# Effect of Educational Intervention Based on Health Belief Model on Breast Cancer Prevention among Nursing Students

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**Abstract**

**Background:** Breast cancer is the most common cause of death among females, it is incidence becomes in increasing. It is frightening for women as it affects all ages so that promoting awareness about breast cancer causes and the screening program can help in reduction of morbidity and mortality among females**. Aim of the study**: the aim of this study was to assess the effect of educational intervention based on health belief model on breast cancer among female nursing students. **Subjects and Methods: Research Design**: Aquazi -experimental design with pre/ post assessment was used in the current study **Setting :** The study was conducted at Technical Nursing Institute at Zagazig University, Zagazig city at Elsharkia Governorate . **Subjects:** the data was collected from 180 female students during the academic year 2022-2023**. Tools of data collection**: three types of tools were used for data collection (1) An interview questionnaire (2) student's Knowledge regarding breast cancer and breast self-examination, (3) Health Belief Model (HBM) regarding Breast Self-Examination. **Results:** revealed that The mean age of students was *18.63±0.723*years old, the present study demonstrated that (20.6%) of studied female students had good knowledge about breast cancer at pre intervention phase, while this percentage increased to 88.3%& 80.0% respectively, at post and follow up intervention. the current study revealed that there was statistically significant difference of studied female students regarding the total health belief model (HBM) for breast cancer &BSE throughout pre/ post-intervention phase (P= 0.000**).. **Conclusion:** The results of present study supported the research hypothesis that there is marked an improvement in knowledge, health beliefs toward breast cancer compared to before applying educational program **Recommendations:** Continuing breast cancer preventive program

for students to improve their awareness. Several instructional handout &brochures should be distributed to female students containing preventive measures of BC &steps of BSE.

**Keywords:** Breast cancer, knowledge, Health belief model ,students

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**Introduction:**

Breast cancer (BC) is the most repeatedly detected cancer in females globally, with around 2.3 million cases diagnosed in 2020[(1)]. At the end of 2020, the data showed that about 7.8 million females with breast cancer were newly reported during the last five years, making it the world's most prevalent cancer[(2)]. .

Breast cancer is a malignancy in the breast that originates from glandular cells, glandular ducts, and breast supporting tissue but not breast skin. Cancer cells can arise when a genetic mutation has occurred due to DNA damage in normal cells. Breast cancer causes lumps in the breast and menstrual pain[(3)]. .

*The Health Belief Model focuses on two aspects. The first was threat perception which includes two main beliefs: perceived susceptibility to disease and severity level of disease. Second, it was behavioral appraisals that also included two distinct sets of beliefs: beliefs related to the benefits or effectiveness of the recommended health behavior, and other beliefs related to barriers to performing the behavior. Additionally, the model proposed that action signals could trigger health behaviors [5].*

* **Significance of the Study:**

Early detection of a breast abnormality is critical for treating breast cancer and reducing morbidity and death associated with the disease. But, between different age groups, there is a significant discrepancy in perceptions of the risk and benefit of the breast self-examination technique. student's perceptions of breast cancer risk and their link with the breast self-examination (BSE) were found to be unrelated. This could be because students are aware that the risk of breast cancer increases with age, but young female may not realize they are at danger until they are older. As a result, they do not believe it is necessary to exercise BSE on a regular basis[(6)].

Breast cancer has been considered a significant health problem among females because of its high incidence in recent years. Breast cancer screening methods was the most critical behaviors for early diagnosis of breast cancer. 95% of all breast cancers can be diagnosed in the primary stage by BSE. Unfortunately, despite the relative benefits of regular BSE, few female examine themselves. Hence, the researcher decided to perform the study to improve breast cancer preventive behavior among nursing students.

**Aim of the study:**

**The aim of the study was:**

**Research Hypothesis:**

After implementation of the educational intervention the female students' knowledge, and health beliefs about preventive behavior of breast cancer was improved.

**Subjects and Methods:**

**Research design:**

A quazi -experimental design was used in this study

**.Study Setting:**

The study was conducted at Technical Nursing Institute at Zagazig University, Zagazig city at Elsharkia Governorate

**Study Subjects:**

A purposive sample was conducted on 180 female students The sample size was calculated through Assuming; percent of participant' good knowledge level was 38% at pre intervention phase .percent of participant' good knowledge level was 64% at post intervention phase **(Mahmoud, et al 2020)**. confidence level is 99% with power of study99%.Sample size calculated using EPI INFO version 6.04, is 180 participant.

