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Female Workers' Socio-Demographic Characteristics and Their Total Knowledge about Breast Cancer: Effect of an Educational Program at Beni-Suef University

Hanan Elzeblawy Hassan[1,*], Sahar Gamal Zaki[2], Fatma Saber Nady[3]

[1]Professor of Maternal and Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt
[2]Demonstrator of Maternal & Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt
[3]Lecturer of Maternal & Newborn Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

Abstract **Background:** Breast cancer is the most prevalent cancer worldwide, causing 2.1 million cases per year. It is the leading cause of death for female patients and is rising globally, particularly in Ethiopia. Global estimates show inequities in the burden, with high Human Development Index countries having 1 in 12 women diagnosed and 1 in 71 dying, compared to low Human Development Index countries having 1 in 27. **Aim:** The current study was conducted to evaluate effect of an educational program at Beni-Suef University and relationship between female workers' socio-demographic characteristics and their total knowledge about breast cancer. **Subjects and Methods:** ***Design*****:** A quasi-experimental design was utilized. ***Sample and Settings*****:** 323 working women at Beni-Suef University, ages 18 to 60, were chosen as a purposive sample based on their lack of cancer, chemotherapy, radiation, and psychological illnesses. ***Tools:*** Tool I: A Structured Interviewing Questionnaire Sheet; It was concerned with the personal and socio-demographic details of the studied females (6 Questions). Tool II: women's knowledge about breast cancer, breast self-examination, and breast cancer preventive measures sheet; to assess women's knowledge about breast cancer, self-examination, and preventive measures, focusing on 55 questions across three domains: general information, early detection screening, and preventive measures. Tool III: Supportive material (Arabic booklet). **Results:** It clarifies that the mean age was 35.91±7.122 years. There was a highly statistically significant improvement as $p \leq 0.01$ in the female workers' total knowledge level about breast cancer ($p = 0.009$). The pretest values were 71.80%, 24.2%, and 4% for poor, average, & good level of knowledge, respectively that improved to 8%, 26.3%, and 65.7% during the posttest. **Conclusion:** Based on the findings of the present study, it can be concluded that the high improvement of studied women's knowledge for all sub items of socio-demographic data is affected by studied female workers' educational level and place of residence, and their marital status. **Recommendations:** With ongoing breast cancer and breast self-examination, preventive efforts for women in all facets of society should be applied to increase awareness.

Keywords Female Workers, Socio-demographic characteristics, Knowledge, Breast Cancer, Educational program

1. Introduction

Breast tissue changes and uncontrollable growth can cause breast cancer (BC), which usually manifests as a lump or tumor. It is the most prevalent cancer worldwide and the leading cause of death for female patients [1-5]. At 2.1 million cases per year, it is the most common cancer-related condition in the world in terms of both morbidity and mortality among female patients. Although rates of BC are greater in industrialized areas, they are rising globally, especially in Ethiopia [6-10].

Global estimates reveal striking inequities in the breast cancer burden according to human development. For instance, in countries with a very high Human Development Index (HDI), 1 in 12 women will be diagnosed with breast cancer in their lifetime, and 1 in 71 women die of it. In contrast, in countries with a low HDI, while only 1 in 27 women are diagnosed with breast cancer in their lifetime, 1 in 48 women will die from it [11-13].

In Egypt, breast cancer accounts for 18.9% of all cancer cases and has the greatest incidence rates among females (32.0% in women and 2.2% in men). According to estimates, the incidence of cancer will triple from 2013 to 2050, with an age-adjusted rate of 49.6 per 100,000 people. Breast cancer that is curable in its early stages has a 97% chance of surviving for five years. However, if it spreads to other bodily areas, a woman's chance of surviving five years drops to 20% [14].

* Corresponding author:
nona_nano_1712@yahoo.com (Hanan Elzeblawy Hassan)
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The biggest risk factor for developing breast cancer is being female, which is followed by old age, family history of breast cancer, genetic predisposition, radiation exposure, and breast density [15-18].

Women's breast cells are extremely sensitive to changes in their hormonal balance, particularly those of progesterone and estrogen. There is a positive correlation between circulating androgens and estrogens and a higher risk of breast cancer. Women who are premenopausal or postmenopausal have an increased risk of breast cancer due to fluctuations in their body's natural levels of sex hormones [19-21].

