor's D	15(15.8%)	80(84.2%)	25.19±7.37	27.00(1-36)	P= 0.459
Postgrad D	1(7.7%)	12(92.3%)	27.54±4.14	28.00(18-33)	
Years of experience					
≤5 years	18(15.4%)	99(84.6%)	25.41±7.17	27.00(1-36)	KW=1.835
6-10 years	1(3.8%)	25(96.2%)	27.54±5.76	27.50(8-34)	P= 0.607
11-15 years	2(50.0%)	2(50.0%)	25.00±8.12	24.50(18-33)	
≥16 years	0(0%)	3(100%)	28.00±4.00	28.00(24-32)	
History of breast disorder					
No	16(12.3%)	114(87.7%)	26.12±6.80	28.00(1-36)	U=1039.0
Yes	5(25.0%)	15(75.0%)	23.85±7.49	24.00(5-34)	P= 0.148
Family history of breast cancer					
No	19(13.9%)	118(86.1%)	25.68±6.98	27.00(1-36)	U=750.50
Yes	2(15.4%)	11(84.6%)	27.31±6.18	31.00(17-33)	P= 0.349

*D: Degree, KW: Kruskal Wallis, U: Mann Whitney

Regarding non-healthcare workers, age, education level, and personal history of breast disorder did not significantly affect the overall knowledge scores ($p>0.05$), but work experience significantly influenced it ($p<0.05$). Females with 6-10 years of experience scored the highest, followed by those with ≤5 years. Individuals with a family history of breast cancer had a higher proportion of high knowledge compared to those without a family history. Additionally, it is important to note that marital status had no statistically significant impact on knowledge, for either research groups, so it was left out from this section (Table 4.11).

Table 4.11. Non-healthcare workers' characteristics and overall knowledge association.

Items	knowledge level		Statistics		
	Low	High	Mean ±	Median	Tests
Age					
20-29	38(66.7%)	19(33.3%)	15.84±.6.72	16.00(0-33)	KW=3.280
30-39	28(54.9%)	23(45.1%)	17.27±6.69	17.00(0-30)	P=0.350
40-49	20(74.1%)	7(25.9%)	16.15±6.01	16.00(3-28)	
≥50	10(66.7%)	5(33.3%)	14.20±8.29	16.00(0-29)	
Level of education					
NFE	31(72.1%)	12(27.9%)	14.77±6.59	16.00(0-29)	KW=9.613
Primary S	22(88.0%)	3(12.0%)	15.16±5.30	15.00(3-29)	P=0.142
Middle school	3(42.9%)	4(57.1%)	18.00±4.55	19.00(12-26)	
High school	13(46.4%)	15(53.6%)	17.11±6.24	19.50(0-27)	
Associate D	13(81.2%)	3(18.8%)	14.63±6.74	15.00(5-30)	
Bachelor's D	13(43.3%)	17(56.7%)	18.80±8.38	20.00(0-33)	
Postgrad D	1(100%)	-	16.00±0.00	16(16-16)	
Years of experience					
Unemployed	86(66.2%)	44(33.8%)	16.18±6.19	16.00(0-33)	KW=8.053
≤5 years	6(42.9%)	8(57.1%)	18.29±8.66	20.00(0-30)	P=**0.045**
6-10 years	2(50.0%)	2(50.0%)	18.50±9.61	18.50(7-30)	
11-15 years	2(100%)	-	0.00±0.00	0.0(0-0)	
History of breast disorder					
No	93(65.5%)	49(34.5%)	16.02±6.62	16.00(0-33)	U=394.5
Yes	3(37.5%)	5(62.5%)	19.75±8.43	21.50(7-29)	P=0.146
Family history of breast cancer					
No	86(66.2%)	44(33.8%)	15.75±6.88	16.00(0-33)	U=919.5
Yes	10(50.0%)	10(50.0%)	19.25±4.95	18.50(12-29)	P=**0.035**

*NFE: No formal education, S: School, D: Degree, KW: Kruskal Wallis, U: Mann Whitney

4.6.2. Association Between Overall Attitude Scores and Respondents' Socio-Demographic Characteristics

According to the healthcare professionals, it was reported that there were no statistical differences between attitude toward breast cancer and its screening methods scores and age groups, educational level, work experience, presence of breast disorder and family history of breast cancer ($p>0.05$) (Table 4.12).

Table 4.12. Healthcare workers' characteristics and overall attitude association.

Items	Attitude level		Statistics		
	Negative	Positive	Mean ±	Median	Test
Age					
20-29	11(11.7%)	83(88.3%)	7.79±1.819	8.00(0-11)	KW=0.579
30-39	2(4.3%)	44(95.7%)	7.83±1.355	8.00(3-11)	P= 0.749
40-49	-	10(100%)	7.80±0.789	8.00(6-9)	
≥50	-	-	-	-	
Level of education					
Associate D	4(9.5%)	38(90.5%)	7.83±1.912	8.00(0-11)	KW=0.486
Bachelor's D	8(8.4%)	87(91.6%)	7.77±1.519	8.00(3-11)	P= 0.784
Postgrad D	1(7.7%)	12(92.3%)	7.92±1.553	8.00(4-10)	
Years of experience					
≤5 years	12(10.3%)	105(89.7%)	7.73±1.752	8.00(0-11)	KW=1.294
6-10 years	1(3.8%)	25(96.2%)	8.12±1.275	8.00(4-11)	P= 0.731
11-15 years	-	4(100%)	7.50±1.291	7.50(6-9)	
≥16 years	-	3(100%)	8.33±0.577	8.00(8-9)	
History of breast disorder					
No	10(7.7%)	120(92.3%)	7.87±1.572	8.00(0-11)	U=980.0
Yes	3(15.0%)	17(85.0%)	7.35±1.954	7.00(4-11)	P= 0.059
Family history of breast cancer					
No	12(8.8%)	125(91.2%)	7.77±1.619	8.00(011)	U=855.50
Yes	1(7.7%)	12(92.3%)	8.15±1.772	8.00(5-11)	P= 0.803

*D: Degree KW: Kruskal Wallis, U: Mann Whitney

The study found no significant differences in attitude scores among non-healthcare workers based on age, presence of breast disorder history, or family history of breast cancer ($p>0.05$). However, there was a significant difference in attitude scores with education level ($p<0.05$). Those with post-graduate degrees and middle school education had the highest percentage of positive attitudes when compared to the others. However, it is important to note that the sample size for these groups may be small when compared to the others. And it is followed closely by those with no formal education completed, and associate degrees holders had the lowest positive attitude, with almost half falling into the negative attitude category (Table 4.13).

Furthermore, marital status did not statistically significantly impact attitude for either research groups, so it was excluded from this section as well.

Table 4.13. Non-healthcare workers' characteristics and overall attitude association.

Items	Attitude level		Statistics		
	Negative	Positive	Mean ±	Median	Test
Age					
20-29	10(17.5%)	47(82.5%)	7.25±2.523	8.00(0-11)	KW=5.821
30-39	3(5.9%)	48(94.1%)	8.00±1.217	8.00(3-9)	P=0.121
40-49	2(7.4%)	25(92.6%)	7.74±1.559	8.00(2-10)	
≥50	2(13.3%)	13(86.7%)	7.20±1.265	7.00(5-9)	
Level of education					
NFE	2(4.7%)	41(95.3%)	7.93±1.121	8.00(4-9)	KW=12.65
Primary S	1(4.0%)	24(96.0%)	7.68±1.108	8.00(5-9)	P= **0.049**
Middle school	-	7(100%)	8.00±0.577	8.00(7-9)	
High school	1(3.6%)	27(96.4%)	7.86±1.820	8.00(0-10)	
Associate D	9(56.2%)	7(43.8%)	5.25±3.125	5.00(0-9)	
Bachelor's D	4(13.3%)	26(86.7%)	7.87±1.961	8.00(3-11)	
Postgrad D	-	1(100%)	9.00±0.00	9(9-9)	
Years of experience					
Unemployed	12(9.4%)	118(90.6%)	7.68±1.788	8.00(0-11)	KW=7.653
≤5 years	3(21.4%)	11(78.6%)	7.36±1.692	7.50(4-9)	P= 0.054
6-10 years	-	4(10%)	8.50±0.577	8.50(8-9)	
11-15 years	2(100%)	-	1.50±2.121	1.50(0-3)	
History of breast disorder					
No	17(12.0%)	125(88.0%)	7.56±1.929	8.00(0-11)	U=518.5
Yes	-	8(100%)	8.00±1.069	8.00(6-9)	p= 0.667
Family history of breast cancer					
No	17(13.1%)	113(86.9%)	7.51±2.005	8.00(0-11)	U=1159.5
Yes	-	20(100%)	8.10±0.718	8.00(6-9)	p= 0.419

*NFE: No formal education, S: School, D: Degree, KW: Kruskal Wallis, U: Mann Whitney

4.6.3. Association Between Practice of Screening Methods and Respondents' Socio-Demographic Characteristics

Practice of Breast self-exam among healthcare workers is not influenced by age, experience, marital status, and presence of breast disorder history or family history of breast cancer ($p>0.05$). Except for education level ($p<0.05$) as postgraduate (53.8%) and bachelor's degree holders (38.9%) have the highest percentage of BSE practice. Clinical breast exam practice appears to not be influenced by age, education, or marital status ($p>0.05$). However, it appears that those with 11-15 years of experience, have personal history, or family history of breast cancer practice CBE more frequently ($p\leq0.001$). Mammography practice differs significantly among different age groups, most (50.0%) who practice are aged 40-49 ($p<0.001$). Furthermore, being married, having longer years of experience, and having family history of breast cancer are associated with more practice ($p<0.001$) (Table 4.14).

