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Women's Awareness and Knowledge of Breast Self-Examination: A Study at the Obstetrics and Gynecology Teaching Hospital in Karbala City

Ismael Mohammed Alsaadi[1], Nada Khazal K. Hindi[2,*], Huda Mohammed Reda[3], Sarmad Salih Jawad[4], Noor Fadhil Al Maamouri[5], Rehab Flieh Hassan[6]

[1,5,6] *College of Nursing, Al-Mustaqbal University, Hillah 51001, Iraq*
[2]*Department of Basic and Medical Sciences, College of Nursing, University of Babylon; and College of Pharmacy, Al-Mustaqbal University, Hillah 51001, Iraq.*
[3] *College of Pharmacy, Al-Mustaqbal University, Hillah 51001, Iraq.*
[4]*College of Sciences, Al-Mustaqbal University, Hillah 51001, Babylon, Iraq.*

Corresponding Author Email:
nadakhazal@yahoo.com

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ABSTRACT

Breast cancer is the most frequent malignancy of women worldwide. The objective of this study is to explore the socio-demographic profiles of women attending the hospital and evaluate their understanding and awareness of breast self-examination practices. Methodology: A descriptive study design was employed at the Obstetrics and Gynecology Teaching Hospital in Karbala City. The study aimed to assess Women's Awareness and Knowledge toward breast self-examination from 1st February 2024 to 1st February 2025. The study included a convenient sample of 100 women from the Obstetrics and Gynecology Teaching Hospital in Karbala City, specifically from the outpatient department. Result: The age distribution showed that most participants were between 20 and 26 years old, while fewer were in the older age categories. However, no significant association was found between age and breast cancer knowledge (p = 0.120). Regarding the age of first menarche, the majority of women experienced it at age 12 and again, no significant relationship was found with knowledge (p = 0.085). A highly significant correlation was observed between education level and knowledge (p = 0.001), with women holding higher education (39.0% with college and higher education) demonstrating better knowledge about breast cancer. Marital status also showed a significant association (p = 0.005), with single women making up the largest group (51.5%). Regarding occupation, a highly significant relationship was found (p = 0.001), with the majority of participants being housewives (40.0%), followed by government employees, private sector employees, and unskilled workers. Economic status also played a role, with 53.5% of women stating their economic situation was sufficient to some extent, and this factor had a significant impact on their knowledge (p = 0.05). Conclusion: Overall, education, marital status, occupation, economic status, menstrual history, and family history of breast cancer were key factors influencing women's knowledge in this study.

Keywords: Women's Awareness, Breast cancer, Self Examination.

1. Introduction

Breast cancer is the most frequent malignancy of women worldwide. It is the leading cause of female cancer related disability and mortality Globally; breast cancer is the most frequent cancer among women comprising about 23 % of all female cancers [1]. Breast cancer is the most common cause of death among

women worldwide. cancer is one of the significant public health problems in the world. Also, breast cancer is a malignant cell, which may start in the breast tissue. Breast self-examination (BSE) is a simple, non-invasive, and low-cost, to detect any changes in breast tissue at an early time [2].

. Breast self-exam (BSE) is considered an important public health procedure; primary prevention should be given the highest priority in the fight against cancer. Breast self-examination (BSE) is a screening method which involves the woman herself looking at and feeling each breast for possible lumps, distortions or swelling to detect early breast cancer. Breast self-examination is a simple, inexpensive, non-invasive procedure which helps a woman to know her breast and allows her to detect changes in the breast; such as breast masses or lumps [3].

Breast self-examination (BSE) is a screening method which involves the woman herself looking at and feeling each breast for possible lumps, distortions or swelling to detect early breast cancer . Breast self-examination is a simple, inexpensive, non-invasive procedure which helps a woman to know her breast and allows her to detect changes in the breast; such as breast masses or lumps [4]. Breast cancer in all parts of the world begins to be seen at about 20 years of age. Breast cancer consists of 3 major tumor subtypes categorized according to estrogen or progesterone receptor expression and *ERBB2* gene amplification [5]. Each of these subtypes has different risk factors for incidence, therapeutic response, disease progression, and preferential organ sites of metastases [6]. Furthermore, subgroup analysis by the type of screening behavior indicates that the probabilities of conducting breast self-examination and mammography in the intervention group are 1.9 and 1.4 times of those in the control group [7].

