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Research Article

Knowledge about Preventive Measures of Breast Cancer: Educational Program

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Abstract:

Background: Breast cancer is the most common cancer globally, and prevention efforts are growing due to rising incidence rates. Primary prevention includes health promotion, risk reduction, smoking cessation, lifestyle modifications, genetic risk identification, screening tools, risk avoidance, and effective chemoprevention. Secondary prevention involves identifying and treating premalignant or subclinical cancers, while tertiary prevention involves symptom control and rehabilitation. Preventive measures include maintaining a healthy weight, eating a healthy diet, and engaging in regular physical activity.

Aim: The current study was conducted to evaluate effect of an educational program on female workers' knowledge about preventive measures of breast cancer.

Subjects and Methods: ***Design***: A quasi-experimental design was used.

Sample and Settings: A study on 323 working women aged 18-60 without any cancer, chemotherapy, radiation, or psychological disorders.

***Tools*:** A Structured Interviewing Questionnaire Sheet and women's knowledge about preventive measures of breast cancer.

Results: 84.2% had enough income and 75.9% were married. Also, 33.4% had correct answers in the pretest regarding factors increases BC risk, which improved to 81.7% correct answers after the intervention. Pretest poor knowledge that 72.1%, 76.8%, and 72.4% improved to 13%, 11.8% and 9.3% during the posttest, respectively. For good knowledge, it improved from 10.2%, 7.4% & 7.1% preprogram to 72.4%, 78.9%, & 72.4%post program, respectively.

Conclusion: Based on the findings of the present study, it can be concluded that was a statistically significant improvement in female workers' knowledge regarding general information about breast cancer preventive measures during the posttest. There is relation between marital status and family income of the studied female workers and their total knowledge about breast cancer, breast self-examination, and breast cancer preventive measures. It clarifies that married females who had enough family income had the highest percentage of poor, average, and good knowledge in both pre-program and post-program.

Recommendations: study the effect of other socio-demographic factor (age, education, income, occupation) on females' knowledge regarding breast self-examination

Keywords: knowledge; preventive measures; breast cancer; educational program

Introduction

Breast cancer is now the most frequently diagnosed cancer in the world. Breast cancer prevention has gained increasing attention due to increasing breast cancer incidence rates in the West and can be actualized through lifestyle modifications or targeted interventions [1-6].

Primary prevention of cancer involves health promotion, risk reduction, smoking cessation, lifestyle modifications, vitamin and micronutrient supplementation, genetic risk identification, carcinogenesis understanding, screening tools, risk avoidance, and effective chemoprevention, leading to decreased cancer morbidity and mortality [7-9]. Secondary prevention is the identification and treatment of premalignant or subclinical cancers. Screening using mammography is a typical example of secondary prevention. Tertiary prevention is defined as symptom control and rehabilitation. These definitions may become less useful in the future as they do not account for the new incoming data, such as molecular data [10-12]

Preventive measures for breast cancer include maintaining a healthy body weight, eating a healthy diet, and engaging in regular physical activity. Limiting hormone therapy, early childbearing before the age of 30 years, Pregnancy and breastfeeding, Avoid tobacco and alcohol intake, limiting exposure to environmental toxins, Perform breast self-examination and undergo regular screening [13-.15].

Maintain a healthy body weight; it is less clear how particular diets affect the risk of breast cancer without regard to weight growth or loss. Triple-negative breast cancer (TNBC) and premenopausal estrogen receptor-negative breast cancer (premenopausal TNBC) are linked to obesity; two meta-analyses of TNBC patients showed that obese premenopausal women had an 80% and 43% higher risk of TNBC development, respectively, than non-obese premenopausal women [16-18].

Numerous researchers have looked into the relationship between obesity and breast cancer risk. Obesity has been linked to breast cancer, and this link was discovered to be due to the estrogenic effect of obesity. Thus, it is possible to hypothesize that the menopausal state modifies the relationship between obesity and breast cancer risk [19-22].