Table 4.14. Healthcare workers' characteristics and practices association.

Items	BSE practice level		CBE practice		Mammography practice	
	Yes	No	Yes	No	Yes	No
Age						
20-29	38(40.4%)	56(59.6%)	20(21.3%)	74(78.7%)	-	94(100%)
30-39	11(23.9%)	35(76.1%)	10(21.7%)	36(78.3%)	3(6.5%)	43(93.5%)
40-49	3(30.0%)	7(70.0%)	3(30.0%)	7(70.0%)	5(50.0%)	5(50.0%)
≥50	-	-	-	-	-	-
Tests	$\chi2$=3.821	P= 0.148	$\chi2$=0.403	P=0.817	$\chi2$=44.9	P=**0.000**
Level of education						
AD	8(19.0%)	34(81.0%)	10(23.8%)	32(76.2%)	3(7.1%)	39(92.9%)
BD	37(38.9%)	58(61.1%)	20(21.1%)	75(78.9%)	4(4.2%)	91(95.8%)
PGD	7(53.8%)	6(46.2%)	3(23.1%)	10(76.9%)	1(7.7%)	12(92.3%)
Tests	$\chi2$=7.404	P=**0.025**	$\chi2$=0.139	P=0.933	$\chi2$=0.65	P=0.721
Years of experience						
≤5	41(35.0%)	76(65.0%)	23(19.7%)	94(80.3%)	2(1.7%)	115(98.3%)
6-10	8(30.8%)	18(69.2%)	7(26.9%)	19(73.1%)	1(3.8%)	25(96.2%)
11-15	1(25.0%)	3(75.0%)	3(75.0%)	1(25.0%)	3(75.0%)	1(25.0%)
≥16	2(66.7%)	1(33.3%)	-	3(100%)	2(66.7%)	1(33.3%)
Tests	$\chi2$=1.703	P=0.636	$\chi2$=8.135	P=**0.043**	$\chi2$=63.96	P=**0.000**
Marital status						
Single	41(35.3%)	75(64.7%)	22(19.0%)	94(81.0%)	2(1.7%)	114(98.3%)
Married	11(32.4%)	23(67.6%)	11(32.4%)	23(67.6%)	6(17.6%)	28(82.4%)
Tests	$\chi2$=0.104	P=0.747	$\chi2$=2.746	P=0.097	$\chi2$=13.20	P=**0.000**
History of breast disorder						
No	10(50.0%)	10(50.0%)	8(40.0%)	12(60.0%)	2(10.0%)	18(90.0%)
Yes	42(32.3%)	88(67.7%)	25(19.2%)	105(80.8%)	6(4.6%)	124(95.4%)
Tests	$\chi2$=2.396	P=0.122	$\chi2$=4.357	P=**0.037**	$\chi2$=0.99	P=0.318
Family history of breast cancer						
No	6(46.2%)	7(53.8%)	7(53.8%)	6(46.2%)	3(23.1%)	10(76.9%)
Yes	46(33.6%)	91(66.4%)	26(19.0%)	111(81.0%)	5(3.6%)	132(96.4%)
Tests	$\chi2$=0.829	P=0.362	$\chi2$=8.412	P=**0.004**	$\chi2$=8.88	P=**0.003**

*AD: associate degree, BD: bachelor's degree, PGD: Postgraduate degree, KW: Kruskal Wallis, U: Mann Whitney

Regarding non-healthcare workers, age, experience, and history of breast disorder and family history of breast cancer did not affect the breast self-exam practice ($p>0.05$). Except for education level and work experience ($p<0.05$). Bachelor's degree holders (30.0%) have the highest percentage of BSE practice and those with less than ≤5 years tend to practice more than the other groups ($p=0.000$). Clinical breast exam practice is only affected by the presence of personal or family history of cancer as those with personal or family history practice tend to undergo CBE more frequently than others ($p\leq0.05$). Mammography practice is not affected education, experience, or marital status ($p>0.05$). However, there was a significant difference in mammography practice among age groups and those with personal breast disorder or family history of breast cancer ($p<0.05$). These differences suggest that certain factors, such as being over 30s,

the presence of either histories, are associated with the likelihood of undergoing mammography (Table 4.15).

Table 4.15. Non-healthcare workers' characteristics and practices association.

Items	BSE practice level		CBE practice		Mammography practice	
	Yes	No	Yes	No	Yes	No
Age						
20-29	5(8.8%)	52 (91.2%)	2(3.5%)	55(96.5%)	-	57(100%)
30-39	6(11.8%)	45(88.2%)	4(7.8%)	47(92.2%)	1(2.0%)	50(98.0%)
40-49	2(7.4%)	25(92.6%)	4(14.8%)	23(85.2%)	3(11.1%)	24(88.9%)
≥50	-	15(100%)	1(6.7%)	14(93.3%)	1(6.7%)	14(93.3%)
Tests	$\chi2$=2.097	P=0.553	$\chi2$=3.480	P=0.323	$\chi2$=7.850	P=**0.049**
Level of education						
NFE	-	43(100%)	2(4.7%)	41(95.3%)	2(4.7%)	41(95.3%)
Primary	-	25(100%)	1(4.0%)	24(96.0%)	1(4.0%)	24(96.0%)
Middle s	-	7(100%)	-	7(100%)	-	7(100%)
High S	1(3.6%)	27(96.4%)	1(3.6%)	27(96.4%)	1(3.6%)	27(96.4%)
AD	3(18.8%)	13(81.2%)	1(6.3%)	15(93.7%)	-	16(100%)
bachelor	9(30.0%)	21(70.0%)	6(20.0%)	24(80.0%)	1(3.3%)	29(96.7%)
Postgrad	-	1(100%)	-	1(100%)	0(0%)	1(100%)
Tests	$\chi2$=27.43	P=**0.000**	$\chi2$=9.191	P=0.163	$\chi2$=1.099	P=0.982
Years of experience						
UE	6(4.6%)	124(95.4%)	7(5.4%)	123(94.6%)	5(3.8%)	125(96.2%)
≤5	6(42.9%)	8(57.1%)	3(21.4%)	11(78.6%)	-	14(100%)
6-10	1(25.0%)	3(75.0%)	1(25.0%)	3(75.0%)	-	4(100%)
11-15	-	2(100%)	-	2(100%)	-	2(100%)
Tests	$\chi2$=24.91	P=**0.000**	$\chi2$=6.815	P=0.078	$\chi2$=0.796	P=0.850
Marital status						
Single	6(10.7%)	50(89.3%)	4(7.1%)	52 (92.9%)	2(3.6%)	54(96.4%)
Married	7(7.4%)	87(92.6%)	7(7.4%)	87(92.6%)	3(3.2%)	91(96.8%)
Tests	$\chi2$=0.473	P=0.491	$\chi2$=0.005	P=0.945	$\chi2$=0.016	P=0.900
History of breast disorder						
No	2(25.0%)	6(75.0%)	5(62.5%)	3(37.5%)	2 (25.0%)	6(75.0%)
Yes	11(7.3%)	131(92.7%)	6(4.2%)	136(95.8%)	3(2.1%)	139(97.9%)
Tests	$\chi2$=2.848	P=0.091	$\chi2$=37.85	P=**0.000**	$\chi2$=12.31	P=**0.000**
Family history of breast cancer						
No	0(0%)	20(100%)	4(20.0%)	16(80.0%)	4(20.0%)	16(80.0%)
Yes	13(10.0%)	117(90.0%)	7(5.4%)	123(94.6%)	1(0.8%)	129(99.2%)
Tests	$\chi2$=2.190	P=0.139	$\chi2$=5.449	P=**0.020**	$\chi2$=19.89	P=**0.000**

*UE: Unemployed, NFE: No formal education, BSE: Breast self-exam, CBE: Clinical breast exam, S: School, D: Degree, AD: associate degree, $\chi2$: Chi-square

4.7. CORRELATION BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND KNOWLEDGE, ATTITUDE AND PRACTCIE SCORES

4.7.1. Association Correlation Between Demographic Characteristics with Healthcare Workers' Knowledge, Attitude, and Practice Scores

Table 4.16 shows that female healthcare workers' age, experience, marital status, and mammography practices are positively correlated (p=0.000, ρ=0.665; p=0.000, ρ=0.472; p=0.000, ρ=0.383; respectively). Education is positively correlated with breast self-exam (BSE) practice, suggesting that those with higher education are more likely to practice it (p=0.006, ρ=0.222). Experience is positively correlated with marital status and mammography practice (p=0.000, ρ=0.412; p=0.000, ρ=0.360; respectively), and negative correlated having a history of breast disorder (p=0.047, ρ=-0.162).

