Early Symptoms of Breast Cancer among Postmenopausal Women in El –Minia Oncology Center

Samia Gaber Seif Abd Elalem [1], Hany Hassan Kamel [2], Amany Hassan Abd Elrahim[3], Heba Atef Osman[4]

1. B.Sc. in Nursing, Minia University, Egypt.
2. Professor of Obstetrics and Gynecology, Faculty of Medicine, Minia University, Egypt
3. Assistant Professor of Woman Health and Obstetrics Nursing, Faculty of Nursing. Minia University, Egypt.
4. Lecturer of Woman Health and Obstetrics Nursing, Faculty of Nursing. Minia University, Egypt.

Abstract

Background: The most significant risk factor for breast cancer is age. As the women get older, the chances of getting the disease rise. Every year, ninety-five percent of women with breast cancer are over forty, and half of them are sixty one years of age or older. **Aim:** was to assess the early symptoms of breast cancer among postmenopausal women In El –Minia Oncology Center. **Design**: Retrospective descriptive research design was used. **Setting**: Oncology Institute in Minia City. **Sample:** Representative sample of 320 cases was included. **Tools**: Two tools were utilized, **Tool I** consisted of three parts, sociodemographic data, obstetric history and breast cancer risk factors. **Tool II** consisted of three parts about early symptoms recognized by the woman, patient's reported response to early symptoms and causes of delaying in diagnosis as well as treatment of breast cancer **Results:** Demonstrates that the early reported symptoms of breast cancer that first recognized by the woman was breast lump (67.2%) then lump under armpit was (13.4%) while the lowest rates were shown in bruising of breast and sore/ulceration in breast that does not heal at (0.4%), the most mutual risk factors among participants was age over 50 years at 80.6%. **Conclusion:** more than two third of the participants reported that the first recognized symptom was breast lump then lump under armpit and the majority mutual risk factors were age, family history of cancers and smoking. **Recommendation**: Provide instruction to women over 40 years through educational program on the significance of regular and annual screening tests for early breast cancer detection.

Keywords: Breast Cancer, Early Symptoms, Postmenopausal Women

Introduction

Breast cancer (BC) is defined as a type of cancer that originates in the breast tissues. If the BC has spread to the surrounding tissue from its original site, it is consider invasive **(Korde et al., 2021).** When breast cells start to proliferate uncontrollably, these cells typically develop into a tumor, which is frequently felt as a lump or visible on an x-ray. If the cells in the tumor have the ability to grow into or invade nearby tissues or spread (metastasize) to other parts of the body, then the tumor is malignant (cancerous). It is unknown what specifically causes BC. Age, genetic predisposition, and female sex hormones may all play a major role in the development of this disease; however, it is still unclear exactly how each of these factors affects the tumor's growth **(Burstein et al., 2021).**

Worldwide, BC is the most frequently diagnosed cancer; over two million new cases are expected to be diagnosed in 2020. Moreover, it is the primary cause of cancer-related mortality among females, accounting for over 680,000 fatalities **(Sung et al., 2021).** With an age-specific incidence rate of 48.8/105, BC is still the most common form of cancer in women in Egypt, despite the disparity in incidence rates between developed and developing nations. It is projected that there will be about 46,000 incident cases in 2050. Egypt's incidence rate is lower than the global average, but its age-standardized mortality rate is higher—20.4/100,000—than the global average **(Globocan, 2020)** in contrast to the developed countries' rate of 12.8/105 and the US rate of 12.3/105. Egypt had roughly twice the ratio (41percent vs 23percent) when comparing the death/incidence rate ratio for BC with developed nations **(International Cancer Control Partnership, (2020)**

Furthermore, with an estimated eleven percent death rate in 2020, it is currently the second most common cause of cancer-related mortality in Egypt, after hepatocellular carcinoma **(International Cancer Control Partnership, (2020).** Interestingly, this mortality rate is significantly higher than that of China and other developing nations, where the age-standardized mortality rate is 6.3/105. The main cause of these differences in incidence and mortality between Egypt and other nations has been identified as the delayed diagnosis presentation. Instead of being in the early stages, the majority of cases in Egypt present as locally advanced or metastatic **(Azim etal., 2023).**

Not all of the BC's causes are understood. On the other hand, a number of risk factors for BC have been found by researchers. We refer to these as "risk factors." Risk factors can raise the likelihood of developing BC, but they do not cause it. A person's age, gender, early menarche (less than twelve years old), late menopause (more than fifty-five years old), lack of breastfeeding, use of oral contraceptives, alcoholism, smoking, late age at full term pregnancy (more than thirty years old), obesity, high dose radiation to the chest, and personal history of BC are risk factors for BC **(Breast Cancer Association Consortium, 2021).**

Risk factors can be further classified as lifestyle-related risk factors and unmodifiable risk factors. Gender, age, genetics, family history, personal history of BC, dense breast tissue, menstruation, early-life breast radiation, and diethylstilbestrol treatment are non-modifiable risk factors. Lifestyle-related risk factors include not having previously been pregnant or becoming pregnant later in life, using birth control pills recently, using hormone therapy after menopause, not breastfeeding, drinking, being overweight or obese, not

exercising, and having an induced abortion**(Dietz et al., 2020).**

A newly discovered lump or mass is the most typical sign of BC. Cancer is more likely to be present in a hard, painless mass with uneven edges, but BC can also be round, soft, or tender. It may even cause pain. This is why it's crucial to have any new breast mass, lump, or change in the breast examined by a qualified medical practitioner (**Hu et al., 2021).** The BC can be identified through thorough screening using mammography, clinical breast examinations, and breast self-examination, or by combining all three **(McKinney et al., 2020).**

While a woman's age increases her risk of developing cancer, menopause itself does not cause cancer. After the age of fifty-five, a woman's risk of developing ovarian, breast, and uterine cancers increases. Also, if a woman started menstruating before the age of twelve, her risk increases. A woman's chance of developing BC rises with prolonged estrogen exposure. Consequently, due to hormonal factors, women who have experienced a natural menopause are approximately twice as likely to develop cancer **(Coles et al., 2020).**

The main benefit of screening is that it can lower treatment costs. Early diagnosis leads to less intrusive and expensive treatment, which may lessen patient anxiety and improve prognosis. From the standpoint of the patient, early detection has several advantages, including less time away from job, a reduced require for chemotherapy, as well as breast preservation surgery rather than mastectomy **(Seely & Alhassan, 2018).** The American Cancer Society is among the many organizations that advise routine mammography screening for BC to start at age forty-five. Some advice holding off until fifty age **(Bailey et al., 2023).**

Finding abnormalities that are too small to be felt or seen is the aim of a mammography. But not all BC can be detected by it, which is why breast exams should be performed physically. The American College of Obstetricians and Gynecologists (ACOG) advises women in their twenties and thirties to undergo a breast exam every three to five years, and after they turn forty, every year **(Chlebowski et al., 2020).**

The nursing management of BC patients includes assessing the patient's individual needs, helping the woman to cope with emotions, providing information and psychological support and assisting in the subsequent, informed decision-making process **(Schünemann et al., 2020).** Expert breast care nurses are available at every stage of the process. They support the woman in making decisions regarding health and well-being by, assisting in navigating health services, communicating and collaborating with multidisciplinary care teams, and helping in understanding diagnosis and treatment plans (**Pastore & Snippe, 2020).**

Significance of the Study:
Globally, BC is the leading cause of cancer-related mortality for women **(Azim & Ibrahim, 2014).** According to the Egypt National Cancer Institute (NCI), BC is the most common cancer in women in the country, accounting for 18.9 percent of all cancer cases (35.1 percent in women and 2.2 percent in men). In females, non-Hodgkin's lymphoma (8.5 percent), breast (38.8 percent), liver (4.6 percent), and ovary (4.5 percent) are the most common cancer sites; taken together, they account for 56.4 percent of all cancer cases in females **(Ibrahim et al., 2014).**

With an estimated 1.67 million new cases diagnosed in 2012, BC is the second most common cancer worldwide and the most common cancer among women. Although it is the most common cause of cancer death for women in less developed countries (324,000 deaths), BC now ranks second in more developed countries after lung cancer (522,000 deaths). The BC ranks as the fifth cause of cancer death overall **(Nabi et al., 2016).** In light of the significance of early diagnosis and treatment for BC, a growing body of research is investigating the variables linked to a late stage at diagnosis, especially in situations where the stage has consistently remained late for decades and the tumor's presentation size (mean 5–8 cm) is significantly larger than a palpable tumor **(Jedy-Agba et al., 2017).**

Aims of the study: -
The aim of the current study was to assess the early symptoms of breast cancer among postmenopausal women In El –Minia Oncology Center

Study questions
- What are the most common or mutual risk factors among postmenopausal women diagnosed with breast cancer in Minia city?
- What are the early symptoms of breast cancer recognized by the woman?

