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Northern Upper Egyptian Female Workers' Beliefs Regarding Breast Cancer according to Health Belief Model: Effect of an Educational Program

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Abstract

Background: The Health Belief Model is a cognitive paradigm that explains poor participation in disease prevention initiatives. It focuses on the belief that a specific behaviour will improve or prevent health and the desire to avoid illness.
Aim: The current study was conducted to evaluate effect of an educational program on Northern Upper Egyptian female workers' beliefs regarding breast cancer according to health belief model.
Subjects and Method Design: A quasi-experimental design.
Sample and Settings: 323 working women at Beni-Suef University, ages 18 to 60, were selected as a sample.
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: Health Belief Model Questionnaire to measure pregnant women's psychological readiness to take positive action regarding the prevention of breast cancer. It includes six subscales for health belief.
Tool III: Supportive material (Arabic booklet).
Results: It that more than half (52.3%) of the studied female workers have a negative beliefs toward pre-HBM pre-implementation regarding breast cancer, breast self-examination, and breast cancer preventive measures, which decreased 2.5% of them post-implementation, while only 0.6% of them have a positive beliefs increased to 63.2% of them post-HBM implementation. The improvement affected by female workers' age, educational level, age of marriage, marital status, residences, monthly income, mammogram, and breast problem history.
Conclusion and Recommendations: Based on the findings of the present study, it can be concluded that workers' total and all sub-items beliefs regarding breast cancer and its preventive measures as measured by the health belief model after the health education program was observed after program implementation. Further studies should study relationship between reproductive profile and health belief model regarding breast cancer and its preventive measures.

Keywords: Northern Upper Egyptian; Breast Cancer; Health Belief Model; Educational Program

Abbreviations

CHBMS: Champion's HBM Scale; HBM: Health Belief Model.

Introduction

Breast cancer is the most common malignancy in women, with a rising fatality rate [1-5]. Early diagnosis and screening programs, including breast self-examination, clinical breast examination, and mammography, are crucial for controlling and preventing BC [6-9].

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% [9].

Due to a lack of knowledge and information regarding breast cancer preventive measures and screening procedures, many women are diagnosed with more advanced stages of the disease. Consequently, promoting breast cancer screening is a major trend in contemporary society [10-16]. Health Belief Models (HBM) are one of the models that can successfully improve females' understanding, alter their unhealthy habits, and strengthen their preventative actions for the early identification of breast cancer. Therefore, the researchers decided to conduct the study to determine how the health belief model affected females' preventative behaviors related to breast cancer detection. The Health Belief Model is a cognitive paradigm that explains poor participation in disease prevention initiatives. It focuses on the belief that a specific behavior will improve or prevent health and the desire to avoid illness. Created by behavioral scientists in the 1950s, it is widely used by health educators, medical professionals, and psychologists [17-21].

Perceived susceptibility to illness, risk perception, perceived severity of illness, perceived benefits of behavior modification, and perceived barriers to action are the six elements that comprise the updated Champion's HBM Scale (CHBMS). Subsequently, proponents of health belief theory introduced the idea of self-efficacy as a component of health motivation and decision-making in health behavior. According to Champion's HBM, women who are perceived as more serious and breast cancer-prone are more inclined to participate in breast cancer screenings. But women must recognize the benefits of screening and think there aren't many barriers [22].

Figure 1 the Champion's HBM Scale (CHBMS) [23]. It consists of six elements: perceived susceptibility to illness, risk perception, perceived severity of illness, perceived benefits of behavior modification, and perceived barriers to action [22]. Perceived susceptibility refers to an individual's vulnerability to a health issue, while perceived threat includes opinions about the illness, potential medical and social ramifications [24,25]. Perceived benefits are the value of adopting health-promoting actions, while perceived obstacles involve the impediments to altering behavior [26]. Internal cues to action include physiological, social, and media cues, which can influence decision-making about health-related actions [27,28].

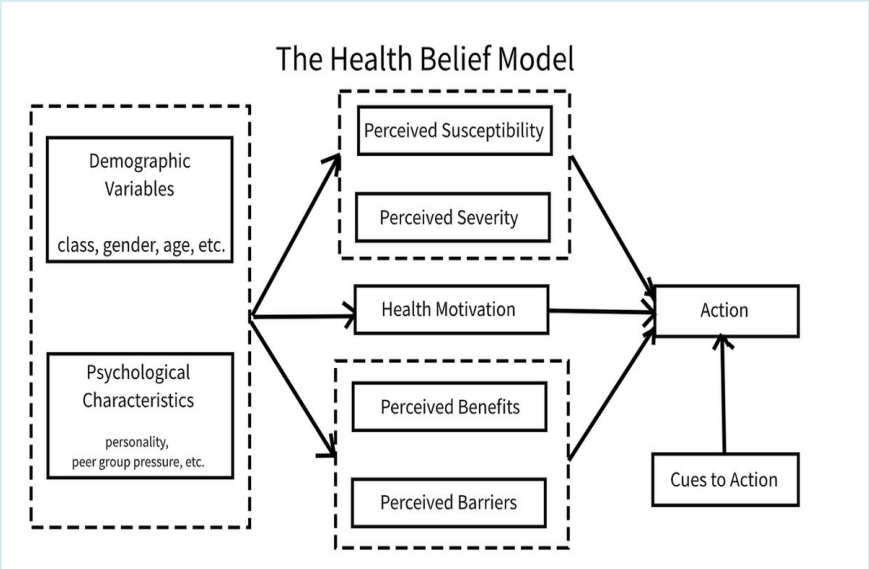

Figure 1: conceptual framework of the Health Belief Model [23].