Eat a healthy diet; numerous compounds found in fruits and vegetables can prevent cancer, which could be a significant factor in lowering mortality. The American Institute for Cancer Research and the World Cancer Research Fund, however, concluded that there was not enough evidence to suggest a high post-diagnosis fruit and vegetable consumption for breast cancer survival. Consumption of fruits or vegetables before or following diagnosis did not significantly affect overall mortality in individuals with breast cancer, according to a new meta-analysis [23-25].

Foods rich in nutrients in quantities that support achieving and maintaining a healthy body weight are part of a healthy eating pattern. A diversity of fruits, particularly whole fruits in a range of hues; whole grains; and a variety of vegetables, including dark green, red, and orange ones; fiber-rich legumes (beans and peas), among others. Red and processed meats, sugar-sweetened beverages, highly processed meals, and refined grain items should all be limited or avoided in a balanced diet [26]. Because of their high levels of antioxidants and omega-3 fatty acids, fatty fish like mackerel, sardines, and salmon are well known for their beneficial health effects. These advantages may even include cancer prevention [27].

Regular physical activity, including 150-300 minutes of moderate-intensity or 75-150 minutes of vigorous-intensity, is a cancer preventive measure, but 25% of adults fail to meet these recommendations globally [28-29]. Physical activity most likely exerts its beneficial effects synergistically through different mechanisms. Physical activity reduces adiposity that may contribute to cancer risk through unregulated sex and metabolic hormone secretion, chronic inflammation, and alterations in adipokine secretion. Physical inactivity may also decrease insulin sensitivity, which would in turn increase insulin levels. Insulin activates the insulin-like growth factor (IGF-1) signaling pathway involved in cell differentiation, proliferation, and apoptosis [30].

The advancement of breast cancer is directly correlated with hormone replacement therapy (HRP). Hormone replacement therapy at high grade increases the risk of breast tumor development. Women who had previously used HRT are likely to have had a significantly lower risk of breast cancer and mortality associated with breast cancer by stopping the medication. Compared to other accessible choices, the methods involving the combination of estrogen and progesterone are more hazardous. A study supporting these conclusions discovered that progesterone added to HRT therapy significantly raises the risk of breast cancer [31-33].

As they reach the so-called "safety age" and their periods stop, many women suffer from mood swings, insomnia, and feelings of hotness. To counteract the new changes in a woman's biology after menopause, doctors have been treating these symptoms with estrogen and progesterone for years. The ovaries progressively stop functioning when a woman's menstrual cycle is disrupted, which results in a drop in estrogen levels and nearly no progesterone. Hormonal therapy can relieve the uncomfortable symptoms that these illnesses might cause, like hot flashes and sleep difficulties [34].

Pregnancy and breastfeeding, Women of all ages have been shown to have an elevated risk of breast cancer in the immediate postpartum period. Parity is protective in the long run for women whose first full-term pregnancy (FFTP) ended when they were young (less than 26), and it increases in parous women whose FFTP ended beyond the age of 35. Breast cancer that is discovered soon after childbirth is typically aggressive. It is more likely to be higher grade, hormone insensitive, to proliferate more quickly, and to metastasize to the bone marrow [35].

Aim of the Study

The current study was conducted to evaluate effect of an educational program on female workers' knowledge about preventive measures of breast cancer.

Subject and Method

Research design:

The study utilized a quasi-experimental research design with a pretest and posttest to achieve its objectives.

Subjects and Settings:

A study on 323 working women aged 18-60 without any cancer, chemotherapy, radiation, or psychological disorders.

Tools of data collection:

Tool I: A Structured Interviewing Questionnaire Sheet

It focused on the marital status and family income of the female subjects, among personal information, history of breast problems.

Tool II: women's general knowledge about breast cancer

The study explores women's knowledge of breast cancer preventive measures, including lifestyle changes, dietary factors, breastfeeding duration, physical activity, hormonal therapy, alcohol consumption, healthy body weight, genetic testing, and early detection using a screening tool for early cancer prevention……. etc (18 items). System of scoring: The questions were scored in degrees, with correct responses earning points and incorrect ones gaining zero points, with categories including good, average, average, and poor scores.

