Knowledge and Attitudes of Female Nursing Students regarding Breast Self-examination and Mammography

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Abstract

Background: Breast cancer is the leading cause of cancer deaths among ages 15-54, according to the National Cancer Institute. Knowledge, attitudes, and beliefs toward breast cancer have been shown to influence breast cancer screening. **The study aimed** to assess knowledge and attitudes of female nursing students regarding breast self-examination and mammography. **Design**: A descriptive study design was used for this study. **Setting:** The study was conducted at Faculty of Nursing- Benha University. **Sample**: Simple random included (220) female nursing students. **Tools of data collection:** Three main tools were used, **Tool I:** A structured self-administered questionnaire which included 2 parts (1) general characteristics of female nursing students, (2) barriers of female nursing students towards performing breast self-examination, **Tool II:** Female Nursing Students' Knowledge Assessment Sheet and **Tool III:** Female Nursing Students' Attitudes Assessment Sheet. **Results:** More than two thirds of the female nursing students had poor total knowledge scores regarding breast cancer, breast self-examination and mammography. About two thirds of female nursing students had total negative attitudes scores regarding breast cancer, breast self-examination and mammography. Additionally, there was a highly statistically significant positive correlation between total knowledge and total attitudes scores among studied female nursing students regarding breast self-examination and mammography ($p \leq 0.001$). **Conclusion:** About two thirds of female nursing students had poor knowledge and negative attitudes regarding breast cancer, breast self-examination and mammography. **Recommendations:** Conducting health education programs, seminars, and counseling regarding breast self-examination, mammography, breast cancer prevention issues for female students in secondary schools and universities.

Key words: Attitudes, Breast self-examination, Knowledge, Mammography.

Introduction

Breast cancer is one of the most common, aggressive and deadly malignancies in women worldwide, could vastly invade and spread to surrounding tissues and organs. According to global cancer statistics "GLOBOCAN" statistics in 2021, this cancer was reported as one of the most common malignancies diagnosed with an incidence of about 11.7% of all new cancer cases (2,261,419 people). It was also ranked the fifth leading cause of death accounting for 6.9% of all cancer-related deaths (684,996). According to the WHO, the prevalence of breast cancer will increase significantly due to major changes in people's lifestyles by the end of 2030 **(Shanbehzadeh et al., 2022).**

In Egypt, breast cancer is the most common cancer among women, accounting for 18.9% of all cancer cases and nearly one-third of all malignancies in women globally. According to its fatality rate, it is the second most common cancer among women in the world. Breast cancer accounts for the largest

proportion of female cancer-related deaths and is the first common cancer in more than 140 countries worldwide **(Masoudi et al., 2022).**

The cause of breast cancer is not fully understood. A variety of interrelated factors for breast cancer have been known for some time. The risk factors are differentiated into non-modifiable risk factors: such as sex, age, genetic characteristics including family or personal history of breast cancer, ethnicity, and early menarche or menopause. Modifiable risk factors, usually associated with lifestyle factors, include alcohol consumption, excess weight or obesity, physical inactivity, and use of some medications, such as oral contraceptives **(Arafat et al., 2021).**

The most common symptoms of breast cancer are usually a painless lump in the breast or thickened tissue in the breast. Other symptoms include pain in the armpits or breast, pitting or redness of the skin of the breast like the skin of an orange a rash around the nipples, a discharge from a nipple, possibly containing blood, a sunken or inverted nipple change in the size or shape of the breast, peeling, flaking, or scaling of the skin on the breast or nipple **(American Cancer Society, 2022).**

According to the WHO recommendations, early diagnosis of breast cancer is the most significant step for reducing mortality and morbidity, especially in low- and middle-income countries .There is some evidence that this approach can produce "down staging" of the disease to stages that are more amenable to curative treatment .So that the survival rate of breast cancer is 90% in those diagnosed at an early stage, but fewer than 15% in those diagnosed late .There are three basic screening measures, include breast self- examination (BSE), clinical breast examination (CBE) and mammography **(Ganggayah et al., 2019).**