Aim of the Study

The current study was conducted to evaluate effect of an educational program on Northern Upper Egyptian female workers' beliefs regarding breast cancer according to health belief model.

Subject and Method

Research Design

An interventional, quasi-experimental research design that included a pre-test and a post-test was used.

Subjects and Settings

A purposive sample of 323 working women aged 18 to 60 at Beni-Suef University was selected due to their absence of cancer, chemotherapy, radiation, and psychological illnesses.

Tools of Data Collection

Tool I: A Structured Interviewing Questionnaire Sheet: The researcher conducted a literature review to gather information on women's personal and socio-demographic details, including age, education, age of marriage, marital status, residence, and family income (6`Items).

Tool II: Health Belief Model Questionnaire: It was created by Foad MA and was intended to measure pregnant women's psychological readiness to take positive action regarding the prevention of breast cancer [29]. It includes six subscales for health belief. There are six health belief subscales in all. It was a self-reported questionnaire that was modified to assess perceived susceptibility, perceived seriousness, perceived rewards, perceived barriers, cues to action, and self-efficacy. It was used to assess women's attitudes regarding breast cancer screening by using a Likert scale that included statements with five responses: strongly disagree, disagree, neutral, agree, and strongly agree. The attitude scale is composed of 6 groups of questions; the first group is related to susceptibility (10 questions), the second group is related to seriousness (12 questions), the third group is related to benefits (7 questions), the fourth group is related to the barrier (13 questions), the fifth group is related to cues to action (10 questions), and the sixth group is related to self-efficacy (8 questions).

Scoring System: The responses were rated as follows on a five-point Likert scale: strongly disagree (1), disagree (2), neutral (3), agree (4), and highly agree (5). The sum of the scores was 300 degrees. Three categories were created from the calculated total attitude score: a score of ≥75% (≥225 degrees) indicates positive belief; a score of 50% to 74% (150-225 degrees) indicates neutral belief; and a score of <50% (<150 degrees) indicates negative belief.

Tool III: Supportive Material (Arabic Booklet): The text provides a comprehensive overview of breast cancer, including its definition, signs, symptoms, risk factors, types, stages, diagnosis, and treatment, as well as preventive measures like maintaining a healthy weight, diet, and physical activity.

Tools Validity and Reliability: The study tools' content validity was evaluated by a jury group of five experts from Beni-Suef University's obstetrics and gynecological nursing department. The tool's reliability was measured using Cronbach's Alpha test, with total knowledge having a reliability coefficient of 0.897, Health Belief Model having a reliability coefficient of 0.910, and breast cancer preventive measures having a reliability coefficient of 0.886.

Administrative Design: The study was approved by the dean of the nursing faculty at Beni-Suef University and an official letter was sent to the director of Beni-Suef University Hospital and specialist faculties.

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 the study sample (32 women) evaluated tool applicability, efficiency, and clarity. The study identified potential obstacles and made necessary modifications, excluding the pilot sample from the main study sample.

Fieldwork: The study's fieldwork included phases for assessment, planning, implementation, and evaluation, and it started in December 2023 and ended in May 2024.

Preparatory Phase: The researcher developed and reviewed the data collection tools with the help of a review. The researcher then assessed the tool's validity by having a panel of experts examine the questions' substance, knowledge, correctness, and relevance.

Phase (I): Assessment Phase: The researcher interviewed women after getting formal approval to carry out the study, followed by an explanation of its goal and an invitation to participate. Women then were interrogated to determine their socio-demographic traits and knowledge about breast cancer. The data that was gathered during this phase served as the baseline for the creation of the educational program and was employed in subsequent comparisons to calculate the impact of implementing the health belief model.

Phase (II): Planning Phase: The researcher developed an educational program to improve females' knowledge and

practices about breast cancer prevention, based on pre-test data and a health belief model, based on their needs.

Phase (III): Implementation Phase: The program aimed to educate women about breast cancer, its causes, risk factors, symptoms, diagnosis, treatment, and preventive measures through theoretical sessions.

Program Sessions: Time allowed: hours have been allocated for health education sessions (45 minutes for each session). At the beginning of the first session, an orientation about the program and its purposes was given. It was agreed at the time of the sessions with the women. The second session, each session started with a summary of what was given through the previous sessions and the objectives of the new one. By the end of each session, a summary was made, time was allocated for questions and answers, and a plan for the next session was made. Except for the last session, a termination of sessions through feedback was done. Educational media was used the artificial breast module was used during a presentation for clarity, a laptop, and a guidance booklet, which includes instruction and information for women as a reference during and after post-program implementation. Teaching material was used in the Arabic booklet and audiovisual materials.