Fieldwork

Preparatory phase:

To verify substance, expertise, correctness, and relevance, an expert jury assessed the data gathering instruments that the researcher developed using a review.

Phase (I): Assessment phase:

The pretest assessment evaluates females' knowledge about preventive measures of breast cancer through interviews, personal characteristics

data, and baselines to compare and assess the effectiveness of an educational program.

Phase (II): Planning phase:

The researcher created an instructional program based on pre-test data to enhance females' knowledge about preventive measures of breast cancer.

Phase (III): Implementation phase:

Program implementation included a theoretical session aimed to acquire women with knowledge about preventive measures of breast cancer such as the most effective lifestyle changes for reducing breast cancer risk, dietary factors that may help reduce breast cancer risk, the recommended duration of breastfeeding to reduce breast cancer risk, and a primary recommendation regarding physical activity to reduce breast cancer risk. Which hormonal therapy is often used to reduce breast cancer risk in high-risk women? What was the primary recommendation regarding alcohol consumption to reduce breast cancer risk? How did maintaining a healthy body weight contribute to breast cancer prevention? What was the role of genetic testing in breast cancer prevention? A screening tool was used for early detection and prevention of breast cancer.

Phase (IV): Evaluation phase:

Female participants' knowledge and application of preventative behaviors were evaluated using post-tests; those exhibiting aberrant indications were referred to maternal healthcare centers for additional research.

Statistical Design:

Women's knowledge and application of preventative behaviors were compared before and after implementation using SPSS version 20 data analysis, with p-values 0.05 signifying statistical significance.

Results

Table (1) shows that, According to Table 1, the bulk the studied female workers (84.2%) had enough money each month to support their families, and over three quarters (75.9%) were married.

Table (2) presents that there was a statistically significant improvement in female workers' knowledge regarding general information about breast cancer preventive measures during the posttest as $p \leq 0.05$ in all items compared to the pretest, as noticed that more than one-third (33.4%) of females had correct answers in the pretest regarding factors increases BC risk, which improved to three quarters and more (81.7%) of them having correct answers after the intervention.

Figure (1) illustrates that there was an improvement in the female workers' regarding their total knowledge level about breast cancer, breast self-examination, and breast cancer preventive measures, as the pretest poor knowledge that 72.1%, 76.8%, and 72.4% improved to 13%, 11.8% and 9.3% during the posttest, respectively. For good knowledge, it improved from 10.2%, 7.4% & 7.1% preprogram to 72.4%, 78.9%, & 72.4%post program, respectively.

The percentage distribution of the female workers' overall knowledge about breast cancer is shown in **Figure (2)**. It shows that the health education program had a significant impact on the improvement of the female employees' overall knowledge level, as before the program, 71.8% and 4% of them had poor and good levels of knowledge, respectively, and after one month, those numbers improved to 8% and 65.7%, respectively.

Figure (3) reveals the relation between marital status of the studied female workers and their total knowledge about breast cancer, breast self-examination, and breast cancer preventive measures. It clarifies that married females had the highest percentage of poor (53.6%), average (18.6%), and good (3.7%) knowledge pre-program that improved to poor (5.5%), average (17.6%), and good (52.6%) post-program.

Figure (4) reveals the relation between family income of the studied female workers and their total knowledge about breast cancer, breast self-examination, and breast cancer preventive measures. It reveals that females with enough family income had the highest percentage of poor (57.8%), average (22.3%), and good (4%) knowledge pre-program that improved to poor (6.8%), average (20.2%), and good (57.3%) post-program.