Several studies have established a strong link between female breast cancer risk and exposure to endogenous hormones, including progesterone and estrogen. Therefore, in terms of a potential induction of the carcinogenic events in the breast microenvironment, the occurrence of particular events, such as pregnancy, nursing, first menstruation, and menopause, along with their duration and the concurrent hormonal imbalance, are significant [22-24].

A lower risk of breast cancer is linked to an early (particularly in the early twenties) first full-term pregnancy and an increase in subsequent births. In addition, the pregnancy itself offers a defense against any malignancy. Nonetheless, protection was noted around the 34th week of pregnancy and was not established for pregnancies lasting 33 weeks or fewer [25-28].

2. Aim of the Study

The current study was conducted to evaluate effect of an educational program at Beni-Suef University and relationship between female workers' socio-demographic characteristics and their total knowledge about breast cancer.

3. Subject and Method

Research design:

To accomplish its goals, the study used an interventional, quasi-experimental research design that included a pre-test and a post-test.

Subjects and Settings:

323 working women at Beni-Suef University, ages 18 to 60, were chosen as a purposive sample based on their lack of cancer, chemotherapy, radiation, and psychological illnesses.

Tools of data collection:

Tool I: A Structured Interviewing Questionnaire Sheet

It was developed by the researcher based on the review of relevant literature. It aimed to gather information related to women. It was concerned with the personal and socio-demographic details of the studied females, including their age, age of marriage, level of education, marital status, place of residence, and family income (6 `Questions).

Tool II: women's knowledge about breast cancer, breast self-examination, and breast cancer preventive measures sheet.

The study aimed to assess women's knowledge about breast cancer, self-examination, and preventive measures, focusing on 55 questions across three domains: general information, early detection screening, and preventive measures. ***System of scoring:*** A total score of 55 degrees was awarded for all questions, with one point awarded for a correct response and zero points for an incorrect one for each question. The following categories apply to the distribution of the total knowledge scores: Good scores are ≥75%; ≥ 40 degrees; average scores are between 50% and 74% to 27%; 40 degrees; and poor scores are less than 50%.

Tool III: Supportive material (Arabic booklet):

It contained information about breast cancer. Part I, the definition of breast cancer, signs, symptoms, risk factors, types, stages, diagnosis, and medical and surgical treatment. Part II: Preventive measures of breast cancer, such as maintaining a healthy body weight, eating a healthy diet, and engaging in regular physical activity, Limit hormone therapy, early childbearing before the age of 30 years, pregnancy, and breastfeeding. Avoid tobacco and alcohol intake, limit exposure to environmental toxins, and take steps for breast self-examination.

Tools Validity:

A jury group at Beni-Suef University evaluated the content validity of study tools, ensuring comprehensiveness, accuracy, and clarity, and made necessary modifications.

Tools Reliability

The study tools' reliability was assessed using Cronbach's Alpha test, revealing a total knowledge of 0.897 and Breast Cancer Preventive Measures of 0.886.

Administrative Design:

Approval to carry out this study was obtained from the dean of the faculty of nursing at Beni-Suef University. An official letter from the responsible authorities at the faculty of nursing at Beni-Suef University to the director of Beni-Suef university hospital and Beni-Suef specialist faculties for conducting the study was obtained.

Ethical Consideration:

The study received ethical approval from Beni-Suef University's Faculty of Medicine's Research Ethics Committee.

Pilot study:

A pilot study on 10% of 32 women evaluated tool applicability, efficiency, clarity, and feasibility of fieldwork, identifying potential obstacles and data collection interference.

Fieldwork:

The study began in December 2023 and concluded in May 2024, involving assessment, planning, implementation, and evaluation phases in its fieldwork.

Preparatory phase:

A review was helpful to the researcher in reviewing and developing the data collection tools, and then the researcher tested the validity of the tool through a jury of expertise to test the content, knowledge, accuracy, and relevance of questions for tools.

Phase (I): Assessment phase:

Assessment of the females' knowledge and performance through an interview schedule for each one (pretest assessment): The pretest will be done to assess the knowledge and practices of the females regarding breast cancer preventive measures. The data obtained during this phase constituted the baseline for further comparison to evaluate the effect of the educational program. Each female was interviewed to collect data related to socio-demographic characteristics and assess their baseline knowledge about breast cancer. Each interview lasted 30–45 minutes.