Patients and methods
Study Design
Retrospective descriptive research design was utilized to accomplish the aim of the present study. A retrospective study looks backwards and examines exposures to suspected risk factors in relation to an outcome that is established at the start of the study. In retrospective studies, the outcome of interest has already occurred in each individual by the time of enrollment, and the data are collected by asking participants to recall exposures. There is no follow-up of participants.

Setting:
This study was carried out at the oncology institute of Minia City in Minia governorate.

Sample
A representative sample of 30% of the total number of BC women; the total number of the BC women during over last year was 1066 case. To determine the sample size, use the **Issac &Micheal (1995)** formula that was calculated as (N=p*30/100), as follows:
N=p*30/100=320 case.
N= Number of the cases
p= Numbers of the cases during over last year
N=1066*30/100= 319.8=320

Inclusion criteria
- Postmenopausal women (any woman stopped her menstrual periods within the last 12 months was defined as postmenopausal).
- Diagnosed Cases with BC

Exclusion criteria
- Women unwilling to share in this study

Samia G., et al

Tools for Data Collection

To accomplish the goal of the study, data were gathered through two tools:

Tool (I): it was an interviewing questionnaire established by the researchers after reviewing related literatures. This tool involved three parts:

Part I: Personal characteristics

It included item such as: age, educational level, occupation, marital status, and place of residence.

Part II: Obstetric history

It included age at menarche, age at marriage, age at first pregnancy, number of gravidities, number of parity, years of menses, breast feeding, first year of lactation and age at menopause.

Part III: - Breast cancer risk factors

This tool developed by the researcher to determine the common risk factors of BC depend on the literatures **(Anothaisintawee et al., 2013; Anderson et al., 2014& Momenimovahe Z., & Salehiniya, 2019).** It was translated into Arabic and was modified by the researcher according to the jury committee's judgements. It consisted of 17 questions (yes or no questions), ''Yes'' answer indicated the presence of the risk factor and ''No'' answer indicated the absence of the risk factor. The common risk factors of BC such as: Age over 50 years, Being overweight or having obesity after menopause, family history of BC, family history of other types of cancer, a sedentary lifestyle, having the first pregnancy after 30 years, early menarche before twelve years, late menopause after fifty years, smoking, living near high tension wires, previous usage hormonal therapy replacement or oral contraception, having dense breasts, history of infertility, personal history of certain non-cancerous breast diseases, no history of breast feeding, and living near an industrial area.

Tool (II): it was an interviewing questionnaire established by the researchers after reviewing related literatures and included three parts:

Part I: Early symptoms of breast cancer recognized by the woman.

This tool adopted from **Grunfeld et al. (2002),** it translated into Arabic and modified by the researchers researcher according to the jury committee's judgements. It included 19 questions (yes or no questions), ''Yes'' answer indicated the presence of the symptom and ''No'' answer indicated the absence of the symptom. It was included common early symptoms of breast cancer such as: breast lump, asymmetry of the breasts, pain in breast region, changes in size of breast, dimpling of breast skin, breast swelling, nipple bleeding discharge, thickening of breast lump, change in shape of a woman's breast, change in the color of a woman's nipple, nipple pussy discharge, redness, warmth or darkening on breast, scaling/dry skin in nipple region, sore/ulceration in breast that does not heal, and bruising of breast.

Part II: The patient reported response to early symptoms of breast cancer

It included questions related to patient reported response to early symptoms of breast cancer. It consisted of 7 multiple choice questions as when did you notice the first symptom, when was the first time did you go for examination after recognizing the first symptom?, where did you go to seek examination for the first time (first reporting)?, did you delay in getting the diagnosis?, when did you get the first definitive diagnostic test?, did you delay in seeking treatment?, and when did you start the definitive therapy after diagnosis?.

Part III: The causes of delaying in diagnosis and treatment of breast cancer

It included 11 causes such as denial or anxiety, high cost of medicine, fear of excess treatment, shame associated with getting a breast exam, high cost of transportation to diagnosis and treatment, didn't aware of the disease, stigma of the disease, competing life priorities, obligations at home, use of traditional methods, used an alternative treatments earlier.

Validity of the study tools

Tools were evaluated for the content validity by a jury of 5 experts in the field of obstetrics and gynecological nursing as well as essential modifications were made. The jury was composed of three professors of women health and obstetrics nursing, faculty of nursing, Minia University and two professors of obstetrics and gynecological nursing, faculty of nursing, Assuit University. Every expert was inquired to evaluate the instruments for content clarity, coverage, length, wording, format as well as overall appearance.

Reliability of the study tools

The reliability of the instruments was applied to confirm internal consistency of instruments. Also an internal consistency identified the extent to which the items of the tools measured the same concept as well as correlate with every other by Cronbach's alpha test which pertinent good internal reliability for the instruments; as well as distributed as: 1st tool "Risk factors of BC" was 0.825 and 2nd tool " Early symptoms of BC recognized by the woman "was 0.828.

Pilot Study:

A pilot study was applied on 10% of women as (32) women to determine the tools' applicability, clarity, and comprehensiveness and to determine how long it will take to fill them out. Nothing was changed from the pilot study; instead, it was included in the final output.

Data Collection Procedure:
- Official permission was granted from the Dean of Faculty of Nursing at Minia University. This permission was involved a brief clarification of the objectives of the study.
- Written consent has been provided by the director of the Oncology Institute.
- Each woman was interviewed individually on the outpatients' clinics in oncology institute and the researchers explained the nature as well as objective of the study. The researcher explained the objective and questionnaire to the women. Also a questionnaire took from 30 to 35 minutes to fulfill.
- Data were collected from 10:00 am to 1:30 pm on Sunday, Tuesday and Thursday from outpatients' clinics in oncology institute each week for five months during the period from the beginning of June 2022 to end of October 2022.

Ethical consideration:

The Ethical Committee and Postgraduate Committee of Minia University's Faculty of Nursing approved the research protocol. The manager of the Oncology Institute was granted formal permission by the dean of Minia University's

faculty of nursing. After outlining the study's objectives, women who volunteered to participate gave their oral consent. The study patients were free to decline participation or to leave the study at any moment, for any reason. Privacy of study participants was taken into account when gathering data. Participants received assurances that the confidentiality of all their data was high. There were no health risks and the research did not conflict with issues of culture, customs, or religion.

Statistical Design:

Data were summarized, tabulated, and presented using descriptive statistics in either number and/or percentage for qualitative data or means and standard deviations as a measure of dispersion for quantitative data. A statistical package for the social science (SPSS), IBM (21) was used for statistical analysis of the data. For qualitative data, comparison between independent groups was done using Chi square test (or fisher test in case of less than 5 cases). Probability (P-value) is the degree of significance, less than 0.05 was considered significant, otherwise is not significant.