Breast self-examination is the most effective method of increasing the rate of survival in breast cancer. Many studies have proven that more than 90% of breast cancer cases are detected by women themselves. Most breast tumors are self-discovered so encouraging competent BSE performance will give more women better means to discover tumors earlier. Evidence suggests that BSE is a reliable screening tool when used as an adjunct to CBE and imaging studies (**Amegbedzi et al., 2022; Sadoh et al., 2021; Koc et al., 2019).**

Mammography is one of the effective medical imaging tools for early breast cancer detection and diagnosis, and it can lower rates of advanced and fatal breast cancer in its early stages. Mammography is considered the best screening method available for identifying breast abnormalities. Therefore, it is important for nurses and other health care providers to make individualized breast cancer screening plans with women based on age, health status, breast cancer risk assessment, and personal values **(Baccouche et al., 2022).**

Breast cancer awareness among female students is critically low. There is an urgent need to target this population for practical interventions to increase breast cancer awareness, in addition to screening and earlier diagnosis. Evidence-based interventions include educational sessions in patients' native language and use of BSE, CBE and mammography for screening **(Pineros et al., 2022).**

Knowledge, attitudes, and beliefs toward breast cancer have been shown to influence breast cancer screening in specific populations. Awareness and perceptions toward breast screening among women hold promise for identifying barriers to early

detection and could aid in the creation of interventions to promote screening **(Racine et al., 2022).**

Nurses have an essential role in the control and prevention of breast cancer focusses largely on educating and empowering women to do breast self-examination and increasing the number of women who participate in breast cancer screening. This depends on the fact that nurses have the knowledge and skills to do so nurses are in an ideal position to play a positive role in increasing the awareness of women about breast cancer and encouraging prevention strategies among women, nurses should possess a good knowledge base regarding BSE and mammogram **(Abo Al-Shiekh et al., 2021).**

Significance of the study

Globally, breast cancer represents a significant global health challenge. It is the most commonly diagnosed cancer in the world with an estimated 2.3 million cases recorded in 2020. Also, in the same year, breast cancer was responsible for almost 685,000 deaths in females worldwide. By 2040, the burden from breast cancer is predicted to increase to over 3 million new cases and 1 million deaths from breast cancer every year **(Arnold et al., 2022).**

In Egypt, breast cancer incidence is projected to increase by 1-2 % every year. According to its fatality rate, it is the second most common cancer among women in the world **(Shoulah and Abd Elaal, 2021; Alkasaby et al., 2020).**

In Egypt, breast cancer affects 38.8% of Egyptian women, according to the National Cancer Registry Program of Egypt; in the last thirty years of the twentieth century **(Swelam et al., 2022).**

The earlier detection through screening, the increased awareness and improved treatment, are believed to have decreased the breast cancer mortality rate. Nursing students play a key role as, nursing students will be the nurses of the future, also they will be responsible for imparting direct women health education in the community and hospital setting. Upgrading the knowledge not only helps in imparting health education to the women but also encourage women to modify lifestyle and reduce the possible complication of breast cancer **(Bastable, 2021).**

Therefore, the researchers found that it is necessary to conduct this study to assess knowledge and attitudes of nursing students regarding breast self-examination and mammography.

Aim of the study

This study aimed to assess knowledge and attitudes of female nursing students regarding breast self-examination and mammography.

Study questions:

- What is the level of nursing students' knowledge regarding breast self-examination and mammography?
- What are nursing students' attitudes regarding breast self-examination and mammography?
- What are nursing students' barriers regarding breast self-examination?
- Is there correlation between nursing students' knowledge and attitudes regarding breast self-examination and mammography?

Subjects and method

Study Design:

A descriptive study designs.

Study setting:

This study was conducted at Faculty of Nursing, Benha University.

Sampling:

Sample type: simple random sample.

Sample size: Total number of students enrolled in first Academic year 2021/2022 was (681); (192) Male and (489) Female. The total number of study sample was (220) female students and was chosen according to this formula: $n= \frac{N}{1+N(e)2}$

Where:

N= total female nursing students' number (489). e= margin error (0.05).

Tools for data collection:

Tool I: A structured self-administered questionnaire:

It was constructed by the researchers after reviewing a related literature **(Ogunkayode and Ajuwon, 2021; Al-Zalabani, et al., 2018; Mowla and Aziz, 2018).** It was written in form of closed ended questions (multiple choice questions) and in a simple Arabic language to suit the students's level of understanding and consisted of two parts:

Part (1): General characteristics of female nursing students: It consisted of (4) items (Age, marital status, residence and Mothers' education).