Phase (IV): Evaluation Phase: The post-test was administered to the participant females immediately following the model's implementation to gauge their knowledge and practices of preventive behaviors as well as assess the model's efficacy. This assessment was carried out right away after the model's application. Finally, a referral was done for all women who suspected abnormal signs and symptoms to the nearest maternal health care center to do the necessary investigation.

Statistical Design: The study used SPSS version 20 to analyze data on women's knowledge and use of preventive behaviors before and after HBMS implementation, comparing results using various statistical tests, P-value ≤0.05 is statistically significant, highly significant at a p-value of ≤0.001, and insignificant at a p-value >0.05.

Results

Figure 2 reveals a highly improvement in the female worker's beliefs regarding breast cancer and its preventive measures as measured by the health belief model after the health education program.

Figure 3 illustrates that more than half (52.3%) of the studied female workers have a negative beliefs toward pre-HBM pre-implementation regarding breast cancer, breast self-examination, and breast cancer preventive measures, which decreased to less than one tenth (2.5%) of them post-implementation, while only less than one tenth (0.6%) of them have a positive beliefs regarding breast cancer, breast self-examination, and breast cancer preventive measures, which increased to less than two-thirds (63.2%) of them post-HBM implementation.

Figure 4 summarizes the relation between age of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.6% of female workers aged 30 to less than 40 years had positive beliefs before the program, which improved to 31.7% after the program.

Figure 5 shows the relation between age of marriage of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.0% of female workers aged of marriage 17-22 years had positive beliefs before the program, which improved to 30.9% after the program.

Figure 6 shows the relation between educational level of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.6% of female workers university education had positive beliefs before the program, which improved to 27.6% after the program.

Figure 7 shows the relation between marital status of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.6% of married female workers had positive beliefs before the program, which improved to 49.2% after the program.

Figure 8 shows the relation between residences of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.0% & 0.6% of rural versus urban female workers, respectively, had positive beliefs before the program, which improved to 19.3% 43.2% after the program.

Figure 9 shows the relation between monthly income of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.6% of enough monthly income female workers had positive beliefs before the program, which improved to 52.3% after the program.

Figure 10 shows the relation between mammogram history of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that 0.6% of female workers who did not have mammogram history had positive beliefs before the program, which improved to 58.6% after the program.

Figure 11 shows the relation between breast problem history of the studied female workers and their total beliefs about breast cancer, breast self-examination, and breast cancer preventive measures as measured by the health belief model. It proves that no one (0.0%) of female workers who had breast problem history had positive beliefs before the program, which improved to 19.5% after the program.

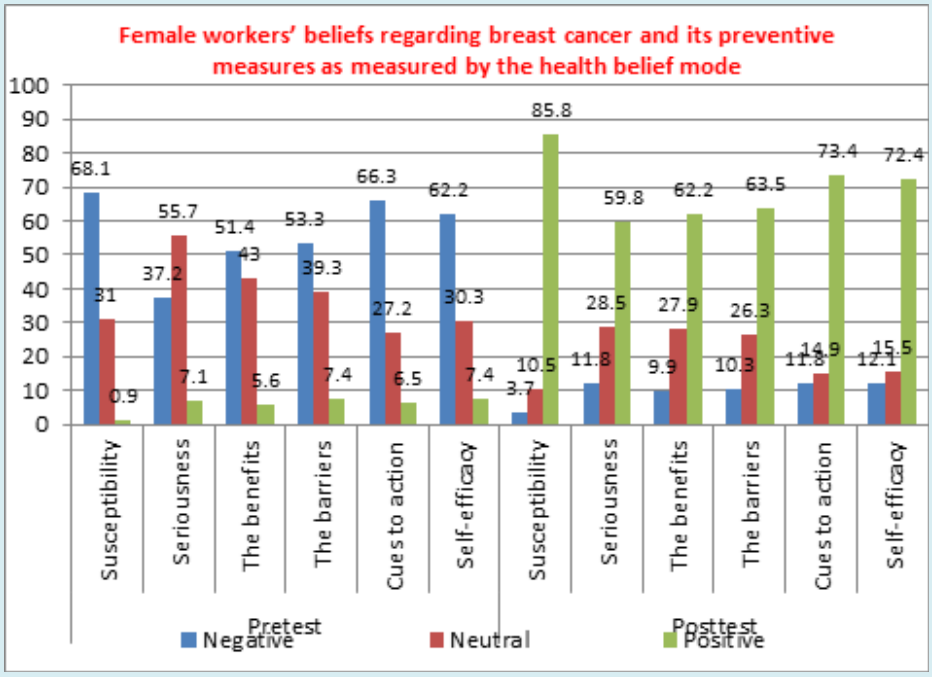

Figure 2: Female workers' beliefs regarding breast cancer and its preventive measures as measured by the health belief model.