Results: -

Table (1): Frequencies and percentages of the study participants' personal characteristics (n=320)

Items	N	%
Age (years)		
41-50	62	19.4%
51-60	125	39.0%
61-70	97	30.3%
> 70	36	11.3%
Mean ± SD	59.36 ± 9.30	
Educational level		
Illiterate	154	48.1%
Basic education	88	27.5%
Secondary education	46	14.4%
University education or higher	32	10.0%
Occupation		
Housewife	278	86.9%
Worker	42	13.1%
Marital status		
Single	8	2.5%
Married	186	58.1%
Widow	106	33.1%
Divorced	20	6.3%
Residence		
Urban	140	43.7%
Rural	180	56.3%
Socioeconomic status (LE/month)		
< 2000	198	61.9%
2000-4000	96	30.0%
> 4000	26	8.1%

Table (1) describes the personal characteristics of study participants namely age, educational level, occupation, marital status, residence and socioeconomic status. The highest proportions in demographics of participants were to the age group "51-60" years 39% with 59.36 ± 9.30 Mean ± SD, Illiterates 48.1%, housewives 86.9%, married 58.1%, rural residents 56.3% and those who earn < 2000 LE/month 61.9%.
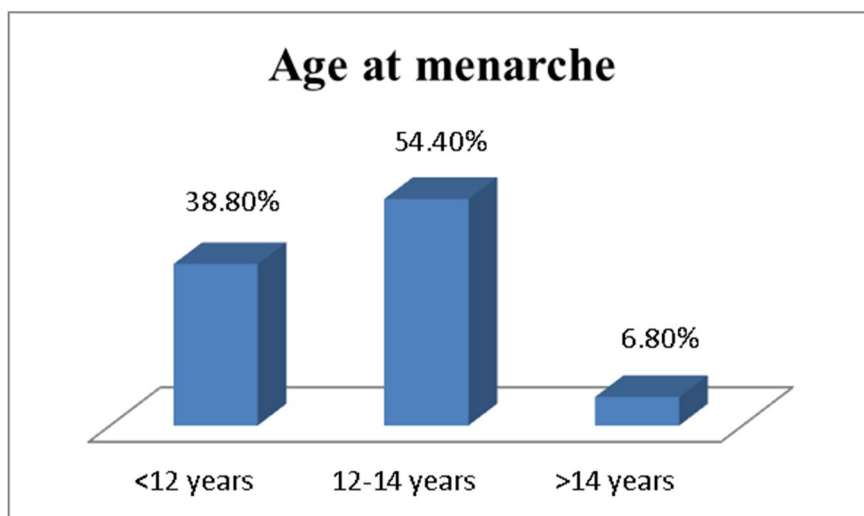

Figure 1, Distribution of studied participant according to their age at menarche

Figure 1 reveals that 54.4% of the study participants their age at menarche were between 12-14 years old while 6.8% of them their age at menarche were > 14 years old.
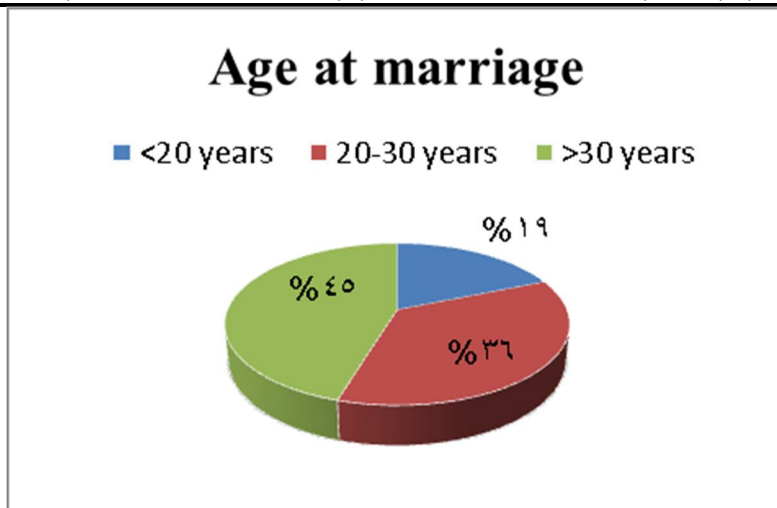
Samia G., et al

Figure 2, Distribution of studied participant according to their age at marriage (n=312)

Figure 2, shows that 45% of the study participants their age at marriage were > 30 years old while 19% of them their age at marriage were <20 years old.
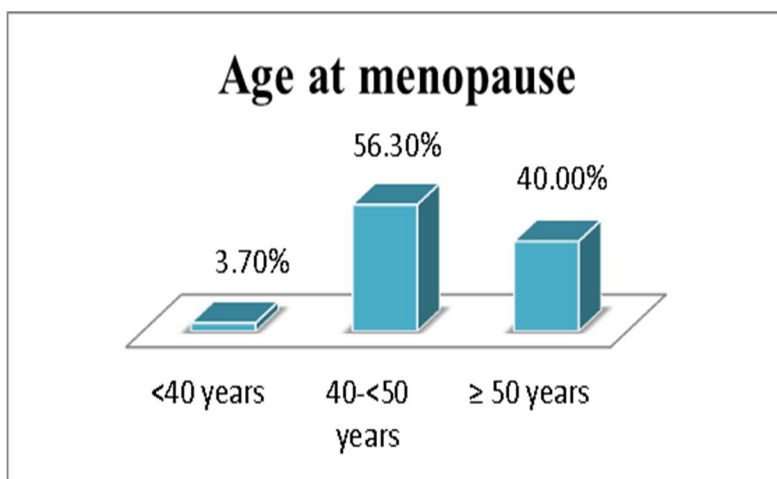

Figure 3, Distribution of studied participant according to their age at menopause

Figure 3, concludes that 56.3% of the study participants their age at menopause were between 40-<50 years old while 3.7% of them their age at menopause were <40 years old.
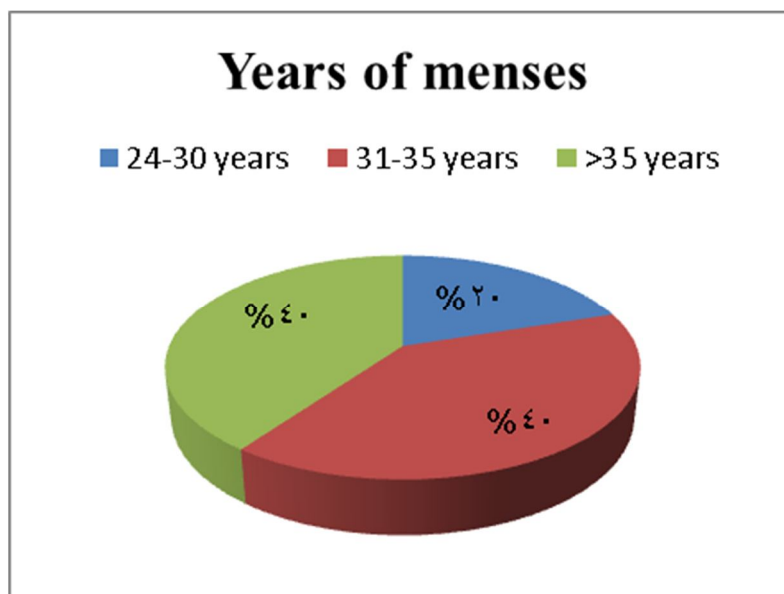

Figure 4, Distribution of studied participant according to years of menses

Figure 4, illustrates that 40% and 40% of the study participants their years of menses were between 31-35 and > 35 years old respectively while 20% of them their years of menses were between 24-30 years old.

Table (2): Frequencies and percentages of obstetric data among study participants (n=320)

Items	N	%
Age at first pregnancy (years)		
Nulligravida	92	28.8
<20	42	13.1
20-30	50	15.6
>30	136	42.5
Number of gravidity (n=228)		
<2	30	13.2
2-5	111	48.6
>5	87	38.2
Number of Parity		
Nullipara	102	31.9
<2	29	9.0
2-5	121	37.8
>5	68	21.3
Breast feeding		
No breast feeding	123	38.4
Breast feeding less than 18 months	30	9.4
Breast feeding from 18 to 24 months	165	51.6
Breast feeding more than 24 months	2	0.6
First year of lactation (n=197)		
<20	95	48.2
20-30	92	46.7
>30	10	5.1

Table (2) demonstrates the frequencies and percentages of study participants according to obstetric history and revealed that the highest proportions were to the, first pregnancy age group ">30" 42.5%, 2-5 gravidities at 48.6%, 2-5 parities at 37.8%, and 38.4% of them had never been breastfed.