Phase (II): Planning phase:

Based on the baseline data from the assessment phase (pre-test), the researcher created the instructional program following a thorough analysis of the pertinent literature. The plan of the educational program was conducted to enhance females' knowledge and practices regarding breast cancer preventive measures that depend on their needs as revealed by the scores of the pretest assessment.

Phase (III): Implementation phase:

Program implementation included a theoretical session aimed to acquire women with knowledge regarding breast cancer, breast self-examination, and breast cancer preventive measures through an explanation of the definition, causes, and risk factors of breast cancer, signs & symptoms, diagnosis, treatment, and preventive measures of breast cancer.

Phase (IV): Evaluation phase:

Post-tests were conducted on female participants to assess their knowledge and practices of preventive behaviors, and abnormal signs were referred to maternal healthcare centers for further investigation.

Statistical Design:

The updated, coded, and computer-entered data were statistically analyzed using the Statistical Package for Social Science (SPSS) version 20. Data were displayed in tables utilizing mean, standard deviation, number, and percentage distribution to compare women's understanding and use of preventive behaviors.

4. Results

Table (1) shows the percentage distribution of the studied female workers regarding their socio-demographic data. It reveals that, the mean age was 35.91±7.122 years. In terms of education, the study reveals that 45.8% of the female workers had a university degree, and 75.9% of them were married. Related to place of residence, 69.0% of them were urban residents, and 84.2% had enough monthly income from their point of view.

Table (1). Percentage distribution of the studied female workers regarding to their socio-demographic data (n=323)

Items	No.	%
Age		
20 > 30 yrs	89	27.6
30 > 40 yrs	164	50.8
≥40 yrs	70	21.7
Mean±SD	35.91±7.122	
Age of marriage		
17-22 years	142	53.8
23-25 years	92	34.8
> 25 years	30	11.4
Educational level		
Intermediate education	97	30.0
University education	148	45.8
Above university	78	24.1
Marital status		
Single	53	16.4
Married	245	75.9
Divorced	25	7.7
Place of residence		
Rural area	100	31.0
Urban area	223	69.0
Monthly income of family		
Enough and increases	13	4.0
Enough	272	84.2
Not enough	38	11.8

Figure (1) illustrates that there was a statistically significant improvement as p≤ 0.05 in the female workers' regarding their total knowledge level about breast cancer (p= 0.05), breast self-examination (p =0.006), and breast cancer preventive measures (p= 0.018) after program implementation. The pretest values for general knowledge about breast cancer were 72.1% for poor knowledge that improved to 13% during the posttest. Also, the knowledge about breast self-examination improved as prior to the health education program as 76.8% of them had poor knowledge. Whereas, after one month, improved to 11.8%. Moreover, knowledge breast cancer preventive measures improved as prior to the health education program, 72.4% of them had poor and good levels of knowledge compared to 9.3% after one month.

Figure (2) illustrates that there was a highly statistically significant improvement as p≤ 0.01 in the female workers' total knowledge level about breast cancer (p= 0.009). The pretest values were 71.80%, 24.2%, and 4% for poor, average, & good level of knowledge, respectively that improved to 8%, 26.3%, and 65.7% during the posttest.

Figure (3) reveals that there was high improvement of studied women's knowledge for all sub items of socio-demographic data. There is a highly statistically significant

relation between the studied female workers total knowledge (pretest) score with their educational level and place of residence, as P-value = 0.000 & 0.000, respectively. There was a statistically significant relation with their marital status, as P-value = 0.040, but there was no statistically significant relation with their age and monthly income of family as P-value = 0.314 & 0.070, respectively. While in the posttest, there was a statistically significant relation with their marital status and monthly income of family as P-value = 0.018. But there was no statistically significant relation with their age, educational level, and place of residence, as P-value = 0.441, 0.516, & 0.485, respectively.