Items	No.	%
Marital status		
Single	53	16.4
Married	245	75.9
Divorced	25	7.7
Family income		
Enough and increases	13	4.0
Enough	272	84.2
Not enough	38	11.8

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

Preventive measures of breast cancer	Pretest		Posttest		X^2	p value
	Correct %	Incorrect %	Correct %	Incorrect %		
Most effective lifestyle changes reducing breast cancer risk.	42.1	57.9	74.0	26.0	21.688	0.000**
Dietary factors may help reduce breast cancer risk.	40.9	59.1	72.4	27.6	6.671	0.010**
Recommended duration of breastfeeding to reduce BC risk	44.3	55.7	78.3	21.7	9.984	0.002**
Hormonal therapy often used to reduce BC risk in high-risk women	28.8	71.2	76.8	23.2	10.663	0.001**
Primary recommendation regarding physical activity to reduce BC risk	47.1	52.9	70.0	30.0	13.222	0.000**
Screening tool is used for early detection & prevention of BC	40.9	59.1	72.4	27.6	4.269	0.039*
Recommended age to start mammography screening	34.4	65.6	70.6	29.4	7.082	0.008**
The following factors increases BC risk	**33.4**	66.6	**81.7**	18.3	5.621	0.018*
Method for maintaining body weight contribute to BC prevention	39.6	60.4	74.9	25.1	10.350	0.001**
The primary recommendation regarding alcohol consumption to reduce BC risk	46.1	53.9	76.2	23.8	5.679	0.017*

The preventive measure involves the surgical removal of one or both breasts to reduce BC risk	33.7	66.3	79.6	20.4	4.626	0.031*
The recommended frequency for CBE for average-risk women	42.7	57.3	84.8	15.2	4.757	0.029*
Environmental factor which associated with an increased risk of BC	32.2	67.8	74.3	25.7	23.100	0.000**
The lifestyle factor which NOT associated with a reduced risk of BC	38.7	61.3	71.8	28.2	5.744	0.017*
The primary recommendation regarding HRT to reduce BC risk	42.1	57.9	78.0	22.0	5.451	0.020*
Breastfeeding contribute to BC prevention	39.9	60.1	80.5	19.5	4.890	0.027*
The role of genetic testing in BC prevention	43.7	56.3	76.5	23.5	8.005	0.005**
Dietary component should be limited to reduce BC risk	39.3	60.7	78.6	21.4	4.416	0.036*

* Statistically significant at p≤0.05 ** Highly statistical significant at p≤0.01

Table 2: Percentage distribution of the studied female workers' knowledge regarding preventive measures of breast cancer (n=323).