Part (2): Barriers of female nursing students towards performing breast self-examination: It consisted of (7) items (lack of knowledge about breast cancer and breast self-examination, lack of knowledge about technique of breast self-examination, lack of obligation, shyness and embarrassment, fear from the result and diagnosis of breast cancer, having healthy breast and unawareness of importance of breast self-examination).

Tool II: Female Nursing students' Knowledge Assessment Sheet:

It was constructed by a researchers based on reviewing the related literatures **(Heena, et al., 2019; El Asmar, et al., 2018; Fondjo, et al., 2018).** It was used to assess nursing students' knowledge regarding breast cancer, breast self-examination and mammography and was written in form of closed ended questions and in a simple Arabic language. It was included three Sections: **Section (1):** Knowledge of female Nursing Students regarding Breast cancer. It consisted of (10) items.

Section (2): Knowledge of female Nursing Students regarding breast self-examination. It consisted of (11) items.

Section (3): Knowledge of female Nursing Students regarding mammography. It consisted of (9) items.

Scoring system for nursing students' knowledge

The scoring system for female nursing students' knowledge was calculated as following:

Each item was assigned a score of (1) given when the answer was correct, a score (0) was given when the answer was incorrect or don't know. The total score of each section was calculated by summation of the scores of its items. The total score for the knowledge of a nursing student was calculated by the addition of the total score of all sections. The female nursing students' total knowledge score was classified as the following:

- **Poor knowledge** when the total score was **< 50%**.
- **Average knowledge** when the total score was **50% - 75%**.
- **Good knowledge** when total score was **> 75%.**

Tool III: - Female Nursing Students' Attitudes Assessment Sheet: -

This tool was constructed by a researchers based on reviewing the related literatures **(Al-Mousa, et al., 2020; Alshahrani, et al., 2019; Afifi, 2015)**. It was written in form of closed ended questions and in a simple Arabic language to suit the students' level of understanding. To assess female nursing students' attitudes regarding

breast cancer, BSE and mammography. It consisted of three parts:

Part (1): Attitudes of the female nursing students regarding breast cancer. It consisted of (11) items.

Part (2): Attitudes of female Nursing Students regarding Breast Self- examination. It consisted of (10) items.

Part (3): Attitudes of female Nursing Students regarding mammography. It consisted of (11) items.

Scoring system for nursing students' attitude scale

To obtain the outcome of attitudes scale, each item scored on three-point Likert scale as (2) if the response was agreed, (1) if it was uncertain and (0) if it was disagreed. The total score of each part was calculated by summation of the scores of its items. The total attitudes score was calculated by the addition of the total score of all parts.

The female nursing students' total attitudes score was classified into:

- **Positive attitudes:** when the total score of attitudes was $\geq 60\%$.
- **Negative attitudes**: when the total score of attitudes was < 60 %.

Validity and reliability of the tools:

Content validity of the tools was assessed by three experts in the field of Obstetrics and Gynecological Nursing. The experts reviewed the tool for clarity consistency and appropriateness of content, the sequence of items, accuracy, relevance, comprehensiveness, simplicity and applicability of the tools .No modification were done. The reliability of the tools was done to check the internal consistency. The Cronbach's alpha for tool II (Knowledge assessment sheet) was 0.92 and for tool III (Attitudes Assessment Sheet) was 0.86.

Ethical considerations:

Ethical aspects should be considered before starting the study as the following:

- The study approval was obtained from the scientific research ethical committee, Faculty of Nursing at Benha University.
- The aim of the study was explained to each student before applying the tools to gain confidence and trust.
- The researchers took a written consent from students to participate in the study and confidentialities were assured.
- The researchers assured that the data would be collected and treated confidentiality and the study didn't cause any harm for students.
- All female students had the freedom to withdraw from participation in the study at any time.

Pilot study

The pilot study was carried out on 10% of the total sample (22 female nursing students) to test simplicity, clarity and applicability of the study tool as well as the estimation of the time needed to fill the study tools. Since no modifications were made, the pilot study was included from the main study sample.