Afterward, age specific incidence steadily rises until the menopause when geographic differences begin to be seen. In the developing world, a flattening and then a decline occurs about 10–15 years after the menopause. In developed countries, the age specific incidence accelerates after the menopause, and at age 70 and above doubles that seen at 45–49 years old [1]. Breast cancer is the second most common cancer in the world and the most frequent cancer among women, with an estimated 1.67 million new breast cancer cases diagnosed [8]. The life style changes contributing to increase post- menopausal. Breast cancer is largely pre-menopausal and includes obesity, low rates of childbirth, infrequent or no lactation, early menarche, and late menopause.

These factors, that are common in high-risk countries, promote a state of relative hypoestrogenism and the development of estrogen responsive tumors. The life-style factors are becoming more common in countries considered low-risk particularly in their growing urbanized communities [9]. A tiny tumor at an early stage of BC's progression is connected with a better prognosis and treatment response. One of the most important steps in creating prevention strategies for BC is identifying its risk factors. Older age, a high body mass index or obesity, tobacco use, physical inactivity, a high-fat diet, early menarche, a late age at the first full-term pregnancy, shorter breastfeeding intervals, hormonal menopausal therapy or oral contraceptives use, breast density, and a family history of BC are the main risk factors for BC [10]. Globally, breast cancer represents about 12% of all new cancer cases, and 25% of all cancer cases in women [11].

Despite the high incidence rate, around 89% of women in Western countries diagnosed with breast cancer are still alive 5 years after diagnosis, with this high survival rate attributed to early detection and treatment [12]. Cancer that is diagnosed at an early stage when it is not too large and has not yet spread is more likely to be treated successfully [13]. It is estimated that one-third of all cancers can be prevented, and a further third of all cancers may be cured if diagnosed at an early stage [14]. Breast self-examination (BSE), clinical breast examination, and mammography are commonly recommended screening method [8]. BSE is a screening technique for early breast cancer detection that can be performed by women at home. This is a simple, inexpensive, easy, and effective technique that allows women to examine their breast tissue for any physical or visual changes. BSE increases women's chances for treatment, thereby

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increasing the survival rate in women [15]. BSE can help screen for tumors, cysts, and other abnormalities in the breasts. The American Cancer Society recommends BSE for early detection of breast cancer as it assists women to become familiar with the appearance and sense of their breasts, and helps them to detect any changes in their breasts as soon as possible[16]. In resource constrained settings such as Nigeria, BSE has been reported to be culturally and religiously acceptable, friendly, and incurring no cost [17]. If detected early, breast cancer can be treated in the early stages of the disease, meaning BSE is something all women should prioritize.

Despite advances in treatment, detecting breast cancer as early as possible is important to maximize the potential for good health outcomes. Early identification of breast cancer may result in earlier treatment and a lower mortality rate [18]. Organizations concerned with breast health education suggest that all women should start performing BSE regularly as soon as their breasts are fully developed. For example, the Maurer Foundation suggests BSE should be performed at least once a month from age 18 years [19]. Apart from BCS research, the effectiveness of health behavior theories has been proven to improve screening behaviors in other kinds of cancer.

The Integrated Behavioral Model used by Serra et al . Such regular examination means women become familiar with their own breasts and are therefore more likely to detect any changes. Awareness about breast cancer is an important factor that has a major impact on the incidence and outcomes of the disease[8]. in Mexico, BC is among the three most prevalent types of cancer. It mainly affects women, and men suffer to a lesser extent [20].