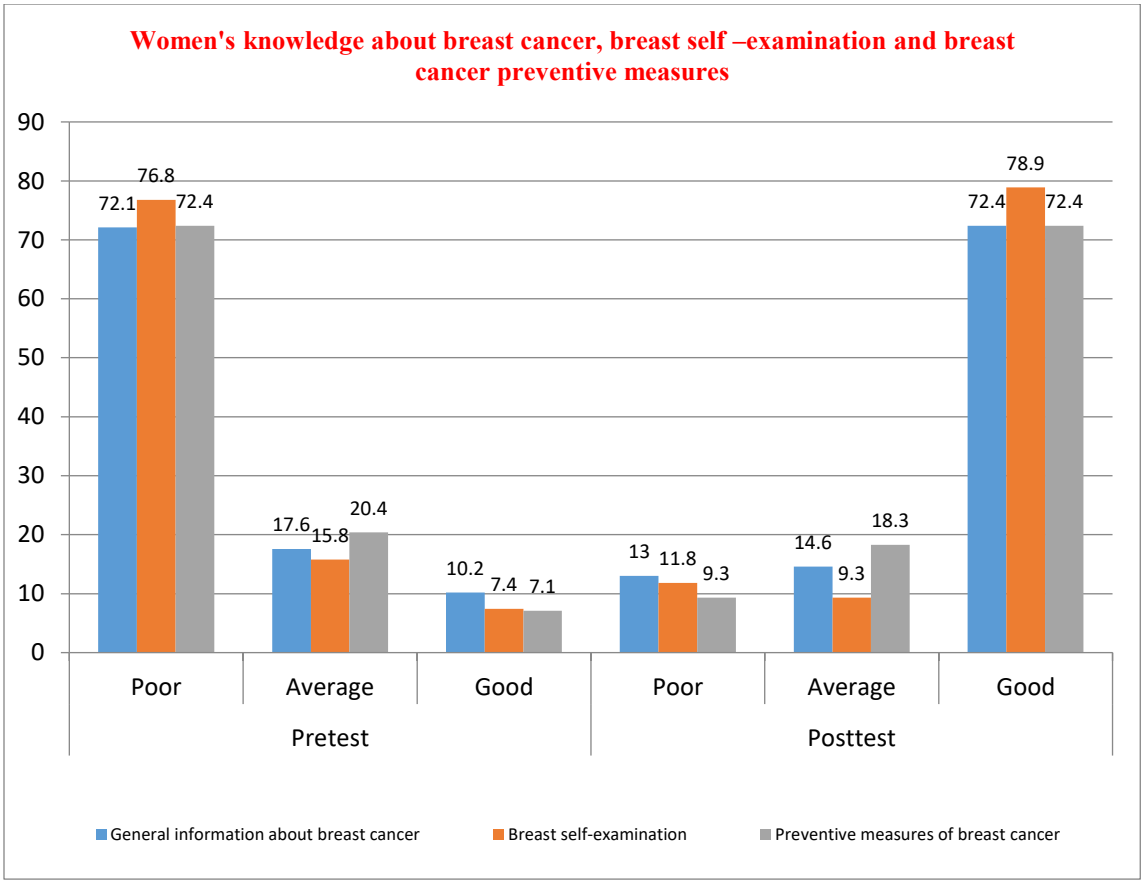

Figure 1: Women's knowledge about breast cancer, breast self –examination and breast cancer preventive measures

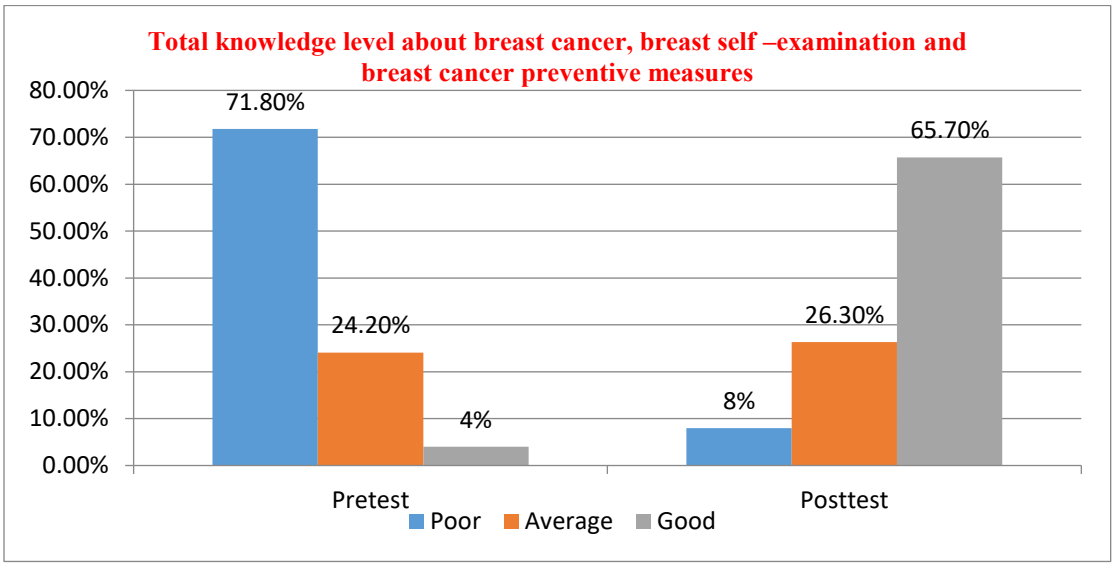

Figure 2: Percentage distribution of the studied female workers' regarding to their total knowledge level about breast cancer, breast self –examination and breast cancer preventive measures (n=323, $X^2 = 6.837$, p value = 0.009**)