Table (3) Distribution of the most mutual risk factors of breast cancer among the studied participants by order (n=320)

#Risk factors items	No.	%
1. Being a woman.	320	100
2. Age over 50 years.	258	80.6
3. Family history of other type of cancer.	236	73.8
4. Smoking (even negative smoking at home.	212	66.3
5. Being overweight (25-29.9) BMI or having obesity(≥ 30) BMI after menopause	189	59.1
6. Sedentary life style	179	55.9
7. Personal history of certain non-cancerous breast diseases.	168	52.5
8. Previous usage of hormonal contraception and hormonal or radiation therapy.	166	51.9
9. Having dense breasts.	164	51.3
10. Late menopause after 50 years.	128	40.0
11. Early menarche before 12 years.	124	38.8
12. No history of breast feeding.	123	38.4
13. Family history of breast cancer.	100	31.2
14. Having the first pregnancy after 30 years	98	30.6
15. History of infertility.	92	28.8
16. Living near an industrial area.	60	18.8
17. Living near high tension wires.	60	18.8

 # More than answer

Table (3) summarizes the most mutual risk factors of breast cancer among the studied participants by order. It showed that all participant 100% were women and 80.6% of them their aged over 50 years old. Also most risk factors founded were family history of other type of cancer 73.8%, smoking 66.3%, overweight or having obesity after menopause 59.1%, while the lowest mutual risk factors were living near an industrial area and living near high tension wires at 18.8%.

Table (4): Frequencies and percentages of the reported early symptom of breast cancer that first recognized by the woman in order (n=320)

Symptoms	N	%
1. Breast lump **(n=215)**	**215**	**67.2%**
a. Lump in the right upper outer quadrant	59	27.4%
b. Lump in the left upper outer quadrant	43	20.0%
c. Lump in the right lower outer quadrant	25	11.6%
d. Lump in the left lower outer quadrant	20	9.3%
e. Lump in the right upper inner quadrant	19	8.8%
f. Lump in the left upper inner quadrant	16	7.5%
g. Lump in the right lower inner quadrant	18	8.4%
h. Lump in the left lower inner quadrant	15	7.0%
2. Lump under armpit.	**43**	**13.4%**
3. Breast swelling.	**10**	**3.1%**
4. Pain in breast region.	**7**	**2.2%**
5. Dimpling of breast skin.	**6**	**1.9%**
6. Asymmetry of the breasts.	**5**	**1.6%**
7. Nipple pussy discharge.	**5**	**1.6%**
8. Redness, warmth or darkening on breast.	**4**	**1.3%**
9. Changes in size of breast.	**3**	**0.9%**

Symptoms	N	%
10. Change in shape of a woman's breast.	3	0.9%
11. Change in the color of a woman's nipple.	3	0.9%
12. Thickening of breast lump.	3	0.9%
13. Inversion/pulling in of nipple.	3	0.9%
14. Change in shape of a woman's nipple.	2	0.6%
15. Lump in neck.	2	0.6%
16. Nipple bleeding discharge.	2	0.6%
17. Scaling/dry skin in nipple region.	2	0.6%
18. Sore/ulceration in breast that does not heal.	1	0.4%
19. Bruising of breast.	1	0.4%

Table (4) summarizes the reported early symptoms of breast cancer that first recognized by the woman in order and the highest proportions were to breast lump 67.2% with right upper outer quadrant reported site 27.4%, then lump under armpit 13.4%, breast swelling 3.1% while the lowest rates were shown in bruising of breast and sore/ulceration in breast that does not heal at 0.4%.

Table (5): Frequencies and percentages regarding the mutual symptoms of breast cancer among study participants in order (n=320)

# Mutual Symptoms of Breast Cancer	N	%
1. Breast lump	268	83.8%
2. Asymmetry of the breasts	222	69.4%
3. Pain in breast region	210	65.6%
4. Changes in size of breast	198	61.9%
5. Breast swelling	190	59.4%
6. Change in shape of a woman's breast	188	58.8%
7. Redness, warmth or darkening on breast	158	49.4%
8. Change in shape of a woman's nipple	146	45.6%
9. Change in the color of a woman's nipple	144	45.0%
10. Lump under armpit	134	41.9%
11. Nipple pussy discharge	112	35.0%
12. Thickening of breast lump	110	34.4%
13. Sore/ulceration in breast that does not heal	106	33.1%
14. Inversion/pulling in of nipple	104	32.5%
15. Lump in neck	84	26.3%
16. Nipple bleeding discharge	82	25.6%
17. Bruising of breast	60	18.8%
18. Scaling/dry skin in nipple region	60	18.8%
19. Dimpling of breast skin	52	16.3%

More than answer

Table (5) summarizes the mutual symptoms of breast cancer among study participants in order and the highest proportions were to breast lump 83.8% then asymmetry of the breasts 69.4% and pain in breast region 65.6%, while the lowest rates were shown in dimpling of breast skin at 16.3%, bruising of breast and scaling/dry skin in nipple region at 18.8%.

Table (6): Data related to patient reported responses to early symptoms of breast cancer

Items	N	%
1. When did you notice the first symptom?		
<1 year	36	11.3%
1-<3 years	96	30.0%
3-5 years	104	32.5%
>5 years	84	26.2%
2. When was the first time did you go for examination after recognizing the first symptom?		
≤ 3 months	54	16.9%
> 3 months	266	83.1%
3. Where did you go to seek examination for the first time (first reporting)?		
Physician in primary health care centers	174	54.4%
Physician in private clinic	130	40.6%
Nurses	10	3.1%
Pharmacists	4	1.3%
Others (friends or family)	2	0.6%
4. Did you delay in getting the diagnosis?		
Yes	260	81.2%
No	60	18.8%
5. When did you get the first definitive diagnostic test?		
< 12 months	162	50.6%
12-18 months	82	25.6%
> 18 months	76	23.8%
6. Did you delay in seeking treatment?		
Yes	244	76.3%
No	76	23.7%
7. When did you start the definitive therapy after diagnosis?		
< 12 months	226	70.6%
12-18 months	70	21.9%
> 18 months	24	7.5%

Table (6) illustrates patient reported responses to early symptoms of breast cancer. It shows that 32.5% of them noticed the first symptoms 3-5 years ago, 83.1% was late more than three months in first time examination which was mostly done by physician

(54.4% in private clinic and 40.6% in primary health care centers). In addition, delay in diagnosis and treatment was reported in 81.3% and 76.3%, respectively, however, the most reported time span between first symptom and definitive diagnosis was < 12 months at 50.6% and the time span between definitive diagnosis and treatment was < 12 months at 70.6%.

Table (7): Frequencies and percentages related to the causes of delaying diagnosis and treatment of breast cancer among the study participants in order (n=320)

# Causes of delaying diagnosis of breast cancer	N	%
1. Denial or anxiety	216	67.5%
2. Fear of excess treatment	188	58.8%
3. High cost of transportation to diagnosis and treatment	182	56.9%
4. I was not aware of the disease	172	53.8
5. Stigma of the disease	164	51.3%
6. High cost of medicine	120	37.5%
7. Shame associated with getting a breast exam	98	30.6%
8. Competing life priorities	78	24.4%
9. Obligations at home	70	21.9%
10. Use of traditional methods	52	16.3%
11. I had been to alternative treatments earlier	4	1.3%

 # More than answer

Table (7) presents the reported causes of delaying diagnosis and treatment of breast cancer among study participants and the most rated causes were denial or anxiety, fear of excess treatment and high cost of transportation to diagnosis and treatment at 67.5%, 58.8%, and 56.9% respectively. While the lowest rated causes were; being to alternative treatments earlier followed by usage of traditional methods and obligations at home at 1.3%, 16.7%, and 21.9% respectively.