Field work:

The study was started and finished through the following steps:

- The study was conducted at the Faculty of Nursing- Benha University with female nursing students enrolled in first Academic year 2021/2022.
- The researchers introduced herself to the female students
- The researchers explained the aim of the study to the female students.

- A consent was taken from every one of them before data collection.
- The actual filed work was carried out in about 3 months from Mid of February 2022 to Mid of May 2022, 2days/week, (Monday and Wednesday), from 9 am to 2pm, nearly from (8-10 students) per day.
- The researchers distributed **A structured self-administered questionnaire (tool I)** to obtain general characteristics of studied nursing students. **Female nursing students' knowledge assessment sheet (tool II)** was used to assess nursing students' knowledge regarding breast self- examination and mammography. **Female Nursing Students' Attitudes Assessment Sheet (tool III)** was used to assess female nursing students' attitudes regarding breast self-examination and mammography.

- The average time needed for this sheet was around (25-30) minutes. Data tools were reviewed once it was finished for mistakes in filing and for clarifying of some questions. The data of questionnaire were transferred on spread sheet on daily bases.

Limitations of the Study

-Some students were heavily busy to fill the questionnaire due to the practical training and lecture time, so it was important to classify the students into groups to overcome this problem.

-There were limited references regarding mammography for students. Hence, the results were compared with those of other studies conducted in other populations.

Statistical analysis:

All data collected were organized, coded, computerized, tabulated and analyzed by using statistical package for social science (SPSS) programs version (22). Data were presented using descriptive statistics in the form of frequencies and percentage, means and standard deviations for categorical data, and result was presented in tables and figures. Qualitative variables were compared using Qui square test (X2) and Fisher Exact Test were used as the test of significance. Correlation coefficient (r) was used to evaluate association between studied variables.

Results:

Table (1): Shows that more than two thirds (70.5 %) of the female nursing students were in the age of (18-19) years old. with the mean ±SD18.17±0.71years. Also, the most (97.7%) of female nursing students were single and near three quarters (72.7%) of the female nursing students were living in rural area. Regarding mothers' education, more than half (55.5%) of studied sample' mothers had secondary education.

Table (2): Shows that, about three quarters (70.5%, 74.5% and 69.1) of female nursing students had lack of knowledge about breast cancer and breast self-examination, lack of knowledge about technique of breast self-examination and lack of obligation respectively. As well as, about two thirds (66.4%) of the female nursing had healthy breast. Additionally, about half (48.2%, 43.6% and 42.7) of the female nursing had shyness and embarrassment, fear from the result and diagnosis of breast cancer, and unawareness of importance of breast self-examination respectively.

Figure (1): Illustrates that, about two thirds (66.4%) of the female nursing students had poor total knowledge score regarding breast cancer.

Figure (2): Shows that, more than two thirds (69.5%) of the female nursing students had poor total knowledge score regarding breast self-examination.

Figure (3): Clarifies that, more than three quarters (79.1%) of the female nursing

students had poor total knowledge score regarding mammography.

Table (3): Shows that, more than half (51.4%) of female nursing students had negative attitudes regarding breast cancer. Also, about two thirds (64.1%) of female nursing students had negative attitudes regarding breast self- examination. While, more than two thirds (69.5%) of them had negative attitudes regarding mammography.

Table (4): Illustrates that there was a highly statistically significant positive correlation between total knowledge and total attitudes scores among studied female nursing students regarding breast self-examination and mammography.

Table (1): Distribution of female nursing students regarding their general characteristics (n=220).

General characteristics	No	%
Age (in year)		
17<18	65	29.5
18-19	155	70.5
Mean ±SD	18.17±0.71	
Marital status		
Single	215	97.7
Married	5	2.3
Residence		
Rural	160	72.7
Urban	60	27.3
Mothers' education		
Not read nor write	2	0.9
Read and write	6	2.7
Basic education	33	15.0
Secondary education	122	55.5
University education	57	25.9

Table (2): Distribution of female nursing students regarding their barriers towards performing breast self-examination (n = 220).