For example, if the women have sufficient knowledge about breast cancer, they can help prevent cancer in themselves and contribute to reducing the incidence of breast cancer in their community. To date, knowledge about Women's Awareness and Knowledge of Breast Self-Examination, A Study at the Obstetrics and Gynecology Teaching Hospital in Karbala City.

Objectives of the Study: Explore the socio-demographic profiles of women attending the hospital, Evaluate women's understanding and awareness of breast self-examination practices, Examine how women's knowledge and attitudes toward breast self-examination are influenced by their socio-demographic factors.

2. Methodology

2.1. Design of the Study

A descriptive study design was accomplished at the Obstetrics and Gynecology Teaching Hospital in Karbala City. The study aimed to assess Women's Awareness and Knowledge toward the breast self-examination.

2.2. Duration of study

From 1stFebruary 2024 to 1stFebruary 2025

2.3. Setting of the Study

The study was carried out at the Maternity Outpatient Department of the prestigious Obstetrics and Gynecology Teaching Hospital in Karbala City.

2.4. The sample of the study

The study included a convenient sample of 100 women from the Obstetrics and Gynecology Teaching Hospital in Karbala City, specifically from the outpatient department. The target population consisted of women over the age of 20 who attended the outpatient clinic. The inclusion criteria for the study were broad, allowing any woman who met the research criteria to participate, regardless of age, marital status,

educational level, or work status. This approach was chosen to reflect the general characteristics of the female outpatient population, minimize sampling error, and improve the representativeness of the sample. The non-probability sampling method ensured that the 100 women selected represented a diverse group from the hospital's outpatient population.

2.5. The study instrument

Throughout an extensive review of relevant review, the instrument of the study was developed and reconstructed by the researcher for achieving the study objectives. The instrument comprises of two parts:

Part I: socio demographic Data

Demographical characteristics of the sample includes: age, Age of first menarche, level of education, occupation, marital status, economics status, Menstrual history, Family history of breast cancer.

Part II: Knowledge of the women regarding breast self-examination: includes the following:

Knowledge of the women regarding breast self-examination consist of (3 items). Knowledge of women regarding breast cancer (Screening) consist of (4 items). Knowledge of women regarding breast cancer (breast cancer) consist of (6 items).

Knowledge of women regarding breast cancer (Warning signs) consist of (5 items). Knowledge of women regarding breast cancer (Risk factor) consist of (12 items).

2.6. Rating and Scoring

The scale adopted in the third part includes three points Likert scale (I know =3 scores, not sure= 2 scores and I Don't know=1 score) the women answer all the questions and can select one choice for each one.

2.7. Methods of Data Collection

The period of data collection was from 20th April to 30th June 2024. A structured face –to face interview was conducted with women who were visited hospitals outpatient's clinic in Karbala City to complete the questionnaire after an agreement was organized from hospitals, and an informed consent of participation was obtained from the women to the interview. The researcher gathered this information in the clinics of the outpatient's clinic, mostly in the morning the time the subjects were attended. The average time required for each respondent has taken about [20-25] minutes for full questionnaire.

2.8. Validity of the Questionnaire

The questionnaire was translated using both forward and back translation methods by two independent bilingual content experts. After the back translation process, the Arabic version that was closest to the original English version was selected for use in this study. To ensure the validity of the questionnaire, a panel of seven experts was consulted to assess its clarity, relevance, and adequacy.

The experts' responses were analyzed based on their agreement or disagreement regarding the relevance of the items. Modifications suggested by the experts were taken into consideration, and the final version of the instrument was adjusted accordingly. The findings showed that the questionnaire was clear, adequate, relevant, and valid for the study.

2.8.1. Pilot Study

Prior to data collection, a pilot study was conducted from April 1st to April 30th, 2024. The results of the pilot study showed that the time required for each interview ranged between 20 and 25 minutes. A sample of 10 women was selected from the studied centers for the pilot study, and these participants were

excluded from the main sample.