Table (8): Correlation between personal data and the most reported symptom recognized by the woman (n=320)

Personal data	Breast lump				X^2	P-value
	Yes N=215		No N=105			
	N	%	N	%		
1. Age						
41-50 (N=62)	48	77.4	14	22.6	5.809	.121
51-60 (N=125)	76	60.8	49	39.2		
61-70 (N=97)	68	70.1	29	29.9		
> 70 (N=36)	23	63.9	13	36.1		
2. Education						
Illiterate (N= 154)	99	64.3	55	35.7	9.557	.023*
Basic education (N=88)	55	62.5	33	37.5		
Secondary education (N=46)	32	69.6	14	30.4		
University education or higher (N=32)	29	90.6	3	9.4		
3. Residence						
Urban (N= 140)	89	63.6	51	36.4	1.476	.224
Rural (N= 180)	126	70.0	54	30.0		
4. Marital status						
Single (N= 8)	6	75.0	2	25.0	6.212	.102
Married (N= 186)	123	66.1	63	33.9		
Widow (N= 106)	77	72.6	29	27.4		
Divorced (N= 20)	9	45.0	11	55.0		
Occupation						
Housewife (N= 278)	181	65.1	97	34.9	4.155	.042*
Worker (N= 42)	34	81.0	8	19.0		

Test used: Fisher test   * statistically significant p = ≤.05   NS no statistically significant

Table (8): illustrates correlation between personal data and the most reported symptom recognized by the woman (Breast lump). It shows that there were no statistically significant difference between the most reported symptom recognized by the woman and age, residence, and marital status (p-value = .121, .224 and .102) respectively but there were statistically significant difference with education and occupation (p-value = .023 and .042) respectively.

Discussion

Concerning the age group of the study participants, near two-fifths of the participants were between 51-60 years with Mean ± SD 59.36± 9.30, this may be a result of the BC is most common in this age. This came into contact with the study of **Putri et al. (2022)** they concluded that more than two-fifths of the participant's age group was between 51-60 years. Also it was agreed with the study of **Al-Saigh et al. (2020)** they reported that the highest incidence of BC near two-fifths was between the ages 51 ≥ 60 years.

In terms of educational level, the actual study also denoted that nearly fifty percent of the study participants were Illiterate. This could be the outcome of the large ratio of the study participants being from moderate economic status where

they didn't favor to complete their education, because of increasing education costs. This is agreed with **Tesfaw et al. (2020)** who stated that the highest proportion of BC women were Illiterate.

As for the participants' occupation, the current study noted that the highest number of them were housewives. This comes with the research of **Oluwasegun et al. (2023)** they reported that the highest number of the participants were housewives. This is because the highest proportion of them was illiterate with low educational level.

In terms of the women's marital status, more than fifty percent of the women were married as well as lived in rural residences. This is supported by **Tesfaw et al. (2020)** who reported that higher than two-thirds of BC women were

from a rural residence and agreed with **Sukartini and Permatasari, (2020)** stated that the highest number of the women were married. This is because the highest participant number from the rural area which encourage the marriages.

The actual study found that more than fifty percent of the participant's age of menarche was 12-14 years. The finding is backed by the study of **Alsolami et al. (2019)** who revealed the same results. This disagreed with the research **Zuraidah et al. (2023)** who concluded that women age of first menstruation <12 years.

Regarding age at marriage near half of the study participant their age at marriage were > 30 years old this was agreed with (**Maurya & Brahmachari, 2023)** who concluded that the association of breast cancer and higher age at marriage was stronger in postmenopausal women also mentioned the effect of age at marriage on breast cancer was measured in ten studies. Younger age at marriage was protective in all except one study.

Concerning age at menopause, two fifth of the study participants their age at menopause were more than years old. This agreed with (**Maurya & Brahmachari, 2023)** who reported in seven studies that women arrived to menopause at age fifty or above their risk of BC was higher than women achieving menopause at younger age.

The current study also denoted that the majority of the participants had menses from 31 to over 35 years, this in the same context with **Rozenberg, et al. (2021)** who discussed that the high number of participants had menses for over 32 years. This may be because the highest number of the women had menarche on the age of twelve to fourteen and their age of menopause between 40:50 years.

The actual study also denoted that near than fifty of women's their age at first pregnancy were >30. This is supported by **Amin et al. (2019)** they reported that the majority of the women's first pregnancies were >30. This could be connected to a lower socioeconomic level and higher marriage costs, which rise the average age of marriage.

In addition, this result illustrated that more than one quarter of the women were nulligravida. This finding was agreed with **Uomori et al. (2019)** who summarized that about one quarter of the participants were nulligravida. Also this agreed with **Chlebowski et al. (2020)** who showed that higher one quarter of participants were nulligravida. This could be due to increase the participant's age of marriage above 30 years which decrease the chance of being pregnant. Pregnancy reduces the risk of BC by causing long-lasting modifications to the mammary gland that reduce the breast's vulnerability to carcinogenic agents.

Regarding the number of gravidities, the majority of participant's were multigravida. This finding was agreed with **Sznajder et al. (2022)** who concluded that more than two-thirds of the participants were multigravida. This might be a result of Egyptian women's cultural and religious beliefs regarding frequent conception.

In terms of the number of parities, more than one-third of the participants in the current study were 2-5 in the parity number. This agreed with **Park et al. (2019)** who concluded that about one-third of women with BC had three or more parity. This could relate to the greater number of participants were multigravida.

The research noticed that more than fifty percent of the women introduce breastfeeding from 18 to 24 months. This is because of the women's religious belief in completing two years of lactation to improve their child's health

additionally the highest number of the participants from the rural area with low economic status. This finding is not supported by **Chimoriya et al. (2020)** they reported that nearly half of the patricipants feed their baby with breastfeeding for less than 12 months only.

The reported risk factors related to the older age, family history, dense breast, early menarche before twelve years, late menopause after fifty years, having the first pregnancy after 30 years, smoking, overweight or obesity, and sedentary life style. This may be related to the prolonged exposure of breast cells to estrogen hormone which promotes cell growth. Furthermore, there are more cells that can develop into abnormal cells in dense breast tissue. Additionally, because cancer appears white on mammograms, radiologists find it more difficult to detect it in dense breast tissue.

This in the same line with **Youn and Han, (2020)** who found that the BC among participants associated with these risk factors ''older age, history of family BC, late menopause, early menarche, exposure to tobacco smoke, high BMI, being obese or overweight, as well as high intake of fatty foods. Also agreed with **Alsolami et al. (2019)** who concluded that the effects of hormonal changes on a woman's body during her reproductive age can increase her risk of BC, being in the higher BMI category increased the incidence of BC.

This finding illustrated that the highest number of the participants their age over 50 years. This finding is backed by **Łukasiewicz et al. (2021)** who was discovered that over fifty percent of patients diagnosed with BC are older than 50. This is due to the fact that as people age, their bodies are more susceptible to genetic damage (mutations) and unable to repair it.

There were more than half of the participants were overweight (25 to 29.9) BMI or obese (equal thirty or more) BMI after menopause. This agreed with **Kim and Nam, (2019)** they reported that more than fifty percent of the sample there BMI were (25-29.9). This is because excess fat cells result in an increased amount of estrogen being produced by the body, which promotes the growth and development of hormone receptor-positive BC.

Also, more than half of the participants were had a sedentary lifestyle. This is supported by the finding of **Godinho-Mota, et al. (2019)** that sedentary behavior was more likely to raise the risk of developing BC regardless of menopausal condition. This is due to the possibility that an unfavorable lifestyle will change biological pathways, which will speed up the growth of tumors and raise the risk of BC.

The study concluded that near one third of study women had a family history of BC this finding is in consistent with **Isa et al. (2013)** they reported that higher than two-thirds of the participants had a family history of BC. This also came in consistent with **Łukasiewicz et al. (2021)** who concluded that a one factor that is strongly linked to an increased risk of BC is a family history of the disease. This is due to the fact that inherited abnormal genes that cause genetic mutations and the development of BC are linked to a family history of BC.