**Inclusion criteria**

1- All female students who have agreed to participate in the program.

2- Female students age 18 years and above.

**Tool for data collection:**

In order to fulfill the objectives of the study three tools were used to collect necessary data:

**Tool 1:** Structured Interviewing questionnaire : It was consisted of three part :

**Part(1):Socio-demographic characteristics of female students** : it was include student's age, place of residence, father& mother educational level and marital status

**Part(2): Mensterual history of female students**: that included age of menarch, regularity of menses, complain of any breast symptoms related to mensteruation t premarital

**Part (3): Medical and family history of female students:** such as having chronic disease, take hormonal therapy, family history of breast cancer

**Tool II: student's Knowledge regarding breast cancer and breast self-examination _Knowledge scoring**

It consisted of (22) items of closed-ended questions such as risk factors of breast cancer, typs of breast cancer, methods of BC treatmen, Importance of BSE, time of BSE, age of beginning BSE

**Knowledge scoring system**: According to [7]. each item was assigned a score of **(2)** for a complete correct , scored**( 1)** if incomplete correct, and **(0)** if Incorrect or don't know.

- **Scored 75% or more** : Having good knowledge,

- **Scored 50%- <75%**:Having average knowledge.

- **Scored**

poor knowledge: **less than 50%** -

- Average : 60% to 75

- High : more than 75% to 100%

**Tool III: Health Belief Model (HBM) regarding Breast Self Examination**

This HBM tool was adapted from **Champion (2008**). and was modified by the researcher after reviewing available related literature**.** It was used to assess female students health beliefs regarding BSE. HBM was including 6 sections as the following :

•**Perceived susceptibility** 5 questions) as, students consider self be at risk of breast cancer, chances of getting breast cancer are great …… ect.

• **Perceived severity** (7 questions) such as, breast cancer has a high mortality rate, afraid to think about breast cancer ….etc.

• **Perceived benefits** (6 questions) as, the belief of a student's that doing BSE was an effort to detect breast cancer early, which is beneficial.

• **Perceived barriers** (6 questions), A students' belief that to do BSE, there were obstacles such as not experiencing or difficulty in menstruation and not knowing the correct steps about it.

• **Sense of self-efficacy** (11 question),as students have ability to follow every instructions against for BSE.

• **Health motivation** (7 questions)as , eat well balanced meal, exercise at least three times a week , search for new information to improve my health ……etc.

***Health Belief Model Scoring:*** it composed of 42 items The scale was measured on a five-point Likert type scale with the following scoring: strongly disagree (1);disagree (2); neutral (3); agree (4), and strongly agree (5).The total scores were 210, divided into two categories. The total scores were constituted positive behaviors if the score≥ 60 % ≥126scores and constituted negative behaviors if it is less than 60%<126scores

**Content Validity and Reliability:**

**Content Validity and Reliability:**

Validity of the tools was tested for content validity by Jury of three experts one professor and other assistant professor obstetrics and gynecological nursing as well as one assistant professor in medical surgical health nursing

The reliability was done by Cronbach's Alpha coefficient test to ensure that three tools of data collection consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool

**Field work:**

Data collection was within the period of eight months from the beginning October 2022 up to end of May 2023. . The researcher allocated three days weekly from 3 days per week on(Saturday , Sunday and Thursday from, 12 pm to 2 pm_after ending the practical sections**).**The average number which interviewed was 10-15 female student per day. The approximate time spent was around 30- 45 minutes according to response of students.

Moreover, an educational session was developed based on actual educational need assessment of the studied subjects to improve their knowledge and health belief regarding Breast cancer. It was developed by researcher in the light of available researches and literature. It was written in simple Arabic language with attractive and colorful pictures and covers the relevant aspects of Breast cancer and preventive behaviour as well as practical aspects . The total number of sessions were (12-18) sessions.