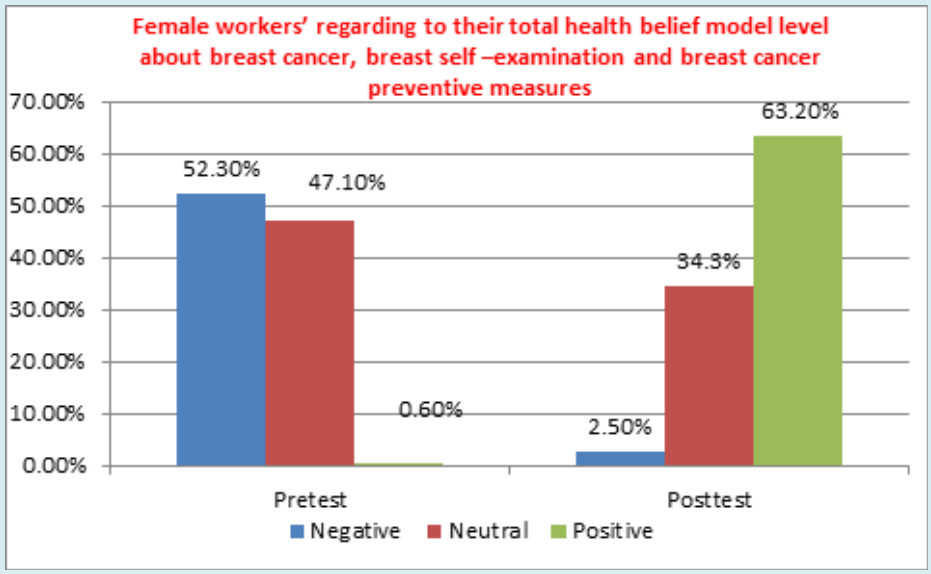

Figure 3: Percentage distribution of the studied female workers' regarding to their total health belief model level about breast cancer, breast self –examination and breast cancer preventive measures (n=323, X2 = 19.127, p value = 0.001**).

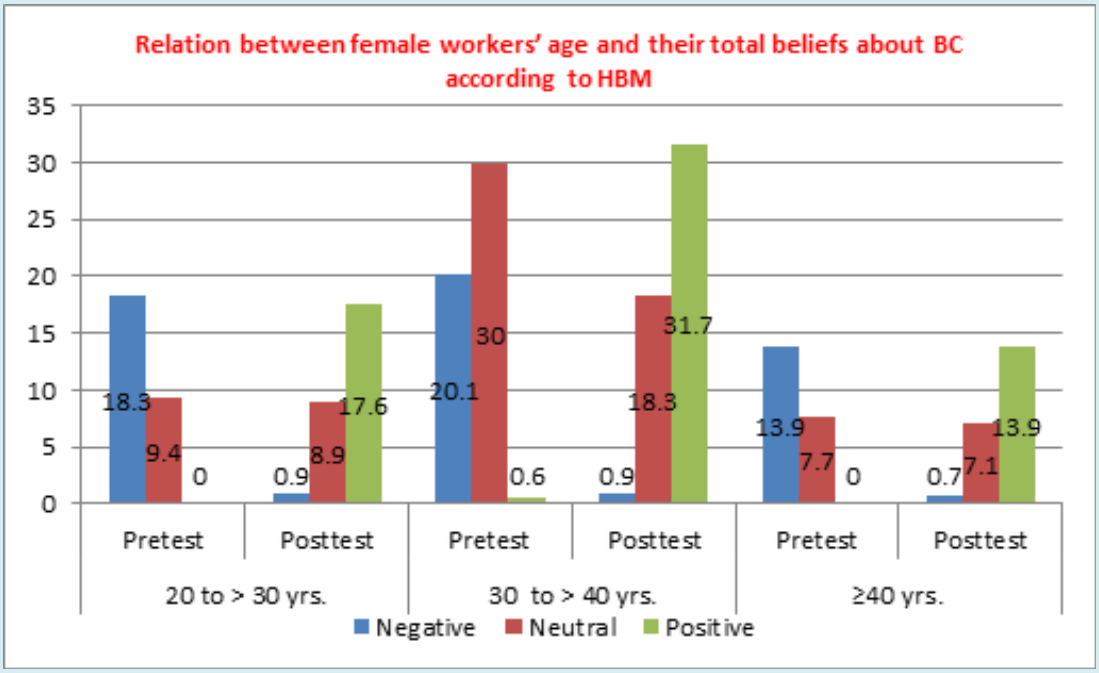

Figure 4: Relation between female workers' age and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