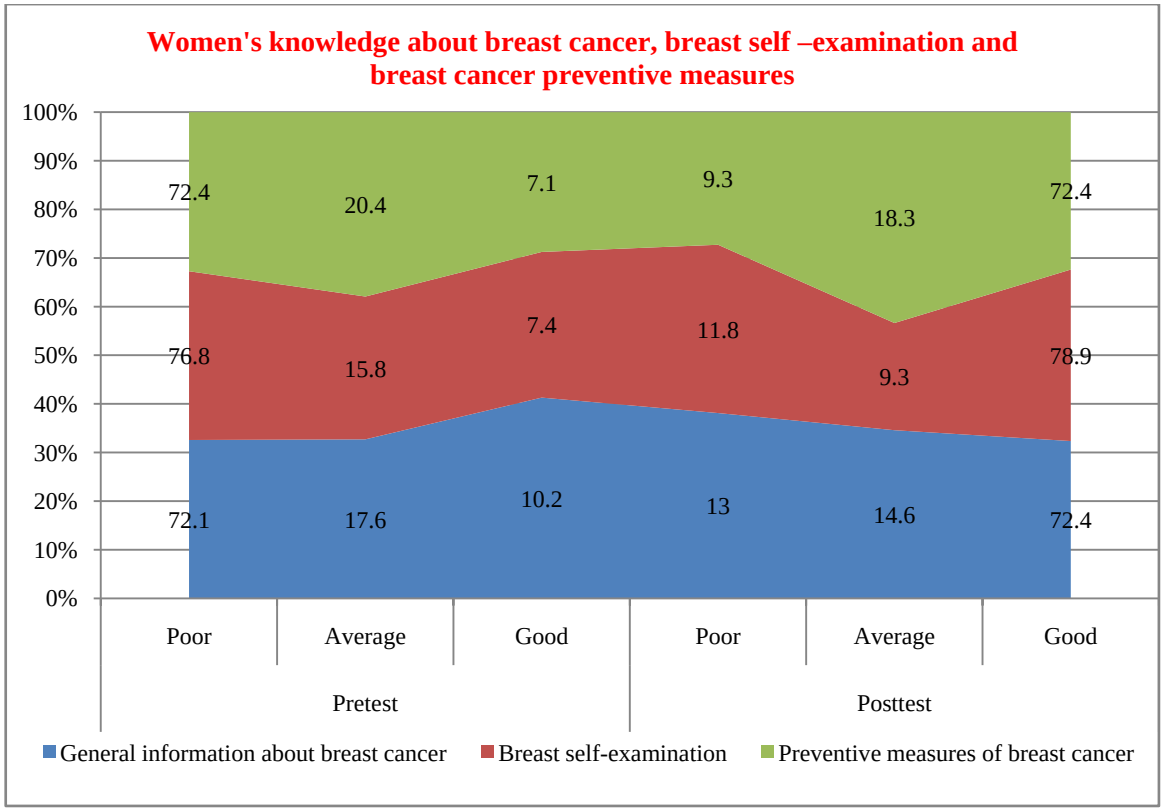

Figure (1). Women's knowledge about breast cancer, breast self –examination and breast cancer preventive measures