Purpose of the Pilot Study to:

1. Ascertain the instrument's clarity and adequacy.
2. Estimate the time required for data collection.
3. Find out the barriers which may be practiced during the study.
4. Determine the instrument's validity and reliability.

The Pilot Study Results:

a) The instrument items were understood and clear.

b) For answering the instrument items, the time required to complete the questionnaire ranged from 20-25 minutes.

c) The questionnaire is reliable

2.8.2. Reliability of the Questionnaire

The reliability of the study was assessed to determine the accuracy of the questionnaire. This was done by calculating the reliability coefficient using Cronbach's Alpha, which yielded a value of 0.85, considered statistically acceptable. The findings confirmed a high level of internal consistency across the study domains and the individual elements of the questionnaire. All calculations were performed using the Statistical Package for the Social Sciences (SPSS) version 20.

2.9. Data Collection:

After the researcher obtained all the required approvals, the process of data collection began in 20th April to 30th June 2024. The purpose of the study was explained to all participants and were asked for voluntary participation. Participants were asked to read the questionnaire and ask the researcher if they had questions. The time was required to fill the survey approximately 20-25 minutes.

2.10. Statistical Data Analysis:

Data entry and statistical analysis were performed using SPSS® version 23.0. Descriptive statistics, such as percentages, frequencies, means, and standard deviations, were used to measure the demographic variables and the responses to knowledge statements. Analytical statistics were applied to investigate the association of knowledge with demographic variables. Statistical significance was set at $p<0.05$ for all analyses. The data are analyzed in the current study throughout the utilization of statistical Package for the Social Sciences (SPSS) version (23.0). The following analysis of data methods are utilized to analyze the findings of the study:

3. Result

Table 1. Distribution of Study Sample According to Socio-demographic Characteristics Variables(n=200)

N=200	No.	%
Age		
20-26	86	43.0%

27-33	49	24.5%
34-40	41	20.5%
41-47	16	8.0%
48-54	6	3.0%
55 and above	2	1.0%
Age of First Menarche (years)		
11	5	2.5%
12	108	54.0%
13	56	28.0%
14	30	15.0%
15	1	0.5%
Education Level		
Illiterate	8	4.0%
Read and write	41	20.5%
Primary	29	14.5%
Intermediate	12	6.0%
Secondary	32	16.0%
College and higher	78	39.0%
Marital Status		
Single	103	51.5%
Married	85	42.5%
Widowed	2	1.0%
Divorced	10	5.0%
Occupation		
House wife	80	40.0%

Government Employee	22	11.0%
Private Sector Employee	35	17.5%
Unskilled Worker	58	29.0%
Private work	2	1.0%
Economic Status		
Completely Sufficient	74	37.0%
Sufficient to Some Extent	107	53.5%
Insufficient	19	9.5%
Menstrual History		
Regular	134	67.0%
Irregular	40	20.0%
Menopause	26	13.0%
Family History of Breast Cancer		
Yes	43	21.5%
No	157	78.5%

Table 1 Showes that majority of participants were relatively young, with 43% aged 20-26 years, followed by 24.5% aged 27-33 years. The group also included women across a broad age range, with a notable portion aged 34-40 (20.5%) and a smaller percentage over 41 years, reflecting a diverse age distribution. Most women (54%) experienced menarche at age 12, with 28% having their first period at age 13, emphasizing the importance of early education on breast health.

In terms of education, 39% of women had completed college or higher, while 4% were illiterate, suggesting that health information should be tailored to various education levels. Regarding marital status, the sample included 51.5% single women, 42.5% married women, and others who were widowed or divorced. This distribution may affect how women seek health information or attend awareness programs. Occupationally, the women were diverse: 40% were unemployed, 29% were housewives, and 17.5% were students, with the rest in various other roles.