Barriers	Yes	
	No.	%
lack of knowledge about breast cancer and breast self-examination	155	70.5
lack of knowledge about technique of breast self-examination	164	74.5
Lack of obligation	152	69.1
Shyness and Embarrassment	106	48.2
Fear from the result and diagnosis of breast cancer	96	43.6
Having healthy breast	146	66.4
Unawareness of importance of breast self-examination	94	42.7

*** Results not mutually exclusive**

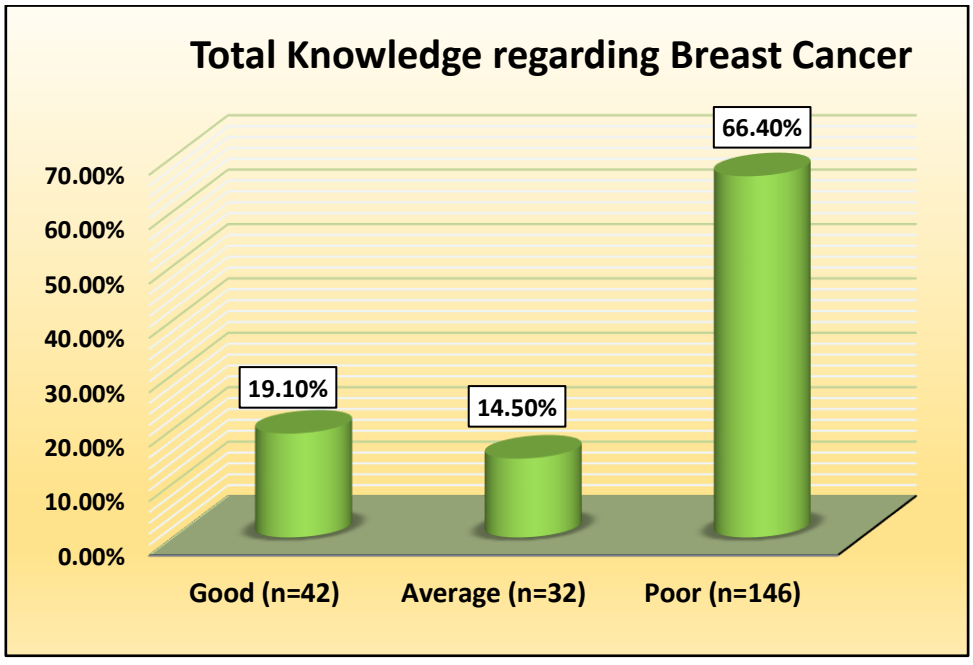

Figure (1): Distribution of female nursing students' total knowledge regarding breast cancer (n=220).

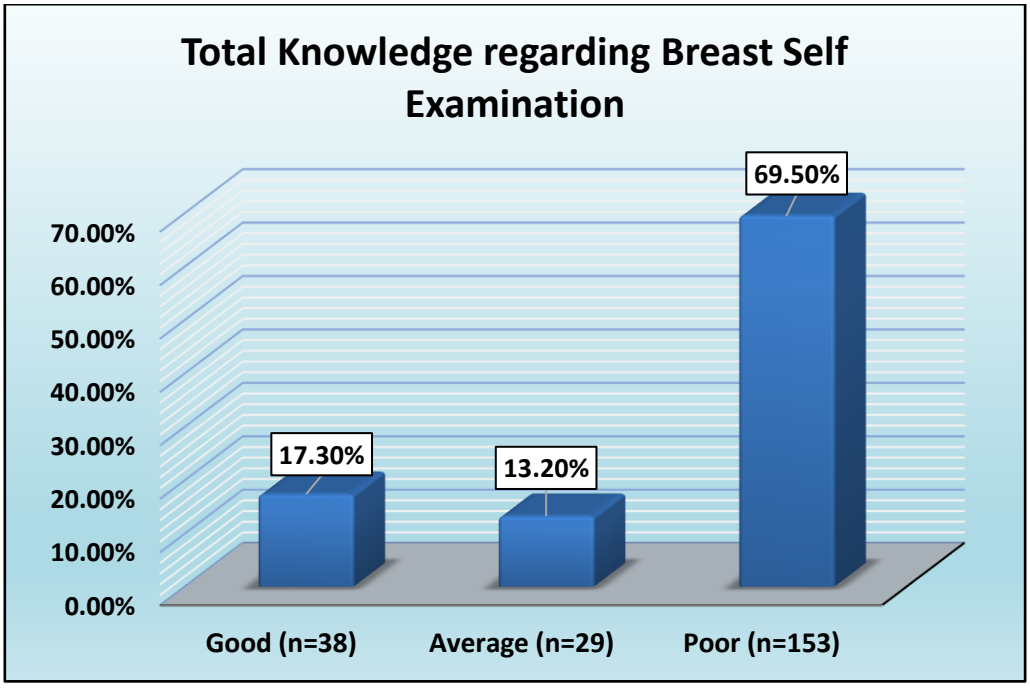

Figure (2) Distribution of female nursing students' total knowledge regarding breast self-examination (n=220).