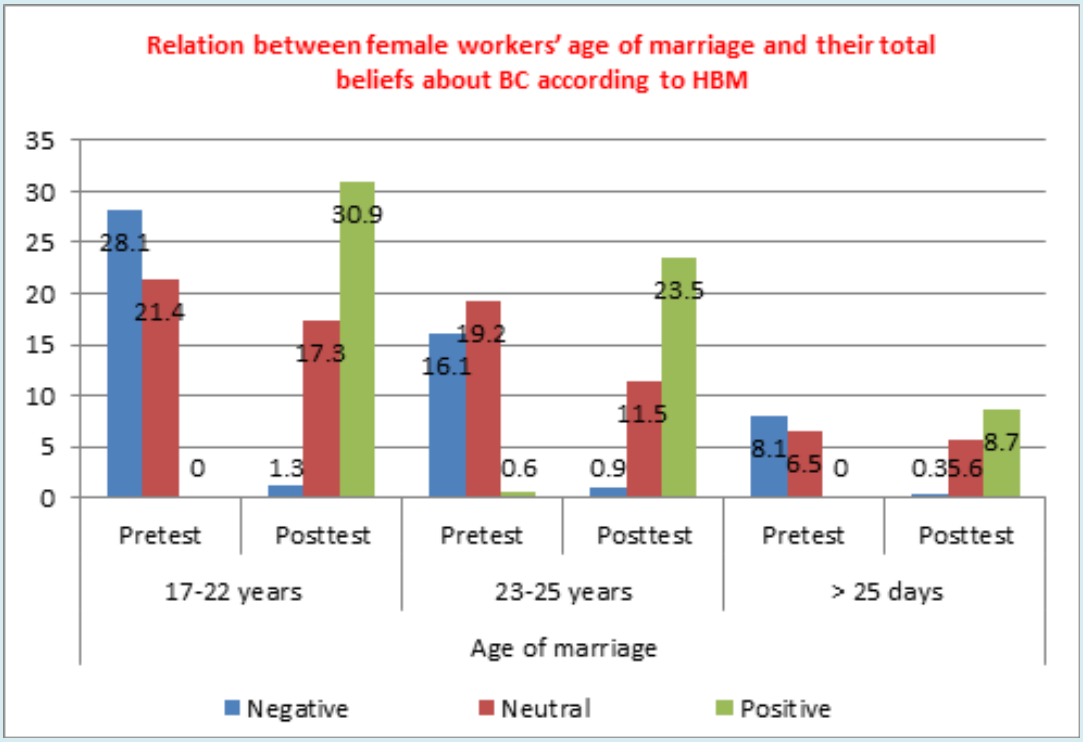

Figure 5: Relation between female workers' age of marriage and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

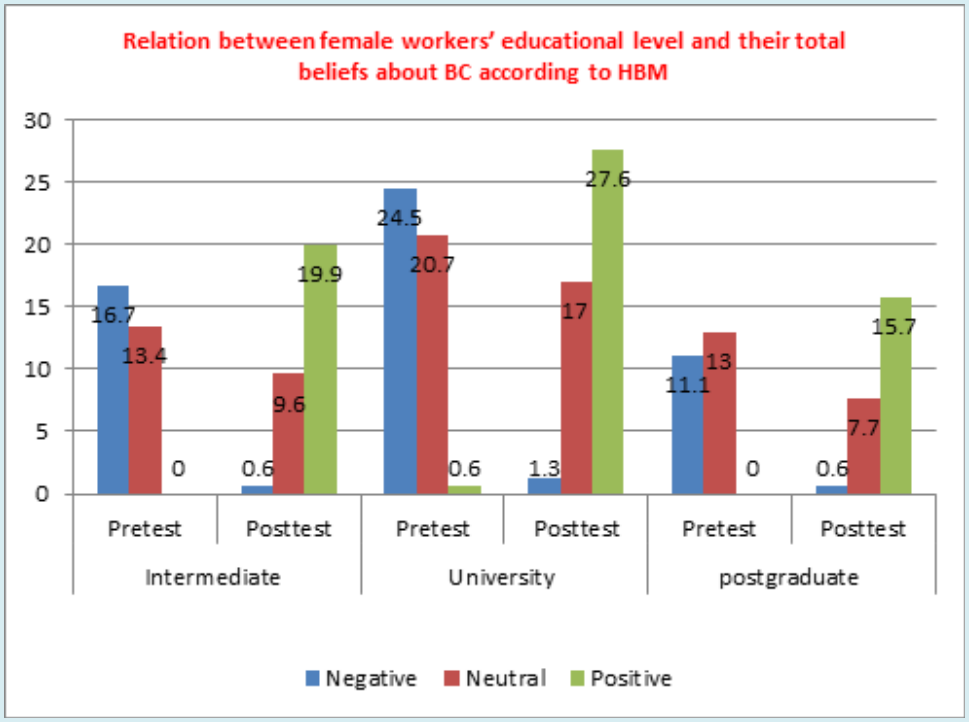

Figure 6: Relation between female workers' educational level and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