Economic satisfaction was mixed, with 53.5% of women somewhat satisfied with their economic situation, while 9.5% were not satisfied, which could influence their access to healthcare resources. A majority of the women (67%) reported regular menstrual cycles, with 20% having irregular cycles and 13% in menopause. The sources of information about breast self-examination were diverse, with 29.5% of women learning from the internet, 28% from friends and relatives, and 19.5% from television. This indicates that health education should utilize both modern and traditional channels to reach women

effectively. Additionally, 21.5% of women had a family history of breast cancer, highlighting the need for targeted education for those at higher risk.

Table 2. Distribution of studied sample according to their knowledge regarding breast self-examination (n=200)

No	Items	I know No. (%)	Not sure No. (%)	I Don't Know No. (%)	M.S	Ass
1	Age of breast self-examination started at puberty	68(34%)	14(7%)	118(59%)	1.95	fair
2	Breast self-examination is performed monthly	56(28%)	21(10.5%)	123(61.5%)	1.43	poor
3	Breast self-examination can be performed after five days of menstrual period	44(22%)	14(7%)	142(71%)	2.22	fair

F= frequency, %=percentage, M.S.= mean of score, Ass= Assessment, "cut of point (0.66), poor (mean of score 1-1.66), fair (1.67-2.33), Good (mean of score 2.34 and more)."

The Table 2. presents women's knowledge regarding breast self-examination, breaking responses into "I know," "Not sure," and "I don't know," along with mean scores (M.S) and overall assessments. For the item "Age to start breast self-examination at puberty," 34% of women knew that breast self-examination should begin at puberty, while 59% were unaware.

The mean score of 1.95 is classified as fair, indicating some awareness, but a large portion lacks knowledge. Regarding "Breast self-examination performed monthly," only 28% of women knew that it should be done monthly, with 61.5% unaware.

The mean score of 1.43 falls under poor, reflecting a significant gap in understanding the frequency of self-examination. For "Breast self-examination after five days of menstrual period," 22% of women knew it should be done after five days of the menstrual period, while 71% did not. The mean score of 2.22 is categorized as fair, indicating that some women are informed, but most are not.

Overall, while some knowledge exists about the timing and frequency of breast self-examination, there are considerable gaps, suggesting the need for improved education on these practices.

Table 3. Distribution of studied sample according to their knowledge regarding Breast Cancer Screening (n=200)

No	Items	I know No. (%)	Not sure No. (%)	I Don't Know No. (%)	M.S	Ass
1	Do you know about mammogram	31(15.5%)	23(11.5%)	146(73%)	1.55	poor
2	Do you know how to perform breast self-examination	44(22%)	26(13%)	130(65%)	1.62	poor
3	Do you know about clinical examination of breast	45(22.5%)	21(10.5%)	134(67%)	1.77	fair
4	Is it possible for screening measures to enhance the chance of recovery	67(33.5%)	11(5.5%)	122(61.5%)	1.33	poor

F= frequency, %=percentage, M.S.= mean of score, Ass= Assessment, "cut of point (0.66), poor (mean of score 1-1.66), fair (1.67-2.33), Good (mean of score 2.34 and more)."

Table 3. presents the distribution of women's knowledge regarding various breast cancer screening methods, showing the responses in three categories: "I know," "Not sure," and "I don't know," along with the mean scores (M.S) and overall assessment for each item. Only **15.5%** of women were aware of mammograms, with **73%** not knowing about this important screening method, resulting in a mean score of **1.55**, categorized as **poor**. Similarly, **22%** of women knew how to perform breast self-examination, while **65%** were unaware, leading to a mean score of **1.62**, also considered **poor**. Awareness of clinical breast examinations was slightly higher, with **22.5%** of women knowing about them, but **67%** were uninformed, yielding a mean score of **1.77**, which falls under the **fair** category. Lastly, **33.5%** of women understood that screening could enhance the chances of recovery from breast cancer, but **61.5%** did not, resulting in a mean score of **1.33**, categorized as **poor**. Overall, the results indicate that women's knowledge of breast cancer screening methods is generally insufficient, highlighting the need for better education and awareness regarding these essential practices.