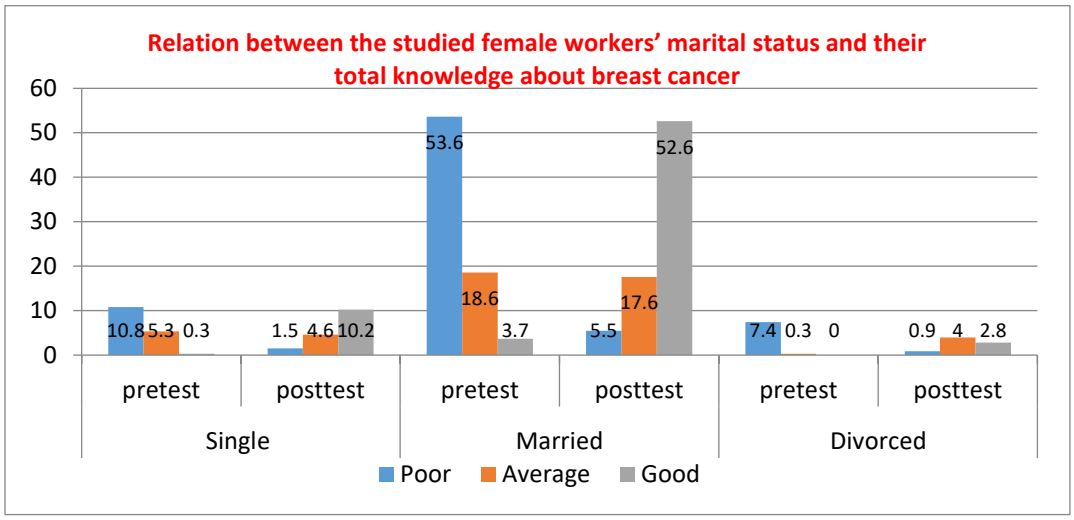

Figure 3: Relation between the studied female workers' marital status and their total knowledge about breast cancer, breast self–examination and breast cancer preventive measures

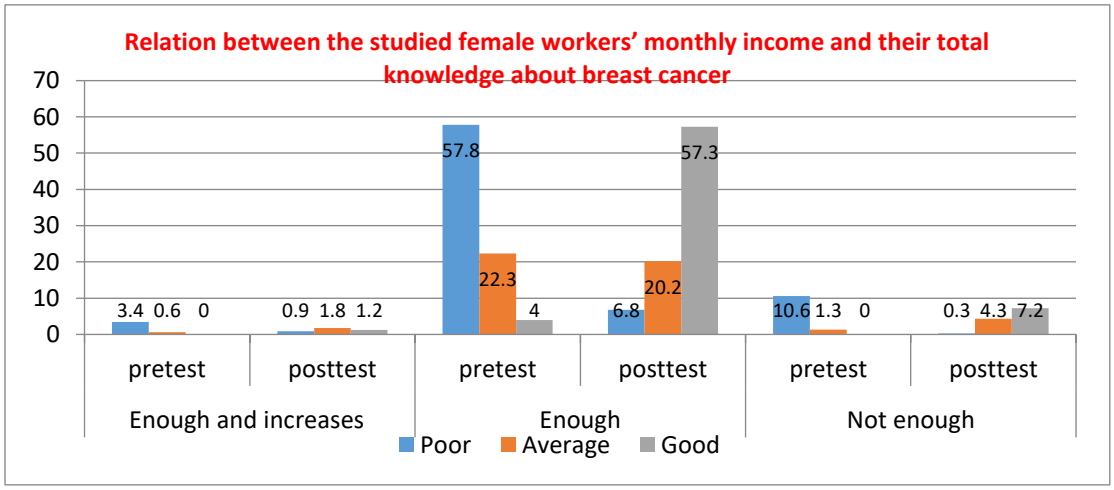

Figure 4: Relation between the studied female workers' monthly income and their total knowledge about breast cancer, breast self–examination and breast cancer preventive measures

Discussion

Breast cancer prevention involves maintaining a healthy body weight, eating a healthy diet, and engaging in regular physical activity. Obesity is linked to triple-negative breast cancer and premenopausal estrogen receptor-negative breast cancer. A healthy diet with fruits, vegetables, and fiber-rich legumes can lower mortality rates [36-40]. Regular physical activity reduces adiposity and inflammation, potentially increasing cancer risk. Hormone replacement therapy is linked to breast cancer progression. Women of all ages have an elevated risk of breast cancer in the postpartum period [15-20]. The aim of the study was evaluate effect of an educational program on female workers' knowledge about preventive measures of breast cancer.