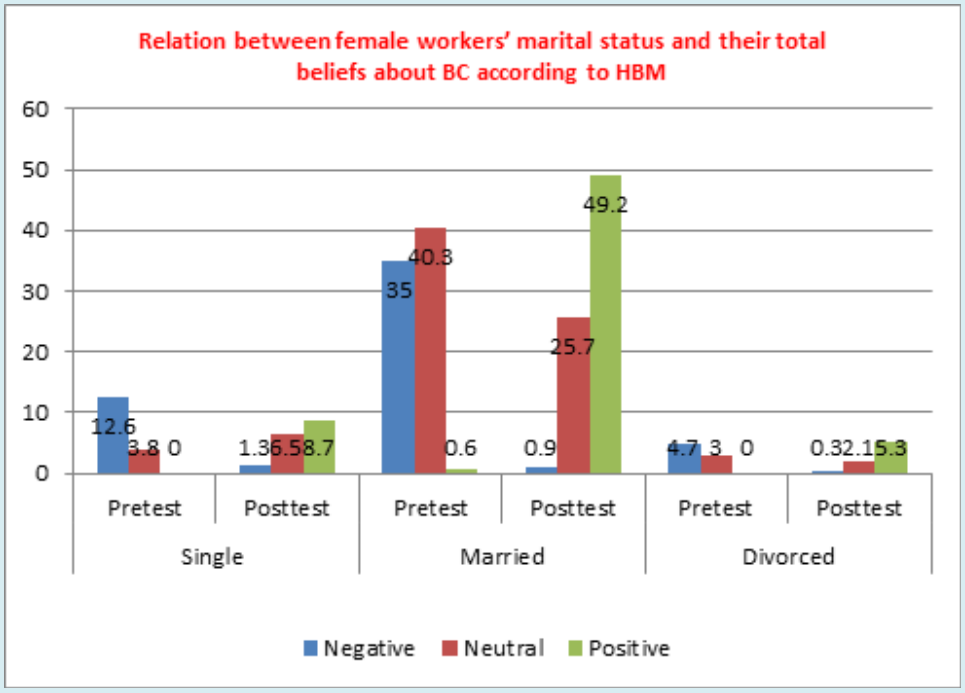

Figure 7: Relation between female workers' marital status and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

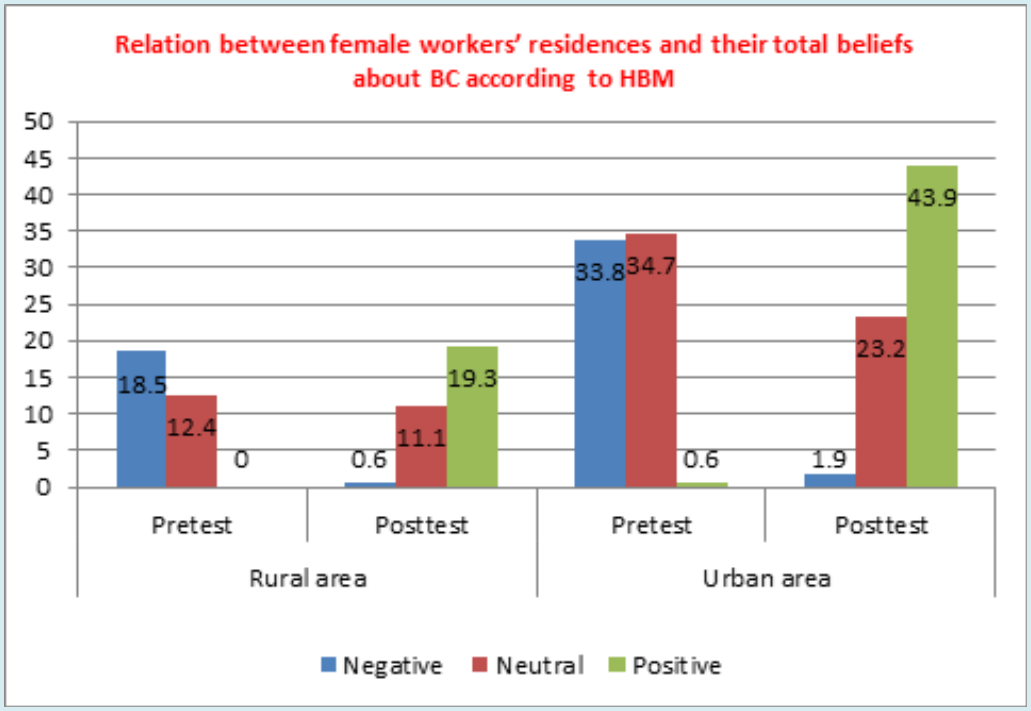

Figure 8: Relation between female workers' residences and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