**Pilot study:**

The pilot sample was applied on 10% of the study sample who selected from the previously mentioned study setting according to inclusion criteria. The purpose of the pilot study was to ascertain the feasibility of the tools, and to detect any problems peculiars to the statement as sequence and clarity. It also helped to estimate the time needed to complete the interview

**Administration and Ethical consideration:**

The ethical issues were taken into consideration during all phases of the study. Firstly, the study approved by the pertinent authority of research ethics committee of the Faculty of Nursing at Zagazig University Then, approved was taken by the dean of Faculty of Nursing at Zagazig University .On the other hand, verbal agreement for participants was taken after fully explanation of the aim of the study. Participants was given the opportunity to refuse the participation, and they were notified that they could withdraw at any stage of the data collection interviews without giving any reason and with no consequences; also, they assured that information

**Statistical Analysis:**

**Statistical Analysis:**

Data entry and statistical analysis were done by using the Statistical Package for Social Sciences (SPSS) version 26. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative .

Moreover, independent sample t test (T test): which was used when compare between the mean of two normally distributed independent groups.Chi square test ($x^2$): used for the association (or relation) between the categories of two independent sample (row and column variable) to reflect real association between these 2 variables in the population. Pearson correlation (r): used to test the nature and strength relation between two quantitative / ordinal variable. For all statistical tests

done, the threshold of significance was fixed at the 5% level (p-value) whereas the p-value is the degree of significance. The P-value was considered significant at 0.05, and the statistical significance was considered high at 0.001 while non-significant when p-value > 0.05.

**Results:**

**Table (1) Distribution of studied sample according to their socio- demographic characteristics,** shows that nearly one half (47.2%) of studied sample was 18 years old .with mean age ***18.63±0.723***years old. More than three quarter of them (77.2%) lived in rural area. The highly percentage of studied sample (92.8%) was single. More than two fifth of father& mother educational level was secondary level & university level **(** 41.7%,41.7%,42.8, 37.2%) respectively. the majority of studied sample (83.4%) had enough income per month. Nearly two third of students (66.1% ) were in first academic year

Table **(2) Distribution of studied sample regarding to their medical and family history** shows that only (4.4%) of studied sample had chronic medical diseases , half of them(50.0%)had diabetes mellitus. All of studied sample didn't take hormonal therapy, or exposed to radiation. Only (16.7%) of studied sample had family relative suffer from breast cancer with second degree relative**%)**.

**Table( 3) . Distribution of studied students regarding their knowledge about breast self examination through the program phases )**, reveals that only 22.8% of studied female student's had correct answer related to The right age to start BSE at pre intervention and this level increased to 94.4% & 88.9% respectively, at post and follow up intervention. Additionally, there was highly statistically significant difference of studied female student's knowledge regarding breast self examination between pre/ post-intervention (P= 0.000**), while there was no statistically significant difference between post/ follow up intervention (P >0.05). agreement that premarital care if applied better will help to decrease genetic diseases .More than one third (35.8%) reported their disagreement to marry couple if having genetic diseases .The majority of students (90.6%) agreed with advising their friends to have PMC services.

**Table (4): Mean and standard deviation of health belief model items among studied students about Perceived susceptibility through the program phases**

reveals that, there was a highly statistically significant difference of studied female students regarding perceived susceptibility of health belief model for breast cancer between pre/ post-intervention and between post/ follow-up intervention (P= 0.000)

**Table (5): Mean and standard deviation of total health belief among studied students about breast self-examination through the program phases**, shows that, there was statistically significant difference of studied female students regarding the total health belief model (HBM) for breast cancer &BSE throughout pre/ post-intervention phase (P= 0.000**).

**Figure (1): Distribution of studied students regarding their source of knowledge about breast cancer),** shows that nearly one half (48.9%) of studied sample reported internet as the main source of knowledge about breast cancer and breast self examination.

**Figure (2):** Percentage distribution of studied students regarding their total health belief about breast cancer through the program demonstrates that 38.3% of studied female students had positive behaviour of total health belief at pre intervention phase, while this percentage increased to 87.8%& 80.6% respectively, at post and follow up intervention.