Marital status has a significant positive association with mammography practice, suggesting that married individuals are more likely to undergo the scan (p=0.000, ρ=-0.297). Personal history of breast disorder is positively associated with family history of breast cancer and clinical breast exam (CBE) practices (p=0.000, ρ=0.367; p=0.037, ρ=0.170, respectively). Also, family history of BC is positively associated with CBE and mammography practice (p=0.004, ρ=0.237; p=0.003, ρ=0.243, respectively), suggesting that screening procedures are more likely to be used among female healthcare professionals with a such histories.

Knowledge has a positive correlation with attitude and BSE practice (p=0.001, ρ=0.277 and p=0.016, ρ=0.197, respectively), and attitude also has a positive correlation with and BSE practice (p=0.013, ρ=0.203), suggesting that better knowledgeable healthcare providers are more likely to have a positive attitude and practice BSE at a greater rate. BSE practices are positively correlated with CBE practices (p=0.000, ρ=0.357), and CBE practices are positively correlated with mammography practices (p=0.000, ρ=0.304), suggesting that healthcare workers are more inclined to implement another screening method if they are familiar with and have used a particular screening method before (Table 4.16).

Table 4.16. Correlation between demographic characteristics with healthcare workers' knowledge, attitudes, and practices.

Items	TEST	1	2	3	4	5	6	7	8	9	10	11
1. Age	ρ(rho)	1.000	0.051	.665**	.472**	-0.149	0.054	0.104	-0.057	-0.149	0.031	0.383**
	p	—	0.539	**0.000**	**0.000**	0.069	0.512	0.207	0.485	0.069	0.710	**0.000**
2. Education	ρ(rho)		1.000	0.030	-0.072	0.022	-0.118	-0.052	-0.009	0.222**	-0.019	-0.029
	p		—	0.716	0.380	0.791	0.151	0.530	0.917	**0.006**	0.813	0.728
3. Experience	ρ(rho)			1.000	.412**	-.162*	0.011	0.096	0.041	-0.009	0.111	0.360**
	p			—	**0.000**	**0.047**	0.890	0.245	0.615	0.915	0.176	**0.000**
4. Marital status	ρ(rho)				1.000	0.069	0.060	-0.034	-0.103	-0.026	0.135	0.297**
	p				—	0.404	0.469	0.684	0.211	0.749	0.099	**0.000**
5. History of breast disorder	ρ(rho)					1.000	.367**	-0.118	-0.154	0.126	0.170*	0.081
	p					—	**0.000**	0.149	0.059	0.123	**0.037**	0.322
6. Family history of breast cancer	ρ(rho)						1.000	0.077	0.020	0.074	0.237**	0.243**
	p						—	0.351	0.804	0.366	**0.004**	**0.003**
7. Knowledge	ρ(rho)							1.000	.277**	0.197*	0.102	0.050
	p							—	**0.001**	**0.016**	0.213	0.543
8. Attitude	ρ(rho)								1.000	0.203**	0.131	-0.107
	p								—	**0.013**	0.109	0.191
9. BSE practice	ρ(rho)									1.000	.357**	0.139
	p									—	**0.000**	0.090
10. CBE practice	ρ(rho)										1.000	0.304**
	p										—	**0.000**
11. Mammography practice	ρ(rho)											1.000
	p											—

*ρ(rho): Spearman correlation coefficient

4.7.2. Association Correlation Between Demographic Characteristics with Non-Healthcare Workers' Knowledge, Attitude, and Practice Scores

Table 4.17 shows that the ages of female non-healthcare workers and their marital status, family history of breast cancer (BC) and mammography practices were all positively correlated (p=0.000, ρ=0.569; p=0.013, ρ=0.203; p=0.017, ρ=0.194; respectively) while and negatively correlated with level of education (p=0.000, ρ=-0.608). Education level had a positive association with experience, knowledge, breast self-exam (BSE), and clinical breast exam (CBE) practices (p=0.000, ρ=0.428; p=0.038, ρ=0.170; p=0.000, ρ=0.350; and p=0.040, ρ=0.168, respectively). However, it had a negative correlation with marital status and having a family history of breast cancer (p=0.000, ρ=-0.476; p=0.005, ρ=-0.227; respectively).

Experience was positively associated with the presence of history of breast disorder, BSE, and CBE practices, while negatively correlated with marital status (p=0.001, ρ=0.262; p=0.000, ρ=0.355; p=0.022, ρ=0.187; p=0.005, ρ=-0.230; respectively). Marital status had a significant positive correlation with reporting of having a family history of breast cancer (p=0.006, ρ=0.222).

There are positive correlations between history of breast disorder and family history of breast cancer and CBE and mammography practices (p=0.039, ρ=0.169; p=0.000 ρ=0.502; p=0.000 ρ=0.286; respectively). Family history of breast cancer is significantly positively correlated with knowledge, CBE, and mammography practices (p=0.035, ρ=0.173; p=0.019, ρ=0.191; p=0.000, ρ=0.364, respectively).

Knowledge exhibits positive correlations with attitude and practices of BSE, CBE, and mammography (p=0.000, ρ=0.388; p=0.001, ρ = 0.266; p=0.000, ρ = 0.353; p=0.000, ρ = 0.283; respectively). Breast self-exam and CBE practices are positively correlated (p=0.000, ρ=0.459), while CBE and mammography practices were positively associated (p=0.000, ρ=0.660). Furthermore, no correlation was found between other variables (p>0.05) (Table 4.17).

Table 4.17. Correlation between demographic characteristics with non-healthcare workers' knowledge, attitudes, and practices.

Items	Test	1	2	3	4	5	6	7	8	9	10	11
1. Age	ρ(rho)	1.000	-.608**	-0.158	.569**	0.013	.203*	0.003	-0.028	-0.050	0.119	0.194*
	p	—	**0.000**	0.053	**0.000**	0.874	**0.013**	0.974	0.738	0.507	0.148	**0.017**
2. Education	ρ(rho)		1.000	.428**	-.476**	0.121	-.227**	.170*	-0.029	0.365**	0.168*	-0.047
	p		—	**0.000**	**0.000**	0.139	**0.005**	**0.038**	0.723	**0.000**	**0.040**	0.568
3. Experience	ρ(rho)			1.000	-.230**	.262**	-0.091	0.052	-0.074	0.355**	0.187*	-0.073
	p			—	**0.005**	**0.001**	0.266	0.525	0.369	**0.000**	**0.022**	0.377
4. Marital status	ρ(rho)				1.000	-0.123	.222**	0.026	0.016	-0.056	0.006	-0.010
	p				—	0.132	**0.006**	0.757	0.849	0.495	0.945	0.901
5. History of breast disorder	ρ(rho)					1.000	.169*	0.119	0.035	0.138	0.502**	0.286**
	p					—	0**.039**	0.147	0.668	0.093	**0.000**	**0.000**
6. Family history of breast cancer	ρ(rho)						1.000	.173*	0.066	-0.121	0.191*	0.364**
	p						—	**0.035**	0.421	0.141	**0.019**	**0.000**
7. Knowledge	ρ(rho)							1.000	.388**	0.266**	0.353**	0.283**
	p							—	**0.000**	**0.001**	**0.000**	**0.000**
8. Attitude	ρ(rho)								1.000	0.133	0.116	0.062
	p								—	0.104	0.157	0.455
9. BSE practice	ρ(rho)									1.000	0.459**	0.075
	p									—	**0.000**	0.363
10. CBE practice	ρ(rho)										1.000	0.660**
	p										—	**0.000**
11. Mammogram practice	ρ(rho)											1.000
	p											—

*ρ(rho): Spearman correlation coefficient

PART 5

DISCUSSION

The most frequent kind of cancer among women is breast cancer. With approximately 2.3 million new cases, comprising 11.7% of all cancer cases, it replaced lung cancer as the primary cause of cancer incidence globally in 2020 (Sung et al., 2021). In Somalia, including Somaliland, cancer is among the top 10 most often diagnosed disease. 10,134 new cases were estimated to have been reported in 2020, with breast cancer accounting for 18.7% of all cases and ranking as the most frequently diagnosed cancer in women (WHO, 2020). This study sought to understand and compare the knowledge, attitudes, and practices of female healthcare and non-healthcare workers with relation to breast cancer and screening methods in Somaliland. This chapter discusses the study's findings that were covered in Chapter 4. These results are reviewed to draw logical inferences based on the study's objectives and comparisons with relevant prior studies.

5.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

The results of the current study revealed that 62.6% of healthcare workers (HCWs) are 20-29 years old, which is similar to a Nigerian study by Ahmed (2020), in which most of female HCWs (51.4%) in the study were between the ages of 21-30. In the case of the non-healthcare workers (NHCWs), most of them (38.0%) were between the 20 and 29 years old, which is comparable to research carried out in Ethiopia by Asmare et al. (2022), in which 47.5% of the participants were the same age group.