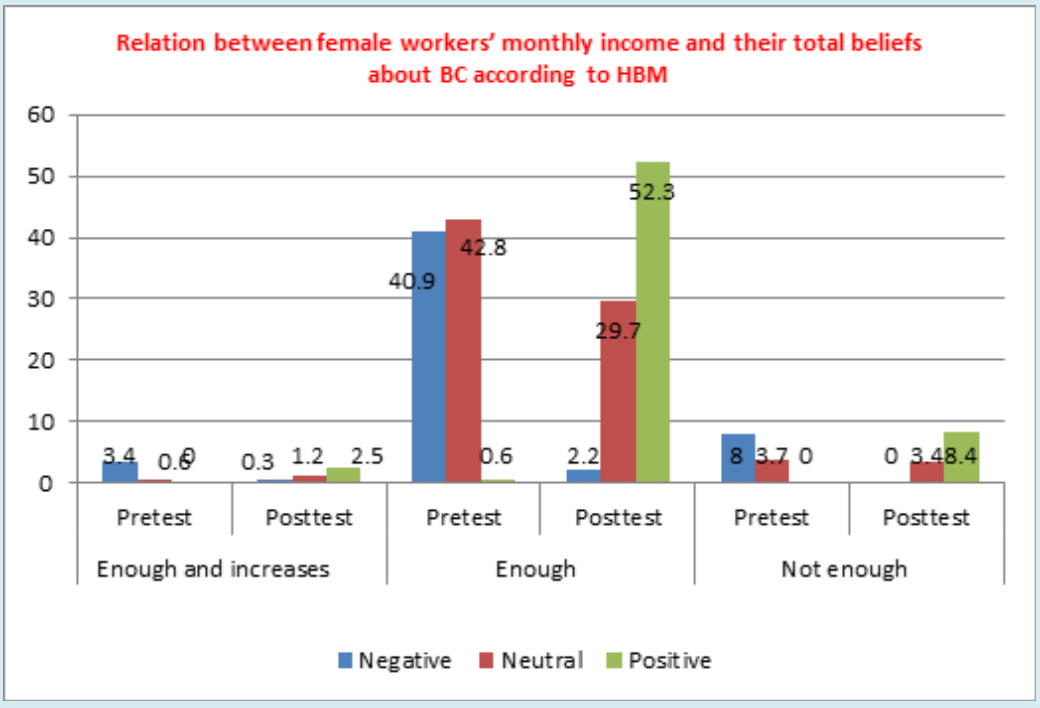

Figure 9: Relation between female workers' monthly income and their total beliefs about breast cancer, breast self-examination and breast cancer preventive measures as measured by health belief model.

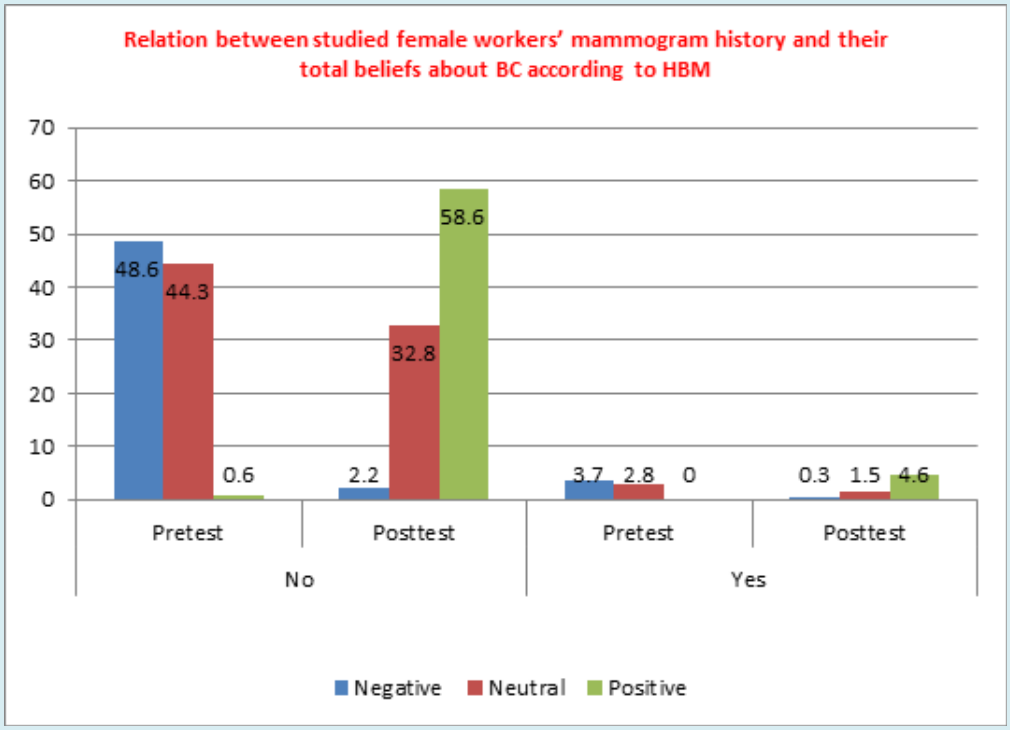

Figure 10: Relation between female workers' mammogram history and their total health belief model level about breast cancer, breast self –examination and breast cancer preventive measures.