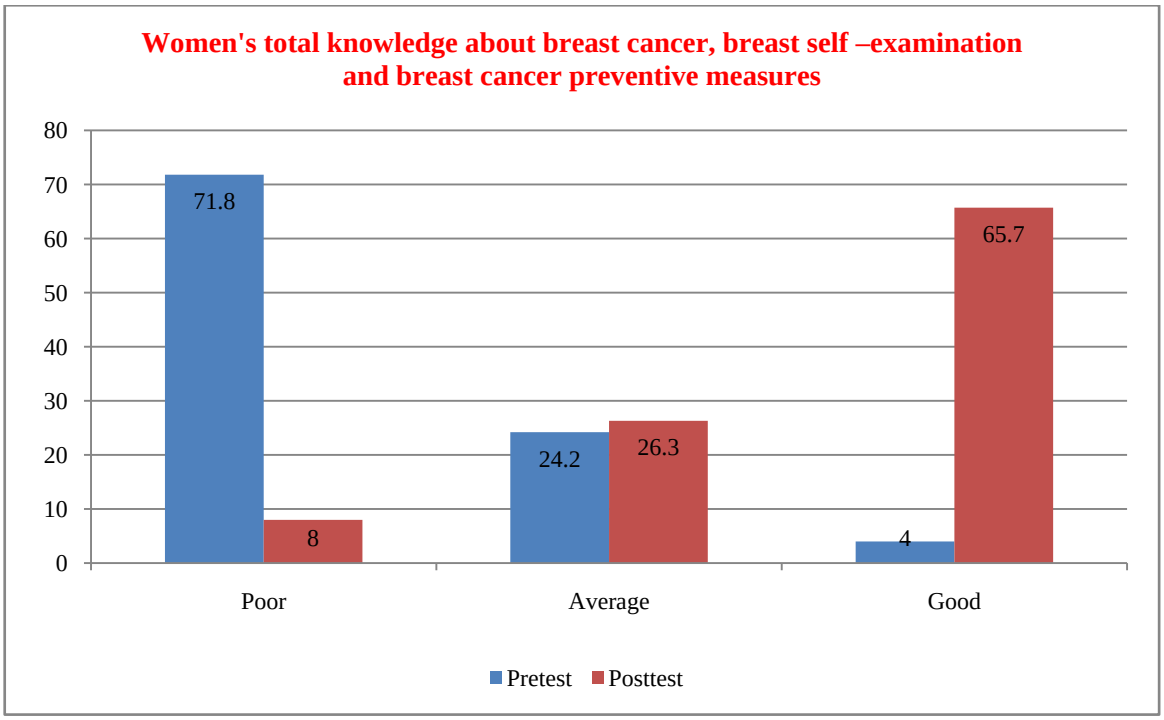

Figure (2). Women's total knowledge about breast cancer, breast self –examination and breast cancer preventive measures