In terms of education, the majority of HCWs (63.3%) held a bachelor's degree, which is comparable to the findings of a study that took place in Saudi Arabia by Alenezi et al. (2022), in which 68.8% of respondents had a bachelor's degree.

The majority of NHCWs participants (68.6%) had educational backgrounds ranging from no formal schooling to high school graduation. The results of this study are different from those of Qatari by Hamed et al. (2022), where most of the female respondents (83%) had earned an associate degree or higher.

Most of healthcare workers (95.3%) had ≤10 years of experience, which is similar to Turkey's study, which found that most of the respondents (51.5%) had <10 years' experience (Erdem & Toktaş, 2016). In contrast to HCWs, 86.7% NHCWs were unemployed, which is like the findings of a research conducted in India by Jothula and Sreeharshika (2021), in which the majority of respondents (52.4%) claimed that they have no job and are being homemakers.

Concerning the marital status, most of the HCWs were single (77.3%), whereas most of the NHCWs were married (62.7%). This result is comparable to two similar research (Alshahrani et al., 2020; Gangane et al., 2016), which found that approximately 60% of female HCWs were unmarried while 73% of female NHCWs were married, respectively.

The overwhelming majority of HCWs and NHCWs (90.7%; 89.0%; 86.7%; 91.3%, respectively) had no personal history of breast disorders or family history of breast cancer (BC). This is consistent with findings from 2 similar studies (Azeez & Andsoy, 2022; Andegiorgish et al., 2018), which found that most HCWs (95.2%; 92.3%) and NHCWs (82.6%; 72.4%) had no such histories, respectively.

5.2. PARTICIPANTS' KNOWLEDGE

5.2.1. Knowledge of Breast Cancer Risk Factors

In this study, most healthcare workers were able to identify the majority of breast cancer risk factors which can be summed up as follow; early menstrual period (56.0%), growing older (73.3%), late or no pregnancy (56.0%), late onset of menopause after age 55 (61.3%), being overweight or obese after menopause (57.3%), race or ethnicity (61.3%), large breasts (55.3%), oral contraceptives use (62.0%), using combination

hormonal therapy (70.7%), exposure to radiation, (87.3%), and personal/family history of BC or non-cancerous breast disease (89.3%). However, just 26.0% and 30.0% of the respondents correctly identified a high-fat diet and a lack of physical activity as risk factors, they were unaware that such a lifestyle is considered a risk factor which is similar to a study conducted in Eretria by Andegiorgish et al. (2018). Overall, the findings depict good knowledge on BC risk factors as over half of the HCWs (65.3%) had good knowledge of risk factors which is different than the results obtained from female nurses and healthcare workers in 2 similar studies conducted in Nigeria and Saudi Arabia by Gabriel et al. (2016) and Heena et al. (2019), respectively where the knowledge score achieved in this study is very low. However, there are other studies in conducted in Nigeria and Saudi Arabia where female HCWs demonstrated good knowledge on BC risk factors (Abiodun et al., 2022; Alshahrani et al., 2020, respectively).

As for the non-healthcare workers' findings, the identified risk factors are as follows: early menstrual period (60.7%), growing older (58.7%), late or no pregnancy (40.0%), late onset of menopause after age 55 (49.3%), high fat diet (32.7%), lack of physical activity (23.3%), being overweight or obese after menopause (56.0%), race or ethnicity (66.0%), large breasts (19.3%), oral contraceptives use (22.7%), using combination hormonal therapy (24.0%), exposure to radiation (75.3%), and personal/family history of BC or non-cancerous breast disease (78.0%). Our studies concluded that 51.3% have a prominent level of knowledge regarding risk factors of breast cancer. This is inconsistence with study findings indicated that the awareness level of BC risk factors was low among women in Saudi Arabia by Alotaibi et al. (2017), in Ethiopia by Chaka et al. (2018), and in India by Gangane et al. (2015).

5.2.2. Knowledge of Breast Cancer Signs and Symptoms

Due to the nature of their occupations and the potential for seeing a clinical presentation of the disease in clinical settings, HCWs appear to have profound knowledge about clinical signs as 92.7% of them demonstrated good knowledge. Their results can be summarized as follows: pain (90.0%), mass in the breast or under the arm (92.7%), any nipple discharge, including blood, other than breast milk (87.3%),

retraction of the nibble (72.7%), any change in the shape of the nipple or breast (61.3%), swelling or enlargement of the nipple or breast (88.0%), and weight loss (80.7%). Many similar studies as well have revealed a good knowledge of breast cancer signs and symptoms (Gabriel et al., 2016; Andegiorgish et al., 2018).

According to the non-healthcare respondents, they could recognize the majority of the clinical manifestations as well, and 72.7% demonstrated a prominent level of awareness. Their responses are as follows: pain (84.6%), mass in the breast or under the arm (84.9%), any nipple discharge other than breast milk with (74.7%), nipple retraction (46.7%), any change in breast/nipple shape (30.7%), swelling or enlargement of the breast/nipple (60.0%), and weight loss (68.0%). This outcome is consistent with research of similar study conducted in Jordan by Al-Mousa et al. (2020) and Lebanon by Asmar et al. (2018). However, an Indian study found that, except for the breast mass, which was accurately identified, the women had little understanding of the other symptoms (Jothula & Sreeharshika, 2021).

5.2.3. Knowledge of Breast Cancer Diagnostic Methods

Most healthcare workers in this study were highly aware of diagnostic methods which can be evidenced by their responses as follows: BSE (85.4%), CBE (84.7%), mammography (82.0%), MRI (71.3%), ultrasound (77.3%), and biopsy (90.6%) were all agreed upon as methods of detecting BC. Many similar studies showed that most female HCWs were able to recognize these diagnostic methods as well (Abiodun et al., 2022; Nilaweera et al., 2012). Heena et al.'s (2019) findings, however, indicated that the respondents had little understanding of diagnostic techniques.

On the other hand, few of NHCWs had good knowledge, which is indicated percentage of the correctly identified diagnostic methods. 70.0% and 45.3% of them appeared to be aware that BSE and CBE, respectively. The remaining diagnostic techniques, including mammography (22.7%), ultrasound (16.0%), MRI (14.7%), and biopsy (14.0%), could not be correctly identified with high rates. It is comparable to a study done in the United Arab Emirates by El-Obaid et al. (2014), which revealed that the women lacked information in this area.

5.2.4. Knowledge of Breast Screening Methods

A good degree of knowledge of breast self-exam (BSE) was demonstrated by majority of the HCWs in this study. Among the 86.0% of those who said they had heard of BSE, 73.0% thought this was a successful approach. Only 32.7% and 49.3% of them, however, were aware that this method is self-administered and that it is an intervention that is suggested to be done once a month. This study's findings are strikingly similar to those of one conducted in Nigeria by Ahmed (2020). The findings of the study by Heena et al. (2019) revealed even higher knowledge because the healthcare professionals in this study were aware that BSE is performed by individuals and is recommended to be performed monthly.

When it comes to non-healthcare worker knowledge of BSE, 74.0% said they had previously heard of BSE and 69.3% believed it to be a good practice. And just 24.0% and 13.3% of people knew that BSE is something that is self-administered and is advised to be done monthly, respectively. Among respondents, 70.3% were able to get the average score. It is significant to notice that this outcome is comparable to the score of the healthcare workers; it appears that neither has in-depth knowledge of it. According to Asmare et al. (2022), most participants had a decent understanding of BSE. Many were aware that it is self-administered and monthly done.

In terms of clinical breast examination (CBE) knowledge, healthcare workers responded as follows: The CBE was known to 87.3% of them, and 66.0% of them thought this was a good strategy. 56.0% of respondents said healthcare professionals could perform it. 32.7% of those who were asked how frequently it should be done said yearly, while the majority (41.3%) were unclear. It appears that more than 50% of the respondents had a solid understanding of CBE. This is comparable to a study done in Nigeria by Olanloye et al. (2019), where the researchers noted that female HCWs do not have in-depth knowledge of this procedure. It is interesting to note that nurses have significantly more knowledge about CBE than other HCWs in the study. A recent study in Nigeria by Abiodun et al. (2022) revealed that the female nurses were remarkably familiar with CBE and the majority of them answered correctly.

According to responses from non-healthcare workers regarding clinical breast exam (CBE), 48.7% of them had heard of CBE and 42.7% and 22% thought it was a useful method and it is done by HCWs, the majority of them (84.7%) were uncertain of how frequently this examination should be done. Less than 50% of them had strong CBE knowledge, which is significantly lower than the scores achieved by healthcare personnel, but it makes sense given the disparity in their levels of education and experience. According to a related study conducted in Vietnam in 2019 by Toan et al., more than half of the women had little or no knowledge of CBE.