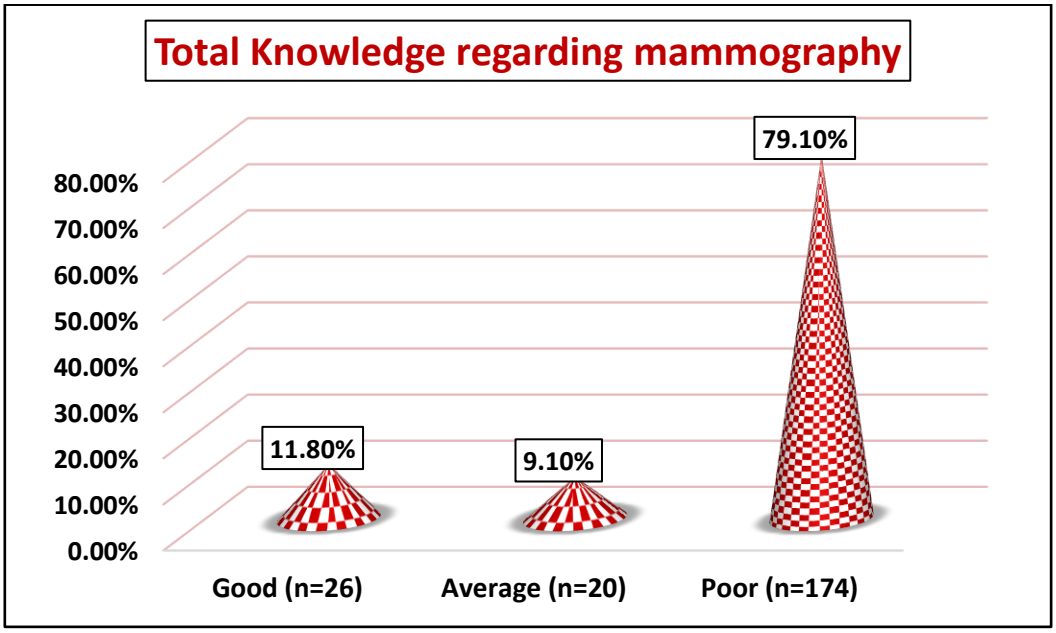

Figure (3) Distribution of female nursing students' total knowledge regarding mammography (n=220).

Table (3): Distribution of total female nursing students' attitudes regarding breast cancer, breast self-examination and mammography (n=220).

Attitudes Items	No	%
Attitudes regarding breast cancer		
Positive	107	48.6
Negative	113	51.4
Attitudes regarding breast self-examination		
Positive	79	35.9
Negative	141	64.1
Attitudes regarding mammography		
Positive	67	30.5
Negative	153	69.5

Table (4): Correlation between total knowledge score and total attitudes score among studied female nursing students (n=220).

Total attitudes	Total knowledge	
	r	P-value
	0.650	0.000**

**** Highly statistically significance** **$p \leq 0.001$**

Discussion

The present study aimed to assess knowledge and attitudes of female nursing students regarding BSE and mammography. This aim is achieved through a descriptive study design that answered the research questions about level of nursing students' knowledge regarding BSE and mammography, Nursing students' attitudes regarding BSE and mammography and correlation between nursing students' knowledge and attitudes regarding BSE and mammography.

According to the general characteristics of female nursing students, the present study showed that more than two third of the female nursing students were in the age of (18-19) years old, with the mean 18.17±0.71years. From a researchers 's point of view, this might be due to this study that was conducted among undergraduate students 1st academic year. These findings came in the same line with **(Lwin, 2019)** who studied " Breast Self-Examination among Diploma Nursing Students. Across-sectional study on Breast Self-Examination among Diploma Nursing Students was conducted in Yangon Region" and found that 83% of nursing students were in the age of (17-20) years old with the mean age was 19.53 ±2.085 years.