Table 4. Distribution of studied sample according to their knowledge regarding general information about breast cancer (n=200)

No	Items	I know No. (%)	Not sure No. (%)	I Don't Know No. (%)	M.S	Ass.
1	Breast cancer is curable in early stages	145(72.5%)	14(7%)	41(20.5%)	1.33	Poor
2	Breast cancer is highly mortal without treatment	134(67%)	9(4.5%)	57(28.5%)	2.55	Fair
3	Painless in early stages	114(57%)	12(6%)	74(37%)	1.33	Fair
4	Breast cancer is more common in women over 50	51(25.5%)	59(29.5%)	90(45%)	1.82	Good
5	Occurs in one breast only	53(26.5%)	57(28.5%)	90(45%)	1.33	poor
6	Breast cancer is more common in obese women	51(25.5%)	53(26.5%)	96(48%)	2.47	Good

F= frequency, %=percentage, M.S.= mean of score, Ass= Assessment, "cut of point (0.66), poor (mean of score 1-1.66), fair (1.67-2.33), Good (mean of score 2.34 and more)."

Table 4. presents the distribution of women's knowledge regarding breast cancer, showing the responses in three categories: "I know," "Not sure," and "I don't know," along with the mean scores (M.S) and the overall assessment for each item. For the statement **"Breast cancer is curable in early stages," 72.5%** of women were aware, but **20.5%** were unsure, and **7%** didn't know, with a mean score of **1.33**, which indicates **poor** knowledge on the topic. Regarding **"Breast cancer is highly mortal without treatment," 67%** knew about the high mortality rate, but **28.5%** were unsure or uninformed. The mean score of **2.55** suggests a **fair** level of awareness, though there's still a significant gap. In terms of the statement **"Painless in early stages," 57%** of women knew that breast cancer could be painless initially, but **37%** were uncertain or unaware, resulting in a mean score of **1.33**, indicating **fair** knowledge. For **"Breast cancer is more common in women over 50,"** only **25.5%** of women were aware, with **45%** not knowing or being unsure. The mean score of **1.82** shows **good** understanding, but many women still lack awareness about this risk factor. Regarding **"Occurs in one breast only," 26.5%** of women believed this to

be true, with **45%** uncertain or uninformed, leading to a mean score of **1.33**, classified as **poor** knowledge. Finally, for **"Breast cancer is more common in obese women," 25.5%** of women knew about the connection, but **48%** did not. The mean score of **2.47** indicates **good** awareness, though knowledge in this area remains limited. Overall, while some knowledge areas, such as the importance of treatment and the risk of obesity, showed moderate understanding, many women were unaware or uncertain about key aspects of breast cancer, especially early symptoms, risk based on age, and the occurrence of cancer in one or both breasts. These findings highlight the need for further education to close these knowledge gaps.

Table 5. Relationship between women's knowledge and their demographic characteristics (n=200)

n=200	No.	%	χ^2	df	P-value
Age			17.544	11	0.120 NS
20-26	86	43.0%			
27-33	49	24.5%			
34-40	41	20.5%			
41-47	16	8.0%			
48-54	6	3.0%			
55 and above	2	1.0%			
Age of First Menarche (years)			16.333	9	0.085 NS
11	5	2.5%			
12	108	54.0%			
13	56	28.0%			
14	30	15.0%			
15	1	0.5%			
Education Level			40.155	7	0.001 HS
Illiterate	8	4.0%			
Read and write	41	20.5%			
Primary	29	14.5%			
Intermediate	12	6.0%			

Secondary	32	16.0%			
College and higher	78	39.0%			
Marital Status			18.435	6	0.005 S
Single	103	51.5%			
Married	85	42.5%			
Widowed	2	1.0%			
Divorced	10	5.0%			
Women occupation			19.045	8	0.001 HS
House wife	80	40.0%			
Government Employee	22	11.0%			
Private Sector Employee	35	17.5%			
Unskilled Worker	58	29.0%			
Private work	2	1.0%			
Economic Status			19.455	5	0.05 S
Completely Sufficient	74	37.0%			
Sufficient to Some Extent	107	53.5%			
Insufficient	19	9.5%			
Women menstrual history				3	0.001 S
Regular	134	67.0%	14.767		
Irregular	40	20.0%			
Menopause	26	13.0%			
Family History of Breast Cancer					