Regarding the mammography knowledge section, 83.3% of healthcare workers had heard of mammography before, and 72.7% of them agreed that it is a reliable method for BC screening. This suggests that 74% of the respondents had good understanding of the procedure. When asked when it is recommended to be done, 6.0% said yearly for the recommended age, 25.2% responded when a mass or lump is found during inspection, and 30.7% responded a mix of the aforementioned. This study's participants' knowledge of mammography is comparable to those of earlier research (Abiodun et al., 2022; Heena et al., 2019).

As for non-healthcare workers' awareness of mammography, only 28.0% of them reported to be aware of mammography, with 72.0% of them having never heard of it. It is seen as a beneficial tool by 24.0% of them. Most respondents (80.0%) were unaware about the recommended timing for doing it. This demonstrates a lack of understanding of this crucial screening method. This situation is comparable to that reported by El-Obaid et al. (2014), who found that women had a limited understanding of mammography. In addition, research conducted in a rural region of India found that none of the female study participants had ever heard of mammography (Gangane et al., 2015).

5.3. PARTICIPANTS' ATTITUDES

The findings of this study indicated that many healthcare workers (HCWs) and non-healthcare workers (NHCWs) (91.3%; 88.7%, respectively) exhibited positive attitudes towards BC and screening methods.

According to HCWs, 39.3% of them believe that all women are at risk of developing breast cancer, while 77.3% believe it can be prevented and treated. 80.7% of respondents believe they need a breast exam, and 82.7% would screen for it if informed of its benefits. 58.0% mind having a male healthcare worker examine their breasts, and 68.0% believe a checkup is still necessary even if no issues are found. About 39.3% of respondents thought BC screening procedures were useful, and 67.3% believed that personal hygiene is a protective measure and 92.0% recommend breast exams. When abnormalities are found, 2.7% do nothing, while 97.3% seek medical assistance. Theses finding are inconsistent with studies found that the level of attitude of female HCWs is inadequate (Alenezi et al., 2022; Heena et al., 2019).

As for NHCWs, 65.3%, do not believe all women are at risk of developing breast cancer and 84.0% believe it is preventable and treatable. 80.0% of the respondents believe they need a breast exam, and 86.7% stated they would screen for breast cancer if they were aware of the benefits. 44.7% of participants said they would be willing to consider having a male healthcare worker examine them, if necessary, and 63.3% said they would still need a checkup even if no issues were found. 24.7% thought that early screening methods are effective and 75.3% believed that hygiene is a preventative measure. 91.3% advise women to have a breast exam, 6.0% do nothing when abnormalities are found, while 91.3% seek medical help. These women to have a positive attitude which is the opposite to the findings similar Afghani study by Mudaber (2020), which found that 70% showed a negative attitude.

5.4. PARTICIPANTS' PRACTICES

Despite the majority of healthcare workers (HCWs) having a high degree of breast self-exam (BSE) knowledge, only 34.7% said they really practice it. 38.5% of those who perform BSE do so on every month. BSE is routinely performed by 50% to monitor their health. Almost half (41.8%) of individuals who had never used BSE reported to be unable to perform BSE. Similar studies showed that BSE is used more frequently and at greater rates among female HCWs (Ahmed, 2020; Eguvbe et al., 2014; Erdem & Toktaş, 2016). Every single one of the prior studies, however, support the finding in this study that BSE knowledge is higher than practice.

On the other hand, only 8.7% of non-healthcare workers (NHCWs) reported practicing BSE. However, just 23.1% of them practice BSE monthly. Additionally, 53.8% of them use BSE because they like regularly monitoring their health. 23.4% of respondents had never heard of BSE, and 38.0% did not know how to execute it. These findings are consistent with those of two related studies, which indicated that a small percentage of women engage in BSE, and an even smaller percentage of them appear to do so on a monthly basis (Mudaber, 2020; Naghibi et al., 2016).

As for clinical breast exam (CBE), the result of the vast majority of both healthcare workers (HCWs) and non-healthcare workers (NHCWs) do not practice CBE. only 22.0% of female HCWs underwent CBE, while 78.0% did not. 42.4% had their breasts examined to check of their health regularly. 33.4% of those who have never practiced CBE stated that they are busy. According to NHCWs, 7.3% of had undergone CBE and 36.4% of them do so because they want to regularly check on their health. 43.9% of those who never practiced CBE stated that they were unaware of this it. The low participating rate in CBE is similar to a study by Abiodun et al. (2022) where they revealed that only 26% of the HCWs have had their breast examined by a health professional. Also, Heena et al., (2019) results where like the findings of this study in aspects of reasons to not undergo this examination.

As for mammography practice, both groups appear to barley do so. 94.7% of healthcare workers indicated that they had never had this screening, whereas 5.3% reported they had. 50.0% had it due to a doctor or friend's advice. 18.3% thought they were ineligible due to age and 18.3% were too busy. Similarly, 96.7% of non-healthcare workers had never had a mammogram, but just 3.3% had. Over half (60.0%) of them had the screening done on the advice of a professional or friend. In regard to individuals who have never had a mammogram screening, 14.5% of individuals were too busy, and 37.9% had never heard of it before.

This study revealed poor mammography practice where less than 10% of respondents in each group stated that they had a mammography scan before. However, it is important to note that the majority of the participants were younger than the recommended age. Several studies conducted in other parts of the world also revealed low mammography practice

among females; Nigeria (8.0%) and India (7%) (Abiodun et al., 2022; Fotedar et al., 2013). However, a study conducted in Turkey revealed higher mammography practice (34.9%) among female healthcare workers (Erdem & Toktaş, 2016).

Somaliland is a Muslim country and crucial to emphasize that Somali women are traditionally shy and hesitant to discuss breast cancer with male physicians. Furthermore, it is important to highlight the fact that health has long been valued highly in Islam, second only to faith. When it comes to health, each Muslim bears enormous responsibility (Al-Khayat, 2004). Despite this, several studies have shown that Muslim women have serious misunderstandings about screening, which causes many of them to decline to participate in the screening (Moey et al., 2022). Muslim women's religious beliefs and values may impact their health-related interventions, such as preserving modesty and most importantly, other barrier key factors that discourage Muslim women from undergoing screenings are breast cancer stigma and fear. A study in Ghana found Muslim women less inclined to engage in breast care activities than Christian women, the distinct perception and involvement limitations of particular groups must be considered as in breast awareness campaigns around the globe (AMISOM, 2015: Gyedu et al., 2018; Moey et al., 2022).

PART 6

CONCLUSION AND RECOMMENATIONS

6.1. CONCLUSION

The study revealed that most of the participants were aged between 20-29. Also, most oof healthcare workers are single, have university degree and above, with ≤5 years of experience. Also, most of non-healthcare workers are married, unemployed, with education ranged from receiving no formal education to having university degree. Also, the majority of all of the participants did not have any history of breast disorder and family history of breast cancer (BC).

According to the study's findings, 86.0% of healthcare workers had good knowledge regarding BC and screening techniques. 91.3% of them had positive attitude. Breast self-exam (BSE), clinical breast exam (CBE), and mammography are respectively practiced by 34.7%, 22.0%, and 5.3%. As for non-healthcare workers, 36.0% had good knowledge, while 88.7% appeared to show positive attitude. BSE, CBE, and mammography are respectively practiced by 8.7%, 7.3%, and 3.3%.

There were significant associations exist between knowledge, attitudes, and practices of breast cancer among participants. It seems that participants with good knowledge, positive attitude, and are already familiar with and have used a certain screening method in the past, these people are more likely to use another screening method. Likewise, a positive statistically significant association was revealed between education, as well as having either personal or family history of BC and engaging in a BSE, CBE, and mammography.

6.2. RECOMMENDATIONS

Although many participants demonstrated adequate level of good knowledge and attitudes, the majority of them lack practical implementation of screening methods. The suggestions listed below are made in accordance with the findings of this study.

The following are recommended for healthcare workers: as some seemed to have poor knowledge regarding breast cancer and screening, it would be advantageous to provide accessible educational programs inside healthcare facilities. These programs should emphasize early detection methods advantages and current recommendations, so that they can impart this knowledge to the public. Also, a routinely customized training program created especially for them would be beneficial so they can acquire the necessary skills to preform both breast self-exam and clinical breast exam in accordance with the guidelines, as well teach the community in turn.

For non-healthcare workers, the following are suggested: As they knew little about screening and diagnostic methods, although some did seem to know a lot about risk factors and symptoms, it would be extremely useful to conduct educational events and workshops where the teaching is concentrated on all of these areas. The most successful approach of overcoming this preventive cancer is to increase women's awareness of the issue. As a result, it is critical to develop culturally relevant awareness programs and advertisements via TV, radio, printed, and social media. Furthermore, more research is needed to understand knowledge gaps and practice barriers for effective interventions for women in Somaliland.

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APPENDIX A.