Regarding the Marital status, the present study showed that, the most of female nursing students were single. From a researchers 's point of view, this might be due to the students being interested in university

study rather than marriage and this is attributed to our culture and tradition in which few families let their girls get married during nursing study. This result was in consistent with **(Mowla and Aziz, 2018)** who studied "the effect of breast self-examination training program on the knowledge, attitude and practice among female nursing students at faculty of nursing, Alexandria university, Egypt" who reported that the most of students were single. Also, the present findings were in agreement with **(Lwin, 2019)** in the previously mentioned study**,** who reported that most of the students were single.

Regarding the student's residence, the present study showed that, near three quarters of the female nursing students were living in rural area, this may be due to geographical location where Benha university is the nearest to their residence. These findings came in the same line with **(Farahat, 2019)** who studied " Application of an Intervention Based on Health Belief Model on Knowledge and Compliance to Breast Self-Examination among Female Students at Risk for Radiation Exposure " and the results revealed that, the majority of students lived in rural area. On the other hand, the current study disagreed with **(Ismail, et al., 2021)** who studied "Knowledge of breast cancer among medical students in Syrian Private University, Syria: a cross-sectional study", they reported that, the majority of the participants were lived in urban residence.

Regarding female nursing students' barriers towards performing BSE. The result of the current study illustrated that, about three quarters of female nursing students had lack of knowledge about breast cancer and BSE, lack of knowledge about technique of BSE and lack of obligation. As well as, about two thirds of the female nursing had healthy breast. Additionally, about half of the female nursing had shyness and embarrassment, fear from the result and diagnosis of breast cancer, and unawareness of importance of BSE. From a researchers 's point of view, this might be due to poor awareness related to the value of health and the importance of BSE.

These findings came in the same line with **(Ogunkayode and Ajuwon, 2021)** they studied " Knowledge, Attitude, and Practice of BSE among Female Secondary School Students in Ibadan, Nigeria" and found that 71% of studied students hadn't practiced BSE as 74.6% of studied students had don't know how to do BSE .Additionally, the present findings were in agreement with **(Mowla and Aziz, 2018)** in previously mentioned study, who stated that, 43% of female nursing students were unawareness of importance of BSE.

Concerning total level of knowledge of female nursing students regarding breast cancer.

It was evident from the results of the current study that, total level of knowledge regarding breast cancer, was found to be poor among female nursing students, where, about two thirds of the female nursing students had poor total knowledge score regarding breast cancer. From a researchers 's point of view, this might be due to the study participants being from undergraduate student's 1st academic year and there were no awareness rising programs about breast cancer.

The result of the current study was consistent with **(Abo Al-Shiekh, et al., 2021)**, who studied "Breast cancer knowledge and practice of BSE among female university students, Gaza " who reported that, 68.6% of students had low knowledge about breast cancer. Also, **(Heena, et al., 2019**), who studied " Knowledge, attitudes, and practices

related to breast cancer screening among female health care professionals" reported that, 71.1% of participants had poor total knowledge score about breast cancer.

Concerning female nursing students' total level of knowledge regarding BSE.

It was evident from the results of the current study that, total level of knowledge regarding BSE, was found to be poor among female nursing students, where more than two thirds of the female nursing students had poor knowledge score regarding BSE. From a researchers 's point of view, this might be due to lack of health education and students hadn't taken previous health education about breast cancer and BSE, this highlights the need for establishing breast cancer prevention and BSE programs.

These results were in consistent with **(Ibrahim, 2019)**, who performed study about" Female secondary school students' knowledge, Attitude and practice regarding Breast self- Examination " and found that, 72% of the students had unsatisfactory knowledge regarding total knowledge about BSE and only one fifth of student had satisfactory knowledge. Also, these results agreed with **(Sakr, et al., 2019)**, who studied" Breast Self-Examination Compliance among Visually Impaired Adolescent Girls: A Nursing Interventional Study" who found that, most of the students had poor total knowledge score regarding BSE before attending intervention.

On the contrary, these findings disagreed with **(Sapountzi-Krepia, et al., 2017)**, who studied " Evaluating female nursing students' knowledge and attitudes regarding BSE" and reported that, more than half of the participants were knowledgeable about BSE.