**Table (1): Distribution of studied sample according to their socio- demographic characteristics (N=180).**

| socio demographic characteristics | No | % |
|---|---|---|
| **student's age** | | |
| 18 | 85 | 47.2 |
| 19 | 72 | 40.0 |
| 20 | 21 | 11.7 |
| 21 | 2 | 1.1 |
| **Mean ±SD** | 18.63±0.723 | |
| **Residence** | | |
| Urban | 41 | 22.8 |
| Rural | 139 | 77.2 |
| **Marital Status** | | |
| Single | 167 | 92.8 |
| Married | 13 | 7.2 |
| **Father Education level** | | |
| Illiterate | 14 | 7.8 |
| Primary level | 16 | 8.9 |
| Secondary level | 75 | 41.7 |
| University or more | 75 | 41.7 |
| **Mather Education level** | | |
| Illiterate | 19 | 10.6 |
| Primary level | 17 | 9.4 |
| Secondary level | 77 | 42.8 |
| University or more | 67 | 37.2 |

| | | |
|---|---|---|
| **Income Level per month** | | |
| Enough" | 150 | 83.3 |
| Not enough | 30 | 16.7 |
| **Academic year** | | |
| first grade | 119 | 66.1 |
| second grade | 61 | 33.9 |

**Table (2): Distribution of studied sample regarding to their medical and family history (n=180).**

| Medical and family history | No | % |
|---|---|---|
| **Do you have any chronic diseases** | | |
| No | 172 | 95.6 |
| Yes | 8 | 4.4 |
| **if yes ,mention this (n=8).** | | |
| Hypertension | 2 | 25.0 |
| diabetes mellitus | 4 | 50.0 |
| chest allergy | 2 | 25.0 |
| **Are you taking any hormonal therapy** No | 180 | 100.0 |
| **Have you been exposed to radiation** **No** | 180 | 100.0 |
| **relative suffer from breast cancer** | | |
| No | 150 | 83.3 |
| Yes | 30 | 16.7 |
| **relationship with relative (n=30).** | | |
| First degree relative | 14 | 46.7 |
| second degree relative | 16 | 53.3 |

Table (3): Distribution of studied students regarding their knowledge about breast self examination through the program phases (n=180).

| Items | | Knowledge | | | | | | $X^2$1 | p-value | $X^2$2 | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre intervention | | Post intervention | | Follow-up intervention | | | | | |
| | | No | % | No | % | No | % | | | | |
| The right age to start BSE | Incorrect | 139 | 77.2 | 10 | 5.6 | 20 | 11.1 | 190.55 | .000** | 1.73 | .187 |
| | Correct | 41 | 22.8 | 170 | 94.4 | 160 | 88.9 | | | | |
| The Frequency of doing BSE | Incorrect | 51 | 28.3 | 2 | 1.1 | 10 | 5.6 | 53.12 | .000** | .000 | 1.000 |
| | Correct | 129 | 71.7 | 178 | 98.9 | 170 | 94.4 | | | | |
| The right time for doing breast self examination | Incorrect | 103 | 57.2 | 3 | 1.7 | 15 | 8.3 | 133.71 | .000** | .000 | 1.000 |
| | Correct | 77 | 42.8 | 177 | 98.3 | 165 | 91.4 | | | | |
| The sutable posture for doing breast self examination | Incorrect | 103 | 57.2 | 0 | 0.0 | 3 | 1.7 | 144.28 | .000** | .000 | 1.000 |
| | Correct | 77 | 42.8 | 180 | 100.0 | 177 | 98.3 | | | | |
| Inspect during breast self examination | Incorrect | 3 | 1.7 | 4 | 2.2 | 5 | 2.8 | 234.77 | .000** | 23.44 | .000** |
| | Incomplete | 154 | 85.6 | 10 | 5.6 | 42 | 23.3 | | | | |
| | Correct | 23 | 12.8 | 166 | 92.2 | 133 | 73.9 | | | | |
| Examination | Incorrect | 11 | 6.1 | 2 | 1.1 | 5 | 2.8 | 67.72 | .000** | 15.65 | .000 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| technique used in BSE | Incomplete | 46 | 25.6 | 0 | 0.0 | 15 | 8.3 | | | | |
| | Correct | 123 | 68.3 | 178 | 98.9 | 160 | 88.9 | | | | |
| The technique of BSE was done through | Incorrect | 70 | 38.9 | 3 | 1.6 | 10 | 5.6 | 134.65 | .000** | .000 | 1.000 |
| | Incomplete | 82 | 45.6 | 5 | 2.8 | 12 | 6.7 | | | | |
| | Correct | 28 | 15.6 | 172 | 95.6 | 158 | 87.8 | | | | |