KARABUK UNIVERSITY ETHICAL COMMITTEE APPROVAL FORM

Tarih ve Sayı: 01.10.2021 - E.67356

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

Sayı : E-77192459-050.99-67356
Konu : 2021/633 Nolu Karar

01.10.2021

Sayın Doç. Dr. Işıl IŞIK ANDSOY

Girişimsel Olmayan Klinik Araştırmalar Etik Kurulumuza sunmuş olduğunuz **"Somaliland'da Sağlık Çalışanı Olan Ve Olmayan Kadınlarda Meme Kanseri Ve Taramaya Yönelik Bilgi, Tutum Ve Uygulamalar İle Algılanan Engellerin Karşılaştırılması"** başlıklı araştırma projeniz amaç, gerekçe, yaklaşım ve yöntemle ilgili açıklamaları açısından Girişimsel Olmayan Klinik Araştırmalar Etik Kurul yönergesine göre incelenmiş olup etik açıdan uygun olduğuna oy birliği ile karar verilmiştir.

Bilgilerinize rica ederim.

Prof. Dr. Orhan ÖNALAN
Kurul Başkanı

Adres: Karabük Üniversitesi Demir Çelik Kampüsü Merkez/Karabük
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Bilgi için: Songül DOYMUŞ
Ünvanı: Sürekli İşçi

APPENDIX B.

HARGEISA GROUP HOSPITAL DIRECTORATE OF HEALTH FORMAL ADMINISTRATIVE PERMISSION

JAMHUURIYADA SOMALILAND
Wasaarada Horumarinta Caafimadka
Cusbitaalka Guud ee Hargeisa

REPUBLIC OF SOMALILAND
Ministry of Health Development
Hargeisa Group Hospital

Email: hghsecretary@gmail.com
Phone: +252 634474973

Ref: HGH/0.1/0328/23 Date: 18/01/2023

APPROVAL LETTER

To Whom It May Concern

On behalf of Hargeisa Group Hospital Administration, we approved that **Ms. Nura Ahmed Ogleh** a student nursing at Kabaruk University Institute in Turkey, has requested to conduct a data regarding the research study titled (Comparison of knowledge, attitudes, and practices to breast cancer and screening among female healthcare professionals and non-healthcare workers in Somaliland).

We are glad to offer her an opportunity to conduct this important study in our hospital and the country moreover we would like to share back the result of this study.

If you have any concerns or require additional information feel free to contact us.

Yours faithfully

Hospital Director
Dr. Ahmed Omar Askar
Signature: _____

MINISTRY OF HEALTH DEVELOPMENT
HARGEISA GROUP HOSPITAL
SOMALILAND

APPENDIX C.

HARGEISA INTERNATIONAL HOSPITAL DIRECTORATE OF HEALTH FORMAL ADMINISTRATIVE PERMISSION

HARGEISA INTERNATIONAL HOSPITAL
مستشفى هرجيسا الدولي

November 28, 2022

To: Assistant Professor: Isil Isik **ANDSOY**

MSc student Nura Ahmed **OGLEH**

Karabuk University, Health Sciences Faculty

Subject: RESEARCH APPROVAL LETTER

This letter is in response to the request for permission to conduct a study on "Comparison of knowledge, attitudes, and practices to breast cancer and screening among female healthcare professionals and non-healthcare workers in Somaliland" As a part of your thesis.

After careful review of the proposal. The hospital management at Hargeisa International Hospital approved the study. We look forward to the report and recommendations that will emerge from the study.

Best regards,

Dr. Yasser Darwish

General Director of Hargeisa International Hospital

Hargeisa, Somaliland

INTERNATIONAL HOSPITAL Hargeisa مستشفى الدولي

28.11.22

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Cusbitalka Hargeisa International Hospital

APPENDIX D.

QUESTIONNAIRE FORM (English)

Dear participant, thank you for taking the time to participate and support me in my in the master's thesis on "**Determination of knowledge, attitudes, and practices about breast cancer and screening among female healthcare and non-healthcare workers in Somaliland**." The correct information you give will positively impact the study's results, and participation will be anonymous and confidential.

Prof. Dr. Işıl Işık Andsoy MSc student Nura Ahmed Ogleh.

I have read and understood all the information provided and I agree to participate in this research	a) Yes b) No		
Section 1: Demographic Data			
1. Write your age:	---------- years old		
2. Are you a healthcare professional?	a) Yes b) No		
3. Level of education:	a) No formal education completed b) Primary school c) Middle school d) High school e) associate degree f) Bachelor's degree g) Postgraduate		
4. Work experience	a) I do not work b) 5 years or less c) 6-10 years d) 11-15 years e) 16 years or more		
5. Marital status	a) Single b) Married		
6. Presence of breast disorder	a) Yes b) No		
7. History of breast cancer in the family	a) Yes b) No		
Section 2: Knowledge of breast cancer and screening methods			
Breast cancer risk factors	**True**	**False**	**I do not know**
1. Early menstrual period			
2. Growing older			
3. Late or no pregnancy			
4. Late onset of menopause after 55			
5. High fat diet			
6. Lack of physically activity			
7. Being overweight or obese after menopause			
8. Race or ethnicity			
9. Large breasts			
10. Oral contraceptives use			
11. Using combination Hormonal Therapy			
12. Exposure to radiation			
13. Personal or family history of breast cancer or non-cancerous breast disease			
Breast cancer symptoms and clinical findings			
14. Pain in the breast			
15. A mass in the breast or under the arm			
16. Any nipple discharge, including blood, other than breast milk			
17. Retraction of the nipple			
18. Any change in the shape of the nipple/breast			

19. Swelling/enlargement of the nipple /breast			
20. Weight loss			
Breast cancer diagnostic and screening methods			
21. Breast Self-Examination (BSE)			
22. Clinical Breast Examination (CBE)			
23. Mammography			
24. Ultrasonography			
25. Magnetic Resonance Imaging (MRI)			
26. Biopsy			

Breast Self-Examination Practice	
27. I heard/learned about Breast Self-Exam	a) Yes b) No
28. Breast Self-Examination is an effective method to detect breast cancer early	a) True b) False c) I do not know
29. Who can perform Breast Self-Examination?	a) Individual b) Healthcare professional c) All d) I do not know
30. How frequently should a Breast Self-Exam be performed?	a)Weekly b)Monthly c)Yearly d)I do not know e) Other_____
Clinical Breast Examination	
31. I heard/learned about Clinical Breast Exam	a) yes b) no
32. Clinical Breast Examination is an effective method to detect breast cancer early?	a) True b) False c) I do not know
33. Who can perform Clinical breast exam?	a) Individual b) Healthcare professionals c)All d)I do not know e)Other:
34. How frequently should a Clinical Breast be performed?	a) Monthly b) Yearly c) I do not know d) Other_____
Mammography Knowledge	
35. I heard/learned about Mammography	a) Yes b) No
36. Mammography is an effective method to detect breast cancer early	a) True b) False c) I do not know
37. How frequently should a Mammography be performed?	a) Monthly b) Yearly for the recommended age c) When a lump/mass is found during a breast examination d) b & c e) I do not know f) Other:

Section 3: Attitudes towards breast cancer screening			
Attitude assessment	**True**	**False**	**I do not know**
1. Every woman is at risk of developing breast cancer			
2. It is possible to prevent and cure breast cancer			
3. I do not need a breast exam or scan			
4. I would screen for breast cancer if I knew the benefits			
5. I do not mind male healthcare professional to examine my breast if necessary			
6. There is no need for doctor's checkup If there is no issue with the breasts			
7. Early detection approaches have no effect on the treatment			

8. Good personal hygiene lowers the risk of breast cancer			
9. I recommend breast examination to women			
10. When some abnormalities are detected in my breasts, I do nothing			
11. When some abnormalities are detected in my breasts, I seek medical attention			

Section 4: Breast cancer screening methods practices	
Breast Self-Examination Practice	
1. I did Breast Self-Exam	a) Yes b) No
2. If yes, how often?	a) Rarely b) Occasionally c) Monthly e) Other_____
3. And why?	a) Recommended by a healthcare professional/friend b) Because of my personal concerns c) I routinely check my health d) Other:
4. If no, why?	a) It isn't necessary (b) I worry about negative results c) I'm afraid of the procedure (d) I have never heard of it before (e) I do not know the procedure f) Other
Clinical Breast Examination Practice	
5. I did Clinical Breast Exam	a) Yes b) No
6. And why?	a) Recommended by a healthcare professional/friend b) Because of my personal concerns c) I routinely check my health d) other_____
7. If no, why?	a) It isn't necessary (b) I worry about negative results c) I'm afraid of the procedure (d) I have never heard of it before e) Other_____
Mammography Practice	
8. I have undergone a mammography	a) Yes b) No
9. And why?	a) Recommended by a healthcare professional/friend b) Because of my personal concerns c) I routinely check my health d) other_____
10. If no, why?	a) I am not included in the recommended age for mammogram screening b) financial reasons (expensive) c) Mammography is not available d) I do not see any reason to do this scan e) I am afraid of the procedure f) I worry about negative results g) I have never heard of it before h) other_____

APPENDIX E.