Also, near two fifth of the participants their menarche were occurs before 12 years. This agreed with **Goldberg, et al. (2020)** who clarified that more than two third of the women reported that their menarche occurs in an earlier age which is a risk factor for BC. This may be related to the prolonged exposure of breast cells to estrogen and progesterone hormones which promote cell growth. A slightly

increased risk of BC exists if menstruation started before the ages of eleven or twelve, or if menopause started after the age of fifty five. This is a result of the breast cells' prolonged exposure to progesterone and estrogen. The risk of BC increases with prolonged exposure to these hormones.

The results concluded that near third of the participants their first pregnancy occurs after 30 years old, this come in contact with **Manouchehri, et al. (2022)** who concluded that late age at the first pregnancy was significantly associated with BC among Iranian women.

Furthermore, the study revealed that over one-third of the women did not breastfeed. This agreed with **Jafari-Mehdiabad et al. (2016)** they showed that slightly higher than one-third of participants didn't feed their babies breast milk which consider a risk factor for developing BC.

Moreover, near one fifth of the participants lived near high-tension wires. This agrees with **Gupta, et al. (2022)** who stated that there was a meaningful correlation between "the risk of cancer in humans and the electromagnetic radiation generated from mobile phones, radio-based stations, phone towers, and high-voltage power lines."

Additionally, the greater percent of studied participants were had mutual risk factors for BC. This was in the same line with **Isa et al. (2013)** who found that the participants had multi risk factor of BC as being a woman, family history, older age and the increasing in the BMI.

In relation to the early symptoms as well as the mutual symptoms of BC, the highest number of the participants in the current study concluded that early symptom of breast cancer that were first and most recognized by the woman were breast lump. This agreed with the finding of **Aghajanzadeh et al. (2023)** concluded that approximately two thirds of women reported that early symptoms of the BC were breast lumps this could be due to the inflammatory process occur near the breast area which present in the mass. Also in the same line **Rahman et al. (2019)** reported that more than three-quarters of the women reported that breast lumps as the most common symptom.

Also, this study clarified that about one quarter of the participants felt a lump in the right upper outer quadrant of the breast. This in the same context with **Prusty, et al. (2021)** who reported that more than one quarter of women felt there breast lump in the right upper outer quadrant of breast. Also it agreed with **Dalvi and Solanki, (2021)** who found that the majority of the women were reported that the right upper outer quadrant was the common symptom of BC. This may be related to the tissue in this site is thicker than elsewhere.

Regarding the mutual symptoms of BC among study participants, the greater percent of studied participants had mutual symptoms of BC. This result was disagreed with the findings of **Curigliano, et al. (2020)** who reported that the highest percentage of the participants had few symptoms of BC. This could be due to delays in the diagnosis and seeking treatment leading to the presence of many symptoms, as well as the variances between the abilities, and tolerance levels of the participants interfering with the symptoms appeared.

The actual study also showed that the highest number of the study participants went for examination after three months from noticing the first symptom. This disagreed with **Shrestha-Bogati (2020)** who reported that about one third of respondents seek medical advice immediately. This may be related to the most women didn't perform breast self-examination also the disease starts painlessly, leading most

women to ignore its existence also a higher number of the participants with low economic status to perform checkup.

The actual study revealed that more than fifty of the participants go to seek examinations for the first time in primary health care centers. This disagreed with **Gebremariam, et al. (2019)** who reported that the greater number of patient's examined their symptoms in the private clinical area. The participants' easy access to primary care facilities and their inability to pay for private hospitals and medical care may be the root of this issue.

Also, more than one fifth of the participants got the first definitive diagnostic test after eighteen months. This is supported by **Gebremariam, et al. (2019)** who discovered that after their first medical presentation, slightly more than one-fifth of the patients waited longer than a year to receive diagnostic confirmation. This may be due to the majority of participants was housewives and lacked the funds for diagnostic testing, so this could be related to them.

The study noted that more than three quarters of the participants reported that they faced delays in seeking treatment. This finding disagreed with **Ho, et al. (2020)** who concluded that more than one quarters of women delayed to seek the treatment. This is due to a different of factors, involving a delayed diagnosis or delayed access to a definitive diagnostic test; low socioeconomic status; the need for financial support for treatment; and treatment-related anxiety.

Regarding starting the definitive therapy after diagnosis, there were more than two-thirds of the participants started before 12 months. This agreed with **Yap, (2022)** who reported that near three quarter of the participants start their therapy within less one year of diagnosis. This could be due to the participant's worries from this disease as well as about their health status and fear about their children.

The actual study noted that the highest of the participants faced delaying diagnosis of BC due to (denial or anxiety, fear of excess treatment, high cost of transportation to diagnosis and treatment, not being aware of the disease, and stigma of the disease). This might be the result of the participant rejecting the possibility of receiving a cancer diagnosis particularly BC. Additionally, their low socioeconomic status, lower level of education, and their fear of how this disease would affect their body shape and final outcome all contributed to an increased level of anxiety.

This finding is supported by **Shrestha-Bogati (2020)** who stated that the causes of women delay in seeking medical help because they were scared, worry about negative results, uncomfortable talking about the symptoms, and having difficulty getting physician´s appointment responded that they see a physician if any abnormality is present during breast self-examination. Also, supported by **Gakunga, et al. (2019)** who concluded the women enumerated that, inadequate awareness and screening services, cost of services, stigma, and communication between patients and their health providers were key barriers to seek the medical treatment.

Regarding correlation between personal data and the most reported symptom recognized by the woman (Breast lump). It shows that there were no statistically significant difference between the most reported symptom recognized by the woman and age, residence, and marital status (p-value = .121, .224 and .102) respectively but there were statistically significant difference with education and occupation (p-value = .023 and .042) respectively. This may be related to highly educated women may have a satisfactory knowledge about

symptoms of breast cancer also worker women may expose to different situation related to the disease from colleagues.

Making more educated decisions about lifestyle and medical care may be facilitated by the woman's recognition of risk factors and discussion of them with the healthcare provider. The BC is influenced by a number of risk factors. This implies that all women should be conscious of the changes they see in their breasts and should consult a healthcare professional about recommendations for routine mammograms and breast exams **(Osei-Afriyie, et al, 2021).**

Because early recognition of breast cancer symptoms, early detection and diagnosis increase all women's chances of surviving breast cancer, the woman should have a yearly mammogram beginning at age 40, or sooner if there is a family history of the disease also should be aware of dangerous signs of breast cancer, such as: a new lump in your breast or underarm, bloody nipple discharge and changes in the skin or appearance of your breast, such as redness, or inflammation. If any of these signs develop, the woman should seek medical attention promptly **(Milosevic, et al, 2018)**

Conclusion:

This study concluded that more than two third of the participants reported that the first recognized symptom was breast lump in the right upper outer quadrant then lump under armpit as well as breast swelling and the mutual risk factors were age, family history of cancers, smoking as well as overweight and obesity after menopause.

Recommendation

The present study's conclusions lead to the following recommendations:

- Provide instruction to women over 40 years through educational program on the importance of regular annual BC screening exams for early BC symptoms detection.
- Establish a suitable platform for health care professionals and educators to inform women about the risk factors of BC; how they can change the modified risk factors and choosing a healthy lifestyle
- Encourage the dissemination of information about BC prevention and early detection to as many women as possible through social media, the media, and non-governmental organizations (NGO).
- Regularly hold lectures, seminars, workshops, training courses, and awareness campaigns for high-risk women at educational institutions to help them recognize the early warning signs of BC.
- Provide brochures or booklet for females in the health care centers about breast self-examination and screening methods for early detection and treatment of BC.

Further researches

- Conduct large prospective studies to enhance the KAP of Egyptian women toward BC; its symptoms, diagnosis as well as early examination
- Conducting a study about the effects of early detection of BC on women's quality of life.