Yes	43	21.5%	9.749	1	0.001 HS
No	157	78.5%			

χ2= Chi-square, df= Degree of freedom, P-value= Probability Value, Sig= Significant, S= Significant, NS= Non- Significant, HS= high significant

The results of this study demonstrate the relationship between women's demographic characteristics and their knowledge about breast cancer, based on a sample of 200 women. The age distribution showed that most participants were between 20 and 26 years old (43.0%), while fewer were in the older age categories. However, no significant association was found between age and breast cancer knowledge ($p = 0.120$). Regarding the age of first menarche, the majority of women experienced it at age 12 (54.0%), and again, no significant relationship was found with knowledge ($p = 0.085$).

A highly significant correlation was observed between education level and knowledge ($p = 0.001$), with women holding higher education (39.0% with college and higher education) demonstrating better knowledge about breast cancer. Marital status also showed a significant association ($p = 0.005$), with single women making up the largest group (51.5%). Regarding occupation, a highly significant relationship was found ($p = 0.001$), with the majority of participants being housewives (40.0%), followed by government employees, private sector employees, and unskilled workers. Economic status also played a role, with 53.5% of women stating their economic situation was sufficient to some extent, and this factor had a significant impact on their knowledge ($p = 0.05$). Menstrual history showed that most women had regular cycles (67.0%), with a significant association found between menstrual history and knowledge ($p = 0.001$). Finally, a highly significant relationship ($p = 0.001$) was found between knowledge and a family history of breast cancer, with 21.5% of women reporting a family history. Overall, education, marital status, occupation, economic status, menstrual history, and family history of breast cancer were key factors influencing women's knowledge in this study.

4. Discussion

This study aimed to explore the socio-demographic profiles of women attending a hospital and assess how these factors influence their knowledge toward breast self-examination (BSE) and breast cancer. The findings provide valuable insights into the relationship between various socio-demographic characteristics and women's understanding of breast cancer screening, self-examination, and general breast cancer knowledge.

4.1 Socio-Demographic Profile

The study revealed a relatively young sample, with the majority of women aged between 20-26 years (43%) and a smaller portion over 40 years old. This age distribution underscores the importance of targeting younger women for breast health education, as early awareness can potentially lead to earlier detection of breast cancer. However, the relatively small number of older women in this study may limit the generalizability of some findings to older populations, who may have different breast health concerns. In terms of education, the majority of women (39%) had attained a college or higher level of education, correlating with improved knowledge about breast cancer and its screening methods.

Interestingly, 4% of women were illiterate, suggesting a clear need for tailored health education programs that cater to those with limited formal education, ensuring that the information is accessible to all. Regarding marital status, the majority of the sample was single (51.5%), with 42.5% of women being married. Single women may have different health-seeking behaviors compared to married women, as they may not have as much access to information or support networks provided by a partner or family. Additionally, married or widowed women may prioritize health education more for themselves and their

families. The employment distribution revealed diversity in occupations, with 40% being housewives, 29% unskilled workers, and others employed in government or private sectors. These occupational categories likely affect access to healthcare resources, as employed women may have more opportunities for formal healthcare services or health education. In contrast, housewives and unskilled workers may face more barriers in accessing these resources. Economic status varied, with more than half of the participants (53.5%) reporting that their economic situation was "sufficient to some extent." While many women have access to basic resources, financial constraints may limit access to advanced healthcare services, including breast cancer screenings.