QUESTIONNAIRE FORM (Somali)

Walalaheyga qaaliga ah kusoo dhawada xog wareysigan, waad ku mahadsantihiin ka soo qeybgalkiina daraasaddan oo aad igu taageerteen qoraalkayga masters-ka ee ku saabsan "**Isbarbardhigga aqoonta, dabeecadaha, iyo dhaqanka kansarka naasaha iyo baaritaanka dumarka Somaliland kuwa ah iyo kuwa aan ahayn shaqaalaha caafimaadka**". Macluumaadka ku saabsan natiijada daraasadda waxay noqon doontaa qarsoodi oo qofna lalama wadaagi doono. Aad ayaad u ayaad mahadsantahay, Prof. Dr. Işıl Işık Andsoy, MSc student Nura Ahmed Ogleh.

Waan akhriyay oo fahmay dhammaan macluumaadka la bixiyay waxaanan aqbalay inaan ka qaybqaato cilmi-baadhistan.	a) Waan ogolahay b) Ma ogola
Section 1: Demographic Data	
1. Qor da'daada:	---------- jir
2. Ma tahay shaqaale caafimaad?	a) Haa b) Maya
3. Heerka waxbarashada:	a) Wax dugsi ah ma dhammayn b) Dugsiga hoose c) Dugsiga dhexe d) Dugsiga sare e) Diblooma f) Bachelor g) Postgraduate degree
4. Khibradada shaqada waa heerkee:	a) Ma shaqeeyo b) ≤5 sano c) 6-10 sano d) 11-15 sano e) ≥16 sano
5. Xaaladda guurka:	a) Maan guursan b) Waan guursaday
6. Xanuun baa naaska iga haya	a) Haa b) Maya
7. Qof family kaygi ka mid ah oo qaba kansarka naasaha	a) Haa b) Maya

Qaybta 2: Aqoonta kansarka naasaha iyo hababka baaritaanka			
Arrimaha halista kansarka naasaha	**Run**	**Been**	**Ma garanayo**
1. Caada waqtiga horeku dhacdo hablaha			
2. Khatartadumarkada'da weyn ayaa aad ubadan			
3. Uurka daaha ama uurla'aanta			
4. Caadada oojoogsatada'da 55 kadib			
5. Cuntada saliid/dufanku ku badantahay			
6. Aan dhaqdhaqaaq jirin			
7. Buurnin ka dib marka ay joogsato caadada			
8. Jisiyadda ayaa sabab u ah			
9. In la yeesho naaso waaweyn			
10. Kiniiniga uurka kontaroola			
11. Kiniinadu hoormoonka ee isku dhafan			
12. Xiriir la sameeyo shucaaca			
13. Adiga ama inaad haysato qof family ka mid ah oo qaba kansarka naasaha			
Calaamadaha kansarka naasaha			
14. Xanuun kudhaca naasaha			
15. Cuf/shay kujira naaska cududda hoosteeda			
16. Dheecaankasta oo ibta naaska oo ay kujiraan dhiig, aan ahayn caanaha naaska			
17. Dib unoqoshadaibta naaska			
18. Isbeddelkasta oo kuyimaadda ibta naaska			
19. Bararkanaaska			
20. Miisaan dhimis			

Habka ogaanshaha kansarka naasaha iyo hababka baaritaanka			
21. Baritaanka nafta ee naaska			
22. Baaritaanka naasaha ee caafimaadka			
23. Sawirka naasaha mammography			
24. Sawirka naasaha ultrasonograph			
25. Sawirkanaasaha MRI			
26. Biopsy			
Baritaanka nafta ee Naaska (Breast Self-Examination)			
27. Waxaan bartay/maqlay wax ku saabsan baritaanka nafta ee naaska	a) Haa b) Maya		
28. Baritaanka nafta ee Naaska waa waxtar u leh in goor hore la ogaado kansarka naasaha	a) Haa b) Maya c) Ma garanayo		
29. Yaa samayn kara baritaanka nafta ee Naaska Breast self-exam?	a)Naftaydi b)Shaqaale cafimaad c) Dhamaamn d) Ma garanayo		
30. Immisa jeer ay tahay in la iska baaro naaska?	a) Todobaadle b) Bil kasta c) Sanad kasta d) Ma garanayo e) Wax kale:_____		
Baaritaanka Naasaha ee Caafimaadka (Clinical Breast Examination)			
31. Waxaan bartay/maqlay wax ku saabsan Baaritaanka Naasaha ee Caafimaadka	a) Haa b) Maya		
32. Baaritaanka Naasaha ee Caafimaadka waa waxtar u leh in goor hore la ogaado kansarka	a) Run b) Been c) Ma garanayo		
33. Yaa samayn kara baaritaankaas?	a)Naftaydi b)Shaqaale cafimaad c) Dhamaamn d) Ma garanayo e) Wax kale:_____		
34. Immisa jeer ayay tahay in baaritaankaas la sameeyo?	a)Bil kasta b) Sanad kasta c)Ma hubu d)Wax kale:		
Sawirka naasaha Mammography			
35. Waxaan bartay/ maqlay wax ku saabsan sawirka naasaha Mammography	a) Haa b) Maya		
36. Mammography waa qalab waxtar u leh in goor hore la ogaado kansarka naasaha?	a) Run b) Been c) Magaranayo		
37. Immisa jeer ayay tahay in la sameeyo sawirka naasaha Mammography?	a) Bil kasta b) Sanadkiiba da'da lagu taliyay c) Marka la helo buro/cun inta lagu jiro baaritaanka naaska d) b&c e) Ma hubu f)Wax kale:		

Qaybta 3: Aragtida ku aaddan baaritaanka kansarka naasaha			
Qiimaynta aragtida	**Run**	**Been**	**Ma garanayo**
1. Dhammaan dumarka waxay halis ugu jiraan kansarka naasaha			
2. Kansarka naasaha waa wax ladaweyn kara lagana hortagi kara			
3. Uma baahni baaritaan kanaaska ama sawir			
4. Waxaaniska baadhi lahaa kansarka naasaha haddii aan garanayo faa'iidada			
5. Dhib kama qabo haddii nin shaqaale caafimaad ah uu naaskayga baaro haddi loo baahdo			
6. Haddii aysan wax dhib ah ka jirin naasaha, uma baahnid baaritaan xilliyeedka ah ee dhakhtarka,			

7. Hababka hore ee ogaanshaha wax saameyn ah kuma laha daaweynta.			
8. Nadaafadda qofka waxa ay yaraynaysaa halista kansarka naasaha.			
9. Wa ku taliyaa in dumarka la baaro naaska.			
10. Markii naasahayga wax aan caadi ahayn laga helo, waxba ma sameeyo.			
11. Marka naasahayga lagu arko cillado aan caadi ahayn, waxaan raadsadaa daryeel caafimaad.			

Qaybta 4: Dhaqanka iyo sababaha baadhista kansarka naasaha	
Breast Self-Exam baritaanka nafta ee Naaska	
1. Hore waan sameeyaa	a) Haa b) Maya
2. Haddi haa tahay, imisa jeer?	a) Dhif dhif ah b) Marmar c) Bishii mar e) Wax kale:_____
3. Sababta aad u sameysid?	a)Waxaa igula taliyay shaqaale caafimaad/saaxiib b) Welwelkayga gaarka ah awgeed c) Si joogto ah ayaan caafimaadkeyga u fiiriyaa d) Wax kale:_____
4. Hadday maya tahay, waa maxay sababtu?	a) Looma baahna b) Waxaan ka walwalsanahay natiijooyin xun c) Waxaan ka baqayaa habka d) Weligay ma maqal wax ku saabsan e) Ma aqaan sida loo sameeyo f) Wax kale:
Dhaqanka iyo sababaha baadhista kansarka naasaha (Clinical breast examination)	
5. Hore waan sameeyaa	a) Haa b) Maya
6. Sababta aad u sameysid ?	a)Waxaa igula taliyay shaqaale caafimaad/saaxiib b) Welwelkayga gaarka ah awgeed c) Si joogto ah ayaan caafimaadkeyga u fiiriyaa d)Wax kale:
7. Hadday maya tahay, waa maxay sababtu?	a) Looma baahna b) Waxaan ka walwalsanahay natiijooyin xun c) Waxaan ka baqayaa habka d) Weligay ma maqal wax ku saabsan e) Wax kale_____
Sawirka naasaha Mammography	
9. Hore waan sameeyay	a) Haa b) Maya
9. Sababta aad u sameysid?	a)Waxaa igula taliyay shaqaale caafimaad/saaxiib b) Welwelkayga gaarka ah awgeed c) Si joogto ah ayaan caafimaadkeyga u fiiriyaa d)Wax kale:
10. Hadday maya tahay, waa maxay sababtu?	a) Anigu kuma jiro da'da lagula taliyey in baaritaanka skan ka ee naasaha baaritaanka mammografi-ka (b) Wa qaali (c) Mammografi baaritaanka skan ka ee naasaha ma yaalo magaalada (d) Ma arko sabab aan ku sameeyo iskaanka (e) Waxaan ka baqayaa habka f) Waxaan ka walwalsanahay natiijooyin xun h) Wax kale:

APPENDIX F.