References

1. Aghajanzadeh, M., Torabi, H., Najafi, B., Talebi, P., & Shirini, K. (2023). Intermammary breast cancer: A rare case of cancer with origin of breast cells in an unusual location. SAGE Open Medical Case Reports, 11, 2050313X231154996.
2. Al-Saigh, T. H., Al-bayati, S. A., Abdul-mawjood, S. A., & Ahmed, F. A. (2020). Breast Cancer in Mosul: A Survival Analysis. Al-Mustansiriyah Journal for Pharmaceutical Sciences, 20(2).
3. Alsolami, F. J., Azzeh, F. S., Ghafouri, K. J., Ghaith, M. M., Almaimani, R. A., Almasmoum, H. A., ... & Tashtoush, S. H. (2019). Determinants of breast cancer in Saudi women from Makkah region: a case-control study (breast cancer risk factors among Saudi women). BMC public health, 19, 1-8.
4. Amin, M. M., Tabatabaeian, M., Chavoshani, A., Amjadi, E., Hashemi, M., Ebrahimpour, K., ... & Mansourian, M. (2019). Paraben content in adjacent normal-malignant breast tissues from women with breast cancer. Biomedical and Environmental Sciences, 32(12), 893-904.
5. Anderson, K. N., Schwab, R. B., & Martinez, M. E. (2014). Reproductive risk factors and breast cancer subtypes: a review of the literature. Breast cancer research and treatment, 144, 1-10.
6. Anothaisintawee, T., Wiratkapun, C., Lerdsitthichai, P., Kasamesup, V., Wongwaisayawan, S., Srinakarin, J., ... & Thakkinstian, A. (2013). Risk factors of breast cancer: a systematic review and meta-analysis. Asia Pacific Journal of Public Health, 25(5), 368-387.
7. Azim, H. A., & Ibrahim, A. S. (2014). Breast cancer in Egypt, China and Chinese: statistics and beyond. Journal of thoracic disease, 6(7), 864.
8. Azim, H. A., Elghazawy, H., Ghazy, R. M., Abdelaziz, A. H., Abdelsalam, M., Elzorkany, A., & Kassem, L. (2023). Clinicopathologic Features of Breast Cancer in Egypt—Contemporary Profile and Future Needs: A Systematic Review and Meta-Analysis. JCO Global Oncology, 9, e2200387.
9. Bailey, S., Ezratty, C., Mhango, G., & Lin, J. J. (2023). Clinical and sociodemographic risk factors associated with the development of second primary cancers among postmenopausal breast cancer survivors. Breast Cancer, 30(2), 215-225.
10. Breast Cancer Association Consortium. (2021). Breast cancer risk genes—association analysis in more than 113,000 women. New England Journal of Medicine, 384(5), 428-439.
11. Burstein, H. J., Curigliano, G., Thürlimann, B., Weber, W. P., Poortmans, P., Regan, M. M., ... & Xu, B. (2021). Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021. Annals of Oncology, 32(10), 1216-1235.
12. Chimoriya, R., Scott, J. A., John, J. R., Bhole, S., Hayen, A., Kolt, G. S., & Arora, A. (2020). Determinants of full breastfeeding at 6 months and any breastfeeding at 12 and 24 months among women in Sydney: findings from the HSHK birth cohort study. International journal of environmental research and public health, 17(15), 5384.
13. Chlebowski, R. T., Anderson, G. L., Aragaki, A. K., Manson, J. E., Stefanick, M. L., Pan, K., ... & Prentice, R. L. (2020). Association of menopausal hormone therapy with breast cancer incidence and mortality during long-term follow-up of the women's health initiative randomized clinical trials. Jama, 324(4), 369-380.
14. Chlebowski, R. T., Anderson, G. L., Aragaki, A. K., Manson, J. E., Stefanick, M. L., Pan, K., ... & Prentice, R. L. (2020). Association of menopausal hormone therapy with breast cancer incidence and mortality during long-

term follow-up of the women's health initiative randomized clinical trials. Jama, 324(4), 369-380.

15. Coles, C. E., Aristei, C., Bliss, J., Boersma, L., Brunt, A. M., Chatterjee, S., ... & Rivera, S. (2020). International guidelines on radiation therapy for breast cancer during the COVID-19 pandemic. Clinical Oncology, 32(5), 279-281.

16. Curigliano, G., Cardoso, M. J., Poortmans, P., Gentilini, O., Pravettoni, G., Mazzocco, K., ... & Cardoso, F. (2020). Recommendations for triage, prioritization and treatment of breast cancer patients during the COVID-19 pandemic. The Breast, 52, 8-16.

17. Curigliano, G., Cardoso, M. J., Poortmans, P., Gentilini, O., Pravettoni, G., Mazzocco, K., ... & Cardoso, F. (2020). Recommendations for triage, prioritization and treatment of breast cancer patients during the COVID-19 pandemic. The Breast, 52, 8-16.

18. Dalvi, S. B., & Solanki, R. J. (2021). A prospective observational study of the clinical presentation and treatment modalities in locally advanced breast carcinoma. International Journal of Surgery, 5(2), 331-334.

19. Dietz, J. R., Moran, M. S., Isakoff, S. J., Kurtzman, S. H., Willey, S. C., Burstein, H. J., ... & Yao, K. A. (2020). Recommendations for prioritization, treatment, and triage of breast cancer patients during the COVID-19 pandemic. the COVID-19 pandemic breast cancer consortium. Breast cancer research and treatment, 181, 487-497.

20. Gakunga, R., Kinyanjui, A., Ali, Z., Ochieng', E., Gikaara, N., Maluni, F., ... & Subramanian, S. (2019). Identifying barriers and facilitators to breast cancer early detection and subsequent treatment engagement in Kenya: a qualitative approach. The oncologist, 24(12), 1549-1556.

21. Gebremariam, A., Addissie, A., Worku, A., Assefa, M., Pace, L. E., Kantelhardt, E. J., & Jemal, A. (2019). Time intervals experienced between first symptom recognition and pathologic diagnosis of breast cancer in Addis Ababa, Ethiopia: a cross-sectional study. BMJ open, 9(11), e032228.

22. Globocan. (2020). https:// gco.iarc.fr/today/ data/factsheets/ populations/ 818- egypt-fact-sheets.pdf Google Schola

23. Godinho-Mota, J. C. M., Gonçalves, L. V., Mota, J. F., Soares, L. R., Schincaglia, R. M., Martins, K. A., & Freitas-Junior, R. (2019). Sedentary behavior and alcohol consumption increase breast cancer risk regardless of menopausal status: a case-control study. Nutrients, 11(8), 1871.

24. Goldberg, M., D'Aloisio, A. A., O'Brien, K. M., Zhao, S., & Sandler, D. P. (2020). Pubertal timing and breast cancer risk in the Sister Study cohort. Breast Cancer Research, 22, 1-11.

25. Grunfeld, E. A., Ramirez, A. J., Hunter, M. S., & Richards, M. A. (2002). Women's knowledge and beliefs regarding breast cancer. British journal of cancer, 86(9), 1373-1378.

26. Gupta, S., Sharma, R. S., & Singh, R. (2022). Non-ionizing radiation as possible carcinogen. International Journal of Environmental Health Research, 32(4), 916-940.

27. Ho, P. J., Cook, A. R., Binte Mohamed Ri, N. K., Liu, J., Li, J., & Hartman, M. (2020). Impact of delayed treatment in women diagnosed with breast cancer: a population‐based study. Cancer medicine, 9(7), 2435-2444.

28. Hu, C., Hart, S. N., Gnanaolivu, R., Huang, H., Lee, K. Y., Na, J., ... & Couch, F. J. (2021). A population-based study of genes previously implicated in breast cancer. New England Journal of Medicine, 384(5), 440-451.

29. Ibrahim, A. S., Khaled, H. M., Mikhail, N. N., Baraka, H., & Kamel, H. (2014). Cancer incidence in Egypt: results of the national population-based cancer registry program. Journal of cancer epidemiology, 2014.