In relation to the studied female worker's total knowledge regarding breast cancer, breast self-examination, and preventive measures pre- and post-HBM-based educational program implementation, the current study illustrated that there was a significant statistical effect of the health education program on improvement in the female workers' total knowledge level, as prior to the health education program, less than one-tenth of them had a good level of knowledge. This percentage improved to nearly two-thirds after one month and implementation of the program. This finding was in accordance with **Elbasuony et al. (2020),** who investigated the "effect of a preventive breast cancer guideline on knowledge of healthy women with family history" and demonstrated that there was a highly statistically significant improvement in the total knowledge regarding breast cancer after implementation of the preventive breast cancer guideline [41].

However, finding was contradicted by **Nema Ram (2020), who** investigated the "impact of an educational program on knowledge of breast cancer and practice of breast self-examination among women in India" and found that in the posttest, around half of the women had good knowledge, two-fifths had poor knowledge, and more than one-tenth had average knowledge [42]. This may be related to differences in the educational level of study subjects, which may hinder their understanding and the ability of the studied female to develop knowledge easily due to all samples being educated.

As regards prevention and early detection of BC, the current study presented that there was a marked improvement in female workers' total knowledge level about breast cancer preventive measures as prior to the health education program, less than one-tenth of them had a good level of knowledge, compared to less than three-quarters after program. This finding was supported by **Alameer et al. (2018),** who assessed "the effect of health education on female knowledge regarding early breast cancer detection and prevention" and found that health education has proven to be effective in improving the participants' knowledge regarding breast cancer prevention and early detection. This may be due to the educational program consisting of sufficient information about preventive methods, which increase their knowledge regarding breast cancer prevention [43].

Concerning marital status, there was a relationship between the studied female workers total knowledge score and the marital status pre & posttest. In which the minority of married females had good knowledge pretest, which increased to more than one-half during posttest. This finding is in the same line with **Al-Qazaz et al. (2020)**, who mentioned that there was a significant association between knowledge level and marital status of the ladies [44]. Conversely, this finding is different from **Ahmed et al. (2018), who** studied "breast self-examination awareness and practices in young women in developing countries: a survey of female students in Karachi, Pakistan," and observed that marital status was not associated with a higher level of knowledge [45]. From the researcher's point of view, married women are frequently exposed to recurrent investigation during pregnancy and childbirth that increases their knowledge about any disease that can affect their health.

In relation to monthly income of family, there was an improvement in good knowledge among women with enough income post program. In which less than one-tenth of female workers who had enough monthly income for their families had good knowledge, which improved to more than half during the posttest. On the other hand, this finding is in contrast with **Heena et al. (2019)**, who studied "knowledge, attitudes, and practices towards cervical cancer and screening amongst female healthcare professionals" and proved that there wasn't any relation between knowledge scores and any social characteristics [46].

Also, this result contradicts **Isara & Ojedokun (2011),** who investigated "knowledge of breast cancer and practice of breast self-examination among female senior secondary school students in Abuja, Nigeria" and revealed that there was no statistically significant association between the socio-demographic characteristics of the respondents and their knowledge of breast cancer. This may be due to women who had enough monthly income from family directing all their attention in regard to their health and not paying money for unnecessary things [47].

Conclusion

Based on the findings of the present study, it can be concluded that there was a statistically significant improvement in female workers' knowledge regarding general information about breast cancer preventive measures during the posttest. There is a relation between marital status and family income of the studied female workers and their total knowledge about breast cancer, breast self-examination, and breast cancer preventive measures. It clarifies that married females who had enough family income had the highest percentage of poor, average, and good knowledge in both pre-program and post-program.

Recommendation

- Additional research on large samples of high-risk women to assess their perceptions for the prevention and early detection of breast cancer.

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