$X^2$1 between pre and post intervention of intervention $X^2$2 between post and follow-up phase

** Highly statistically significance p<0.001 *Statistically significance p<0.05

**Table (4): Mean and standard deviation of health belief model items among studied students about Perceived susceptibility through the program phases (n=180).**

| Perceived susceptibility Items | Max score | Health belief model | | | | | | t1 | p-value | t2 | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre intervention | | Post intervention | | Follow-up intervention | | | | | |
| | | Mean | ±SD | Mean | ±SD | Mean | ±SD | | | | |
| It is extremely likely I will get breast cancer | 5 | 2.04 | .902 | 3.07 | .894 | 2.15 | 1.016 | 10.776 | .000** | 9.034 | .000** |
| I feel I will get breast cancer in the future. | 5 | 1.87 | .617 | 2.47 | .881 | 1.98 | .724 | 7.482 | .000** | 5.774 | .000** |
| There is a good possibility I will get breast | 5 | 1.77 | .617 | 2.33 | .852 | 2.03 | .957 | 7.536 | .000** | 3.110 | .002* |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cancer in the next ten years. | | | | | | | | | | | |
| My chances of getting breast cancer are great | 5 | 1.97 | .638 | 2.46 | 1.069 | 2.03 | .747 | 5.391 | .000** | 4.333 | .000** |
| 1 am more likely than the average woman to get breast cancer | 5 | 1.65 | .664 | 2.08 | .921 | 1.91 | .674 | 5.417 | .000** | 2.180 | .031* |
| Total | 25 | 9.30 | 2.03 | 12.40 | 3.60 | 10.10 | 2.55 | 10.49 | .000** | 7.003 | .000** |

t1 paired test between pre and post intervention t2 paired test between post and follow-up phase of intervention

** Highly statistically significance p<0.001 *Statistically significance p<0.05

**Table (5): Mean and standard deviation of total health belief among studied students about breast self examination through the program phases (n=180).**

| Total | Max score | Health belief model | | | | | | t1 | p-value | t2 | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre - intervention | | Post - intervention | | Follow-up intervention | | | | | |
| | | Mean | ±SD | Mean | ±SD | Mean | ±SD | | | | |
| | 205 | 130.11 | 15.49 | 142.22 | 6.05 | 140.00 | 7.52 | 10.35 | .000** | 3.73 | .000** |

t1 paired test between pre and post intervention t2 paired test between post and follow-up phase of intervention

** Highly statistically significance p<0.001 *Statistically significance p<0.05

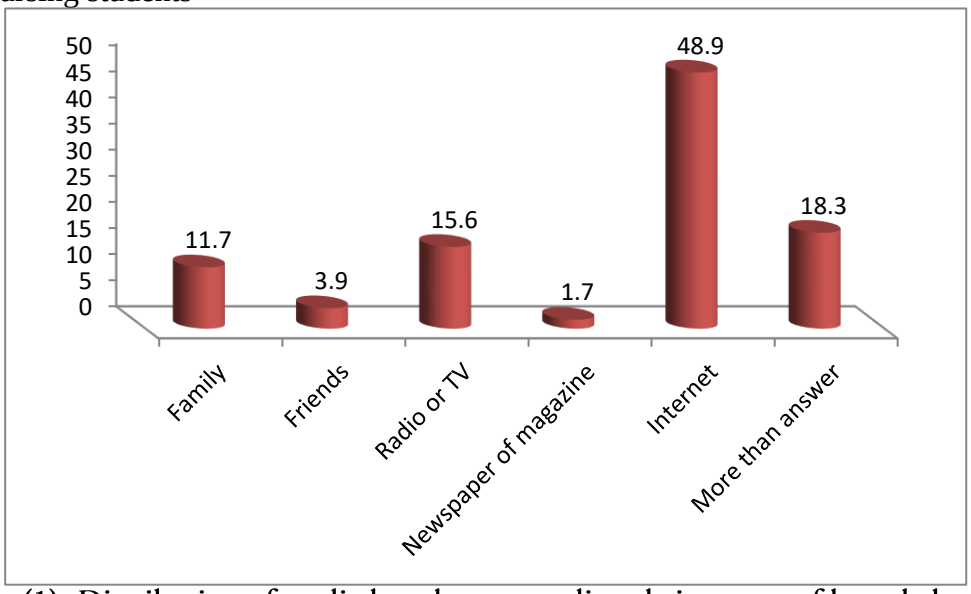


Figure (1): Distribution of studied students regarding their source of knowledge about breast cancer (n=180).