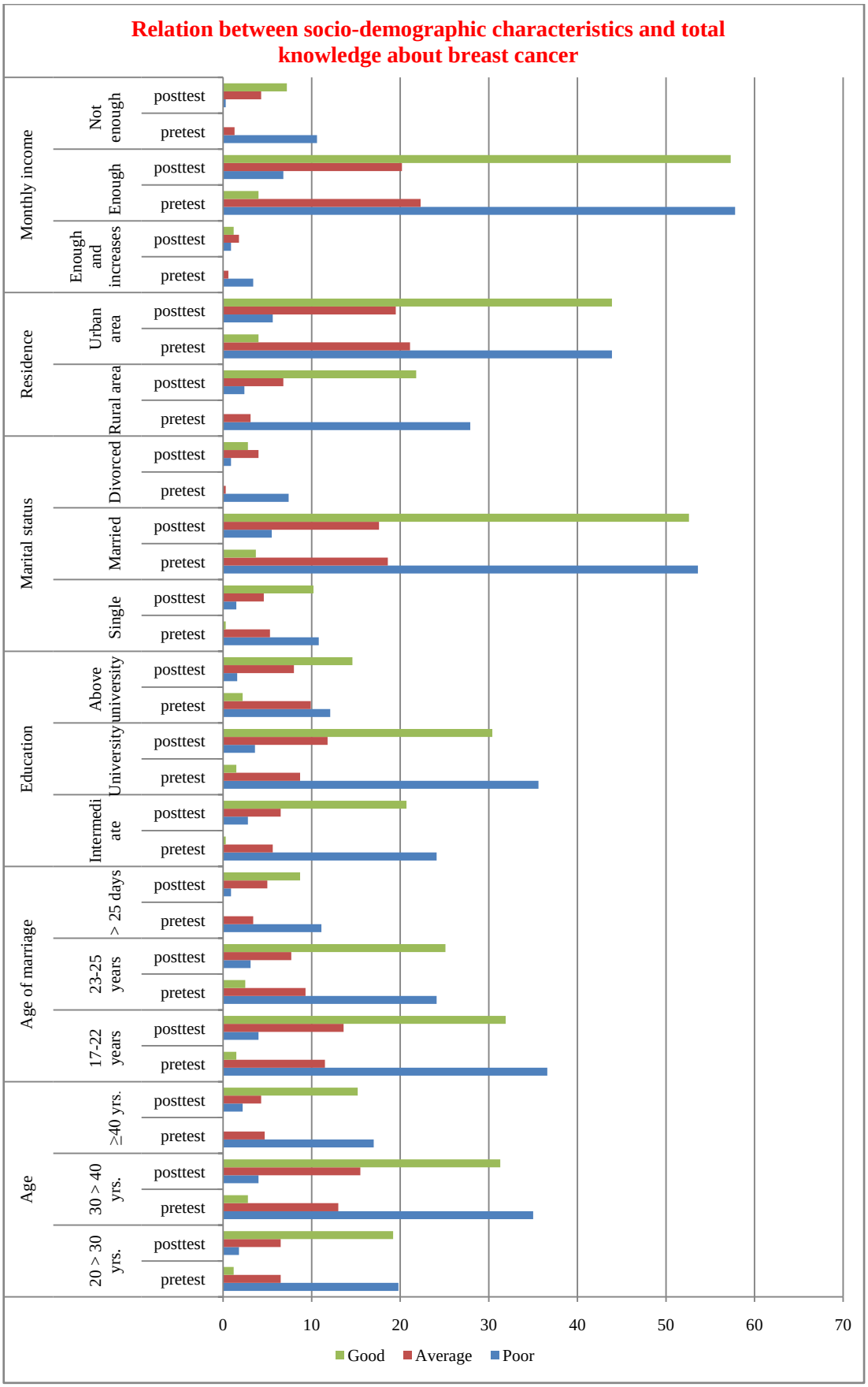

Figure (3). Relation between socio-demographic characteristics of the studied female workers and their knowledge about breast cancer, breast self-examination and breast cancer preventive measures

5. Discussion

The aim of the study was evaluate effect of an educational program at Beni-Suef University and relationship between female workers' socio-demographic characteristics and their total knowledge about breast cancer. The study found an improvement in female workers' knowledge about breast cancer, self-examination, and preventive measures after program implementation. However, it agreed with a study by **Ibitoye et al. (2021)**, which found a significant increase in knowledge post-intervention, possibly due to inadequate knowledge and lack of motivation [29]. Hence, concerning total knowledge of breast cancer, the study found that a highly progressive and regression in poor in female workers' knowledge about breast cancer, breast self-examination and breast cancer preventive measures.

Regarding the relationship between the studied female's total knowledge score and their demographic characteristics (pre & post-program), the current study revealed that there was an improvement posttest in total knowledge for all subgroups in relation to age, education, age of marriage, marital status residences, and family income. The study shows an improvement in women's total knowledge across all age categories, with a minority aged 30-40 having good knowledge pretest and around one-third improving posttest. This contrasts with **Kumarasamy et al.'s (2017)** findings [30].

The program improved the total knowledge of intermediate -educated females, with a positive relationship between their total knowledge scores and their educational level. This indicates the success of the educational guidance program, as the minority of females with intermediate education had better knowledge before the program.

The study found that urban females had better knowledge about breast cancer signs and symptoms before a program, increasing to about half after the program, indicating that urban residents have a greater access to information. This finding is in accordance with **Al-Mousa et al. (2020)** [31].

The study found that a significant association exists between the knowledge level of married females and their marital status, with a minority showing good knowledge during pretest. This finding is in the same line with **Al-Qazaz et al. (2020)** [32]. Conversely, **Ahmed et al. (2018)** found that marital status doesn't correlate with knowledge, as married women often undergo recurrent pregnancy and childbirth investigations, increasing their health knowledge [33].

Female workers with sufficient monthly income showed improved knowledge, despite a decrease in knowledge scores, unlike **Heena et al. (2019)** who found no relationship between knowledge and social characteristics [34]. Also, the study contradicts **Isara & Ojedokun's (2011)** findings, suggesting that women with sufficient family income prioritize their health and avoid unnecessary expenses [35].

6. Conclusions

Based on the findings of the present study, it can be concluded that there is a statistically significant improvement in the female workers' regarding their total knowledge level about breast cancer, breast self-examination, and breast cancer preventive measures after program implementation. There was high improvement of studied women's knowledge for all sub items of socio-demographic data. This improvement is affected by studied female workers' educational level and place of residence, and their marital status.

7. Recommendations

- With ongoing breast cancer and breast self-examination, preventive efforts for women in all facets of society should be applied to increase awareness.
- Additional research on large samples of women is required for the prevention and early detection of breast cancer.

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