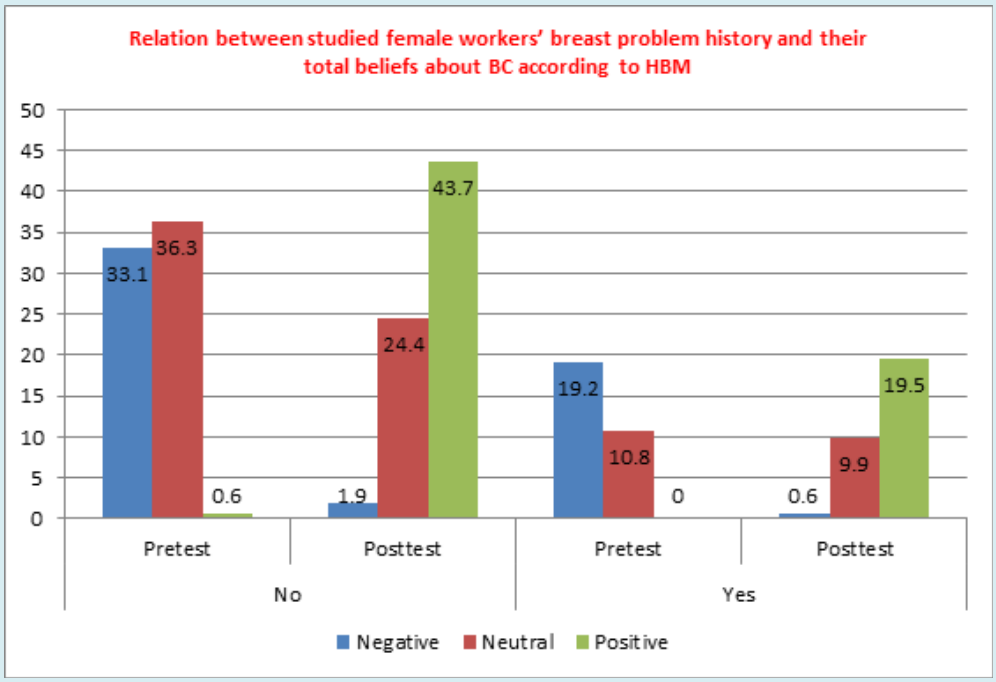

Figure 11: Relation between female workers' breast problem history and their total health belief model level about breast cancer, breast self –examination and breast cancer preventive measures.

Discussion

The aim of the study was evaluate effect of an educational program on Northern Upper Egyptian female workers' beliefs regarding breast cancer according to health belief model. The study found a significant improvement in female workers' beliefs about breast cancer and its preventive measures after implementing a health education program based on Health Belief Model (HBM). Previously, over half of the workers had negative beliefs, but after the program, less than one-tenth had positive beliefs. This finding aligns with previous research on self-efficacy in breast cancer prevention [30].

The study found a significant relationship between socio-demographic characteristics and female workers' beliefs about breast cancer, self-examination, and preventive measures. The majority of female workers aged 30-40 had positive beliefs before the program, which improved to around one-third after. This contradicts previous studies that found no significant relationship between age and health beliefs, indicating a need for further research. This finding is accepted with Mohamed, et al. [31] who stated that there was a highly statistically significant relationship between the studied patients' total HBM score and their age [31]. On the other hand, this finding contradicts Alenezi, et al. **[32],** who assessed "female healthcare workers' knowledge, attitude towards breast cancer, and perceived barriers towards mammogram screening: a multicenter study in north Saudi Arabia" and showed that there was no significant relationship between age of women and their health beliefs toward breast cancer [32]. This finding might be attributed to increased age and life experience that may affect the health beliefs of women and due to the improved level of knowledge and practices that can affect behaviors about breast cancer.

The study found no significant relationship between female workers' beliefs and their educational level before and after an educational program. However, a minority of intermediate-educated females had positive beliefs before the program, which improved after. This contradicts previous studies showing a significant relationship between education level and breast self-examination beliefs among female health workers **[33,34].** The improvement in knowledge for females who had intermediate education led to a change in health beliefs regarding breast cancer and how to deal with it after the educational program.

The study found a significant relationship between female workers' health beliefs and their marital status, with positive beliefs increasing before and almost half after a program, as supported by study on mammography knowledge and practice among women [35]. Conversely, this finding is different from Alenezi, et al. who assessed "female healthcare workers' knowledge, attitude towards breast cancer, and perceived barriers towards mammogram screening: a multicenter study in north Saudi Arabia" and showed that there was no significant relationship between marital status of women and their health beliefs toward breast cancer [32]. From the researcher's point of view, this finding may be related to the education level that improved the knowledge that strengthened the beliefs of the studied female and confirmed the incorrect belief that breast cancer is a disease of the married.

The study found no significant relationship between female workers' beliefs and their place of residence, with urban areas showing positive beliefs before the program, and monthly income of the family having a positive effect post-program. Women living in urban areas had the ability to receive information and change perceptions and beliefs about breast cancer, which show the impact of the educational program in changing their concepts about breast cancer.

The study found a significant relationship between family history of breast cancer and female workers' beliefs about breast cancer, self-examination, and preventive measures. However, no significant relationship was found in the posttest. Positive beliefs improved in minority females without a family history of breast cancer after program implementation.

Conclusion and Recommendation

Based on the findings of the present study, it can be concluded that there was marked improvement in female workers' total and all sub-items beliefs regarding breast cancer and its preventive measures as measured by the health belief model after the health education program was observed after program implementation. The improvement affected by female workers' age, educational level, age of marriage, marital status, residences, monthly income, mammogram, and breast problem history. Further, studies should study relationship between reproductive profile and health belief model regarding breast cancer and its preventive measures.

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