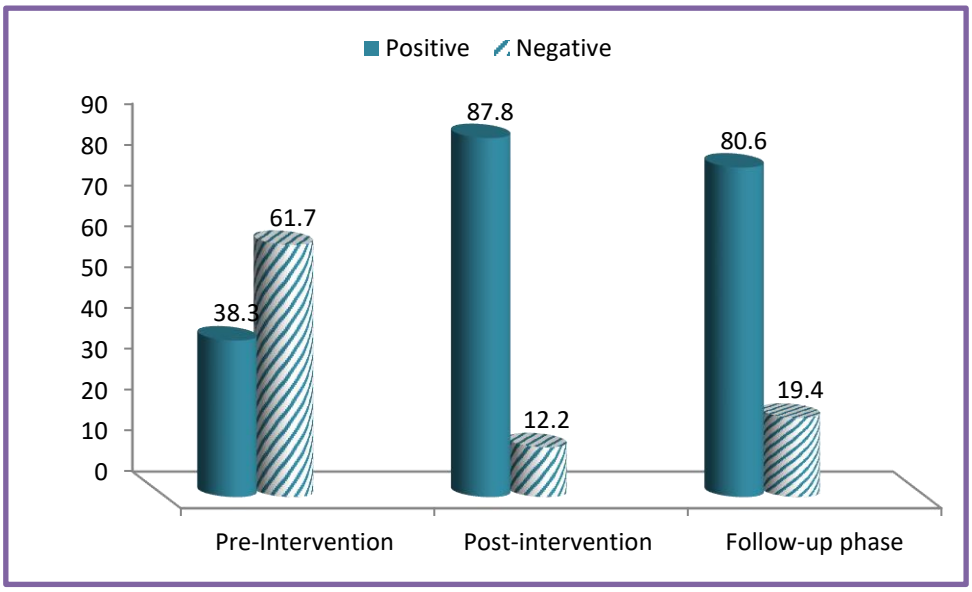


Figure (2): Percentage distribution of studied students regarding their total health belief about breast cancer through the program phases (n=180)

## Discussion:

The Health Belief Model (HBM) has been widely used to assess health beliefs about cancer screening behaviors; it is a cognitive model that attempts to identify health behavior patterns. In general, this model focuses on changes in beliefs that lead to changes in behaviors .The effectiveness of this model has been reported on issues such as breast self-examination ,breast cancer screening behavior **Sardasht**[7] , Therefore, the aim of this study was to assess the effect of educational intervention based on health belief model on breast cancer among female nursing students This was achieved through pre- assessment for female students knowledge, and practices of breast self-examination, design an educational session for those female students, and then implement and evaluate these educational sessions.)

**Regarding to demographic characteristics**, the current study revealed that **nearly one half of studied students their age was 18 years .with mean age** *18.63±0.723***years old**. This study was in the same line with across sectional study in cairo university carried by **Mohamed**[8] clarified that the majority of study participants age from 18 to 21 years. Also, this finding is similar to a study by **Rana**[9] who reported that Majority of the respondents were within the age of ≥17 years. On other hand, this result disagreed with a study by **Mihret**[10] about "Knowledge and Practice on Breast Self-Examination and Associated Factors among Summer Class Social Science Undergraduate Female Students in the University of Gondar, Northwest Ethiopia" who reported that nearly half of students was aged 26-31 years . The difference may be due to variations in socio-demographic characteristics, study setting and sample.

**As regard to educational level** ,the present study reaveled that More than two fifth of father& mother educational level was secondary level & university level**.** This results was contrasted with **Abo Al-Shiekh**[11] who reported that nearly half of father& mother educational level was university& level secondary level

**Regarding family and medical history of studied students. The current study revealed that .** Only(16.7%) of studied sample had family relative suffer from breast cancer with second degree relative. While only (12.8%)of studied students had breast problem related to menses. This result was agree with **(Abo Al-Shiekh**[11] a study in Gaza reported that Regarding the family history of BC, 24.4% of the students had a family history and only five had previous breast problems.