QUESTIONNAIRE FORM (Arabic)

عزيزتي المشاركة, شكًرا لك على الوقت الذي قضيته في المشاركة في هذا البحث **"تحديد المعرفة والمواقف والممارسات المتعلقة بسرطان الثدي والفحص بين المتخصصات في الرعاية الصحية وغيرالعاملات في مجال الرعاية الصحية في أرض الصومال"**. تم إجراء هذا الاستطلاع كجزء من رسالة الماجستير الخاصة بي. ستساهم المعومات الصحيحة التي تقدمينها لكل سؤال بشكل يجابي في نتيجة البحث و جميع إجاباتِك ستكون مجهولة وسرية.

طالبة الماجستير نورا أحمد أوجليه و البروفيسورة الدكتورة إيشيل إيشيك اندسوي.

لقد قرأت و فهمت جميع المعلومات المقدمة و أوافق على المشاركة في هذه البحث	أ. نعم ب. لا			
القسم 1 :البيانات الديموغرفية:				
1. عمرك	----------سنة			
2. هل أنت متخصصة في مجال الرعاية الصحية؟	أ. نعم ب. لا			
3. ما هو مستوى تعليمك؟	أ. لم أتلقى أي تعليم ب. مدرسة إبتدائية ج. المدرسة المتوسطة د. المدرسة الثانوية ه.دبلوم و. باكالوريس ز. شهادة عاليا أو دكتورا			
4. سنوات من الخبرة	أ. أنا لا أعمل ب. 5 سنوات أو أقل ج. 6 سنوات إلى 10 د. 11 سنة إلى 15 ه. 16 سنه أو أكثر			
5. الحالة الزوجية	أ. غير متزوجة ب. متزوجة			
6. لدي مشكلة في الثدي (الآن أو سابقًا)	أ. نعم ب. لا			
7. تاريخ من سرطان الثدي في الأسرة	أ. نعم ب. لا			
القسم2 :المعرفة بسرطان الثدي وطرق الفحص				
الجزء الأول: عوامل خطر الإصابة بسرطان الثدي		**صحيح**	**خطأ**	**أنا لا أعرف**
1. البلوغ في سن مبكر (الدوره الشهرية في سن مبكرة)				
2. التقدم في السن				
3. تأخر الحمل أو عدمه				
4. دخول سن اليأس بعد سن 55				
5. إتباع نظام غذائي عالي الدهون				
6. قلة النشاط الحركي				
7. زيادة الوزن				
8. الأصل العرقي				
9. الصدر الكبير				
10. إستخدام وسائل منع الحمل عن طريق الفم (الحبوب)				
11.إستخدام مزيج من العلاج الهرموني				
12. التعرض للأشعة				
13. التاريخ الشخصي أو العائلي لسرطان الثدي أو أمراض الثدي الغير السرطانية				
الجزء الثاني: أعراض سرطان الثدي				
14. ألم في الثدي				
15. كتلة في الثدي أو تحت الذراع				
16. أي إفرازات من الحلمة بما في ذالك الدم, غير حليب الثدي				
17. تراجع الحلمة				
18. أي تغير في شكل الحلمة / الثدي				
19. تورم أو تضخم حلمة الثدي/ الثدي				
20.فقد الوزن				
الجزء الثالث: طرق تشخيص وفحص سرطان الثدي				
21. الفحص الذاتي				
22. فحص الثدي السريري				
23. تصوير الثدي الشغاش (الماموغرافيا)				

24. التصوير بالموجات فوق الصوتية			
25. التصوير بالرنين المغناطيسي			
26. خزعة, فحص نسيج الجسد			
الفحص الذاتي للثدي			
27. لقد تعلمت / سمعت عن الفحص الذاتي للثد	أ. نعم ب. لا		
28. الفحص الذاتي للثدي هو أداة مفيدة للكشف المبكر عن سرطان الثدي	أ. نعم ب. لا ج. أنا لا أعرف		
29. من يمكنه إجراء الفحص الذاتي للثدي؟	أ. بنفسي ب. عمال القطاع الصحي ج. كل ما ذكر د. لا أعرف		
30. كم مرة يجب إجراء الفحص الذاتي للثدي؟	أ. أسبوعيا ب. شهريا ج. سنويا د. لست متأكدا ه. غير ذالك_____		
الفحص السريري للثدي			
31. لقد تعلمت / سمعت عن الفحص السريري للثدي	أ. نعم ب. لا		
32. الفحص السريري للثدي هو أداة مفيدة للكشف المبكر عن سرطان الثدي	أ. نعم ب. لا ج. أنا لا أعرف		
33. من يمكنه إجراء الفحص السريري للثدي؟	أ. بنفسي ب. عمال القطاع الصحي ج. كل ما ذكر د. لا أعرف ه. غير ذالك		
34. كم مرة يجب إجراء الفحص السريري للثدي؟	أ. شهريا ب. سنويا ج. لست متأكدا د. غير ذالك		
تصوير الثدي الشعاعي			
35. لقد تعلمت / سمعت عن الفحص الشعاعي (الماموغرافيا) للثدي	أ. نعم ب. لا		
36. لقد قمت بعمل تصوير شعاعي للثدي من قبل	أ. نعم ب. لا ج. أنا لا أعرف		
37. إذا كان الجواب نعم، كم مرة؟	أ. شهريا ب. سنويا ج. عندما يتم العثور على كتلة / كتلة أثناء فحص الثدي د. ب & ج هـ. لا أعرف و. غير ذالك___		
القسم 3:المواقف تجاه سرطان الثدي و فحوصات الكشف عن سرطان الثدي			
تقييم الموقف	**صحيح**	**خطأ**	**أنا لا أعرف**
1. كل إمرأة معرضة لخطر الإصابة بسرطان الثدي			
2. يمكن الوقاية و الشفاء من سرطان الثدي			
3. أنا لست بحاجة لفحص الثدي			
4. سأقوم بفحص سرطان الثدي إذا كنت أعرف الفائدة			
5. لا أمانع بأن يقوم إخصائي ذكر بأن يفحص ثدي إذا لزم الامر			
6. إذا لم يكن هناك مشكلة في الثدي فلا داعي للفحص الدوري من قبل الطبيب			
7. الفحص المبكر ليس له تأثير على العلاج			
8. النظافة الشخصية تقلل من خطر الإصابة بسرطان الثدي			
9. أوصي بفحص الثدي للنساء			
10. عند إكتشاف شيئ غريب في صدري لا أقوم بأي شيء			
11. عند إكتشاف شيئ غريب في صدري أذهب إلى الطبيب			
القسم 4 : وأسباب ممارسات فحص سرطان الثدي			
الفحص الذاتي للثدي			

1. أنا أمارس الفحص الذاتي للثدي	أ. نعم ب. لا
2. إذا كان الجواب نعم، كم مرة؟	أ. نادرا ب. من حين إلى آخر ج. شهريا د. أخرى
3. و لماذا؟	أ . أوصى به أخصائي صحى أو صديق ب. بسبب مخاوفي الشخصية ج. لكي أتحقق من صحتي بشكل روتيني د. أخرى
4. إذا كانت الإجابة لا, فلماذا إذن؟	أ . ليست ضرورية ب. أنا أخشى النتيجة السلبية ج. أنا خائفة من هذا الإجراء د. لا لم أسمع به من قبل ه. أنا لا أعلم عن طريقة الفحص و. أخرى
الفحص السريري للثدي	
5. لقد أجريت فحص الثدي السريري من قبل	أ. نعم ب. لا
6. و لماذا؟	أ . أوصى به أخصائي صحى أو صديق ب. بسبب مخاوفي الشخصية ج. لكي أتحقق من صحتي بشكل روتيني د. أخرى
7. إذا كانت الإجابة لا, فلماذا إذن؟	أ . ليست ضرورية ب. أنا أخشى النتيجة السلبية ج. أنا خائفة من هذا الإجراء د. لا لم أسمع به من قبل
تصوير الثدي الشعاعي	
8. لقد قمت بعمل تصوير شعاعي للثدي من قبل	أ. نعم ب. لا
9. و لماذا؟	أ . أوصى به أخصائي صحى أو صديق ب. بسبب مخاوفي الشخصية ج. لكي أتحقق من صحتي بشكل روتيني د. أخرى
10. إذا كانت الإجابة لا, فلماذا إذن؟	أ. لست مشمولة في العمر الموصى به لفحص الماموجرام ب. أسباب مالية ج. التصوير الشعاعي للثدي غير متوفر د. لا أرى أي سبب للقيام بهذا الفحص هـ. أخشى الإجراء و. أنا قلق بشأن النتائج السلبية ز. لم أسمع به من قبل ح. غير ذالك_____

RESUME

Nura AHMED OGLEH completed most of her school education in United Arab Emirates. She then moved to Somaliland where she graduated from Admas University and earned her BSc in Nursing in 2018. After that, she started to work at Hargeisa International Hospital. In 2020, she started her master's program in the Department of Nursing of the Graduate Education Institute of Karabuk University.