30. International Cancer Control Partnership: WHO cancer country profiles (2020). March 9, 2020. https://www.iccp-portal.org/news/who-cancer-country-profiles-2020 Google Scholar

31. Isa, S. A., Lafta, R. K., & Saeed, E. Q. (2013). Risk factors of breast cancer among women (A Sample from Baghdad). Iraqi Journal of Community Medicine, 26(1).

32. Isaac, S., & Michael, W. B. (1995). Handbook in research and evaluation: A collection of principles, methods, and strategies useful in the planning, design, and evaluation of studies in education and the behavioral sciences. Edits publishers.

33. Jafari-Mehdiabad, F., Savabi-Esfahani, M., Mokaryan, F., & Kazemi, A. (2016). Relationship between breastfeeding factors and breast cancer in women referred to Seyed Al-Shohada Hospital in Isfahan, Iran. Iranian journal of nursing and midwifery research, 21(6), 622.

34. Jedy-Agba, E., McCormack, V., Olaomi, O., Badejo, W., Yilkudi, M., Yawe, T., ... & Adebamowo, C. (2017). Determinants of stage at diagnosis of breast cancer in Nigerian women: sociodemographic, breast cancer awareness, health care access and clinical factors. Cancer causes & control, 28(7), 685-697.

35. Kim, M. S., & Nam, Y. H. (2019). Obesity Factors (Physical Activity and Usual Dietary Pattern) and Breast Cancer in Korea. Polish Journal of Sport and Tourism, 26(3), 29-34.

36. Korde, L. A., Somerfield, M. R., Carey, L. A., Crews, J. R., Denduluri, N., Hwang, E. S., ... & Hershman, D. L. (2021). Neoadjuvant chemotherapy, endocrine therapy, and targeted therapy for breast cancer: ASCO guideline. Journal of Clinical Oncology, 39(13), 1485-1505.

37. Łukasiewicz, S., Czeczelewski, M., Forma, A., Baj, J., Sitarz, R., & Stanisławek, A. (2021). Breast cancer—epidemiology, risk factors, classification, prognostic markers, and current treatment strategies—an updated review. Cancers, 13(17), 4287.

38. Manouchehri, E., Taghipour, A., Ghavami, V., Shandiz, F. H., Ebadi, A., & Roudsari, R. L. (2022). Menstrual and reproductive factors and risk of breast cancer in iranian female population: A systematic review and meta-analysis. International Journal of Preventive Medicine, 13.

39. Maurya, A. P., & Brahmachari, S. (2023). Association of hormonal and reproductive risk factors with breast cancer in Indian women: A systematic review of case–control studies. Indian Journal of Cancer, 60(1), 4-11.

40. McKinney, S. M., Sieniek, M., Godbole, V., Godwin, J., Antropova, N., Ashrafian, H., ... & Shetty, S. (2020). International evaluation of an AI system for breast cancer screening. Nature, 577(7788), 89-94.

41. Milosevic, M., Jankovic, D., Milenkovic, A., & Stojanov, D. (2018). Early diagnosis and detection of breast cancer. Technology and Health Care, 26(4), 729-759.

42. Momenimovahed, Z., & Salehiniya, H. (2019). Epidemiological characteristics of and risk factors for breast cancer in the world. Breast Cancer: Targets and Therapy, 151-164.

43. Nabi, M. G., Ahangar, A., Akhtar, H., Akbar, A., & Mustafa, S. A. (2016). Awareness and knowledge of breast cancer risk factors, symptoms and screening among females in a hospital in North India. breast cancer, 3, 4.

44. Oluwasegun, A. A., Ayinde, O. L. U. B. U. N. M. I., Babafemi, M. O., Oluwaseyi, A. A., Omoruyi, A. O., & Olatunbosun, A. S. (2023). Perception of Women About Breast Cancer in Isiokpo Community Of Ikwerre Local Government Area, Rivers State. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 1(5), 11-28.

45. Osei-Afriyie, S., Addae, A. K., Oppong, S., Amu, H., Ampofo, E., & Osei, E. (2021). Breast cancer awareness, risk factors and screening practices among future health professionals in Ghana: A cross-sectional study. PloS one, 16(6), e0253373.

46. Park, S., Moon, B. I., Oh, S. J., Lee, H. B., Seong, M. K., Lee, S., ... & Bae, S. Y. (2019). Clinical subtypes and

prognosis in breast cancer according to parity: a nationwide study in Korean Breast Cancer Society. Breast Cancer Research and Treatment, 173, 679-691.

47. Pastore, R., & Snippe, A. (2020). P0019: The evolution of the role of the breast clinical nurse specialist. European Journal of Surgical Oncology, 46(6), e15.

48. Prusty, R. K., Begum, S., Patil, A., Naik, D. D., Pimple, S., & Mishra, G. (2021). Increasing breast cancer awareness and breast examination practices among women through health education and capacity building of primary healthcare providers: a pre-post intervention study in low socioeconomic area of Mumbai, India. BMJ open, 11(4), e045424.

49. Putri, A. M., Tejo, J., Probowati, W., & Siagian, J. W. (2022). The Association between The Patient's Age Groups with Stage, Grading, and Molecular Subtype of Breast Cancer. Journal of Medicine and Health, 4(2), 123-130.

50. Rahman, S. A., Al–Marzouki, A., Otim, M., Khayat, N. E. H. K., Yousef, R., & Rahman, P. (2019). Awareness about breast cancer and breast self-examination among female students at the University of Sharjah: a cross-sectional study. Asian Pacific journal of cancer prevention: APJCP, 20(6), 1901.

51. Rozenberg, S., Di Pietrantonio, V., Vandromme, J., & Gilles, C. (2021). Menopausal hormone therapy and breast cancer risk. Best Practice & Research Clinical Endocrinology & Metabolism, 35(6), 101577.

52. Schünemann, H. J., Lerda, D., Quinn, C., Follmann, M., Alonso-Coello, P., Rossi, P. G., ... & European Commission Initiative on Breast Cancer (ECIBC) Contributor Group*. (2020). Breast cancer screening and diagnosis: a synopsis of the European Breast Guidelines. Annals of internal medicine, 172(1), 46-56.

53. Seely, J. M., & Alhassan, T. (2018). Screening for breast cancer in 2018—what should we be doing today?. Current Oncology, 25(s1), 115-124.

54. Shrestha-Bogati, S. (2020). KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING BREAST CANCER AMONG COLLEGE STUDENTS IN NEPAL.

55. Sukartini, T., & Permatasari, Y. I. (2020). Women with breast cancer living with one breast after a mastectomy. Central European Journal of Nursing and Midwifery, 12(2), 366-375.

56. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians, 71(3), 209-249.

57. Sznajder, K. K., Kjerulff, K. H., Wang, M., Hwang, W., Ramirez, S. I., & Gandhi, C. K. (2022). Covid-19 vaccine acceptance and associated factors among pregnant women in Pennsylvania 2020. Preventive medicine reports, 26, 101713.

58. Tesfaw, A., Demis, S., Munye, T., & Ashuro, Z. (2020). Patient delay and contributing factors among breast cancer patients at two cancer referral centres in Ethiopia: a cross-sectional study. Journal of Multidisciplinary Healthcare, 1391-1401.

59. Uomori, T., Horimoto, Y., Arakawa, A., Iijima, K., & Saito, M. (2019). Breast Cancer in Lean Postmenopausal Women Might Have Specific Pathological Features. in vivo, 33(2), 483-487.

60. Yap, J. Z. (2022). Physical Function and Depression in Breast, Colorectal, and Prostate Cancer Survivors Following a 16-Week Circuit-Based Aerobic and Resistance Exercise Intervention.

61. Youn, H. J., & Han, W. (2020). A review of the epidemiology of breast cancer in Asia: Focus on risk factors. Asian Pacific journal of cancer prevention: APJCP, 21(4), 867.

62. Zuraidah, E., Agatha, N. F. P., Edwar, S. Q., & Handayani, S. I. (2023). Correlation between Age at First Menarche and Breast Cancer in Dr. Cipto Mangunkusumo National General Hospital Jakarta in 2010-2014. Asian Pacific Journal of Cancer Care, 8(3), 459-464.