In addition to, the result is in line with study conducted in ETHIOPIA carried by **( Murad** [17] reprted that only (18.2%)of studied female had family history for breast cancer.

**Regarding studied sample knowledge about breast self-examination,** the present study revealed that there was highly statistically significant difference of studied female student's knowledge regarding breast self-examination between pre/ post-intervention. **(Ibrahim**[13] supported this study as reported there was a highly statistical significant difference (p= <0.000) in the adolescent student's knowledge about breast self-examination as pre/immediate post and after one month of intervention implementation.

In current study, majority (71.7%) of the female students mentioned that the frequency of breast self-examination is once a month . this finding was agree with (**Rana**[9] in study about Knowledge and attitude on breast self-examination among female students in secondary school of Kathmandu ,reported that majority (68.9%) of the respondents mentioned that the frequency of breast self-examination is once a month. Meanwhile, this study contradicts with study conducted at Delta State, Nigeria where only 15.8% knew the accurate frequency of breast self-examination **(Akpo**[14] Regarding ideal time to perform BSE for menstruatingfemale, 42.7% of the studied female responded correctly about ideal time to perform BSE which was after mensteruation In this line a study conducted at Andhra Pradesh, India showed consistent result

only 23.0% of respondents responded correct timing to perform BSE **(Karem** [15]

**Concerning the total health belief about Perceived susceptibility through the program phases**, the present study revealed that nearly one third of studied students had positive attitude related to perceived susceptibility of health belief model at pre intervention and this level was

changed to 83.9%& 78.9% respectively, at post and follow up intervention. **(Mahmoud1**[16] was in agreement with this study as mentioned one third of studied sample had positive attitude toward Perceived susceptibility and increased in post model implementation. This finding might be due to awareness and education on breast health issues from the HBM model changed students's behavior toward breast cancer detection.

**Regarding Mean and standard deviation of total health belief among studied students about breast self-examination through the program phases,** the current study finding showed that, the mean score of women' health belief models throughout pre/ post-intervention was highly statistically significant difference, meanwhile no statistically significant difference between post/ follow up intervention.**( Ritchie et al ., 2020)** was agree with this study as reported highly statistical significance total score of health believe model as

(*p* < .00001).this result was supported by a study in Banha carried by

**(Mahmoud et al., 2018**) after the educational intervention a highly statistically significant differences (P= 0.000) were observed between both groups in the total and all HBM constructs; perceived susceptibility, severity, benefits, barriers, self-efficacy, and cues to action. Moreover, a general improvement (P= 0.000) in the total and all HBM constructs mean scores were observed within the intervention group two months after educational intervention as compared to before it.

**In relation to the previous knowledge about breast cancer and the source of these knowledge of the studied female students**, the current study showed that 94.7% of studied female students reported that they had heard about breast cancer. In this respect a study done by **(Mohamed**[8]in Cairo university, mentioned that, about 90%had heard about breast cancer. Nearly half of studied female students (48.9%) had source of knowledge about breast cancer from internet followed by Radio &TV. These findings contradicted those of **Murad**[17], who stated that radio and TV is the main source of information about BC followed by Family, friends, neighbors.

**As for the total level of health beliefs model ,the present study revealed that** more than one third of studied female students had positive behaviour of total health belief at pre intervention phase, while this percetage increased to 87.8%& 80.6% respectively, at post and follow up intervention. This result was in the same line with (**Mahmoud**[16].who reported more than one third of studied sample has positive behavior in pre intervention of health model ,while this percentage increased to more than two third after intervention.( **(Mahmed**[12] supported this result as reported only 9% of studied sample had positive behavior while the majority of studied sample had positive behavior after implementation of the health model

## Conclusion:

The results of present study supported the research hypothesis that there is marked an improvement in knowledge, beliefs toward breast cancer compared to before applying health belief model

## Recommendation:

Based on findings, the study recommended:

1-Health education is a keystone in improving students knowledge toward preventive behavior for breast cancer

2-Continuous health educational program for students regarding breast cancer in Egypt building on the president's initiative to support student's health for early detectionof breast cancer.

3- Several instructional handout &brochures should be distributed to female students containing preventive measures of BC &steps of BSE

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