4.2 Knowledge and Awareness of Breast Self-Examination

The results regarding women's knowledge of breast self-examination (BSE) were concerning, with many participants unaware of basic aspects such as the appropriate age to start BSE and the frequency of its performance. For example, only 34% knew that BSE should begin at puberty, and only 28% were aware that it should be performed monthly. These findings highlight a significant gap in knowledge and emphasize the need for more comprehensive educational programs on the correct timing and frequency of BSE. Furthermore, many women were unaware that BSE should be performed five days after the menstrual period (71% lacked knowledge). This indicates a need for targeted education to improve women's understanding of the correct timing for BSE, as incorrect practices could reduce the effectiveness of early detection.

4.3 Breast Cancer Screening Knowledge

Knowledge regarding breast cancer screening methods, such as mammograms and clinical breast examinations, was also limited. Only 15.5% of women knew about mammograms, and 22% were aware of how to perform BSE. This is particularly concerning given that early detection via screening methods like mammograms and BSE can significantly improve outcomes for women diagnosed with breast cancer. Awareness of clinical breast examinations was slightly higher (22.5%), yet the majority of women remained uninformed about these critical screening tools. These findings underline the need for educational interventions specifically targeting knowledge about breast cancer screenings and emphasizing their importance for early detection and treatment.

4.4 General Knowledge About Breast Cancer

In terms of general knowledge about breast cancer, there was moderate awareness. A majority (72.5%) of women knew that breast cancer is more treatable in the early stages, which is a positive finding. However, knowledge about other aspects of breast cancer was more mixed. For example, while 67% knew that breast cancer could be fatal without treatment, only 25.5% were aware that it is more common in women over 50. This highlights the need for improved education on risk factors, especially regarding age, as older women are at higher risk for developing breast cancer. A common misconception was that breast cancer only occurs in one breast (45%), indicating a lack of understanding about the nature of breast cancer. Furthermore, while many women were aware of the relationship between obesity and breast cancer (25.5%), a significant number were unaware of this link, suggesting a gap in knowledge about lifestyle factors contributing to breast cancer risk.

4.5 Socio-Demographic Factors Influencing Knowledge

The analysis of socio-demographic factors and their relationship with breast cancer knowledge revealed several significant findings. A higher level of education, particularly college and higher education, was strongly correlated with better knowledge of breast cancer, screening methods, and BSE ($p = 0.001$). Women with higher education levels are more likely to seek information and participate in health education programs, making them a crucial target for more in-depth health campaigns. Marital status also influenced knowledge, with significant differences observed between single and married

women (p = 0.005). Single women, who made up the largest group in this study, may benefit from more targeted education programs that account for their unique health-seeking behaviors. Occupational status was another key factor, with housewives and unskilled workers demonstrating less knowledge compared to women employed in government or private sectors (p = 0.001). These women may have more limited access to formal health education, indicating the need for outreach through community-based programs. Economic status, menstrual history, and a family history of breast cancer were also associated with women's knowledge, highlighting the role of personal and familial factors in shaping health awareness. Women with a family history of breast cancer were more likely to have higher knowledge, underscoring the importance of targeted education for those at higher risk.

5. Recommendations:

According to the main study conclusion, the study recommended that:

1. Planning educational programs using the health belief model to increase and reinforce the knowledge of most woman regarding the breast self –examination this can be done by the collaboration between the health care institutions and may be the woman organizations.

2.Though the overall assessment of the knowledge results was fair some health information which was very vital assessed as poor and there is a need to strengthen this information such as screening of the disease.

3.Women can be educated regarding the steps of the procedure by nurses and other care providers in a simple way.

4.Activate the programs of the early detection specially the ones related to breast cancer.

5.Women can be educated regarding classification and some causes of BC, as well as some preventive measures of BC by breast self- examination at the same time provide the family and the dominant of the family the importance of this health issue for the family life.

6.Use the international day of breast cancer to visit the governmental and non- governmental institutions by the health facility and some volunteers to give some awareness in this regard in a simple, and non- embarrassing way.

7.Make a good use of the different social media and encourage the women to utilize them in order to help increasing their knowledge and attitudes.

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