Concerning female nursing students' total level of knowledge regarding mammography.

It was evident from the results of the current study that, total level of knowledge regarding mammography was found to be poor among female nursing students, where more than three quarters of the female nursing students had poor knowledge score regarding mammography. From a researchers 's point of view, these results might reflect the need for appropriate steps to spread awareness about breast cancer and early detection measures, especially mammograms.

These findings were in the same line with **(Foad, 2018)** who studied, " Improve women health behavior and beliefs regarding breast cancer screening: Appling health belief model " who found that, 83.1% of studied participants had total poor knowledge about breast cancer and breast cancer screening before attending intervention.

On the other hand, the results of present study were discordance with **(Jalambo, et al., 2020)** who studied "Women's knowledge, attitude and practices about breast cancer A cross-sectional study was conducted at primary health care centers among 346 women in Gaza strip, Palestine", who found that, 56.6% of participants had good overall knowledge towards breast cancer, BSE and mammography.

Concerning female nursing students' attitudes regarding breast cancer.

The present study showed that, more than half of female nursing students had negative attitudes regarding breast cancer. From a researchers 's point of view, this might be due to poor knowledge and students hadn't taken previous health education about breast cancer. This highlights the need for establishing breast cancer prevention programs.

These findings were in the same line with (**Lwin, 2019)** in previously mentioned study, who found that, about half of the nursing students had negative attitudes regarding breast cancer. On the other hand, the results of present study were discordance with **(Alaudeen and Ganesan, 2019)**, who studied "Knowledge, attitude, and practice of Malaysian medical students towards breast cancer "and reported that, the majority of the students had positive attitudes towards breast cancer.

Concerning female nursing students' attitudes regarding BSE, the present study revealed that, about two thirds of female nursing students had negative attitudes regarding BSE. From a researchers ’s point of view, this might be due to the false concept spread among people that breast cancer doesn’t occur in younger age. This highlights the need for establishing breast cancer prevention and breast self-examination programs among students.

These results were consistent with **(Ibrahim, 2019)** in previously mentioned study, who found that, more than half of students had negative attitudes regarding BSE.

On the contrary, these findings disagreed with **(Pardi and Romli, 2017)**, who studied " Knowledge, attitude and practice of breast self-examination among undergraduate health science female students" and illustrated that, the majority of students had positive attitude towards BSE.

Concerning female nursing students' attitudes regarding mammography, the result of the current study showed that, more than two thirds of students had negative attitudes regarding mammography. From a researchers ’s point of view, this result might emphasize the need for appropriate steps to spread awareness about breast cancer and early detection measures, especially mammograms.

The present study was in the same line with **(El-Mahmoud, et al., 2019)**, who studied " Women's awareness and attitudes regarding mammography for early detection of breast cancer ", who stated that, more than half of the women had negative attitudes regarding mammography.

On the other hand, the results of present study were discordance with **(Ansari, et al., 2018)** who studied " Medical students’ knowledge and attitude towards breast Cancer risk factors and early detection practices" and found that, most of students had positive attitudes towards mammography, promotion of screening and early detection.

Concerning the Correlation between total knowledge score and total attitudes score among studied female nursing students, it was revealed from the results of the current study that, there was a highly positive statistically significant correlation between total knowledge and total attitudes scores among studied female nursing students regarding Breast Self-examination and Mammography. These findings of the present study supported by **(Alenezi, et al., 2022)** who studied "Female Healthcare Workers’ Knowledge, Attitude towards Breast Cancer, and Perceived Barriers towards Mammogram Screening"and found that, there was a significant positive correlation between knowledge and attitude scores (rho = 0.195, p = 0.001).

Also, these results came in agreement with **(Ibrahim, 2019**) in previously mentioned study, who illustrated that, there was a highly statistically significant positive

correlation between students' total knowledge and their total attitudes (P<0.001).

Conclusion

More than two thirds of the female nursing students had poor total knowledge scores regarding breast cancer, breast self-examination and mammography. Also, about two thirds of female nursing students had total negative attitudes scores regarding breast cancer, breast self-examination and mammography. As well as, about three quarters of female nursing students had barriers towards performing breast self-examination as (lack of knowledge regarding breast cancer and technique of breast self-examination). Finally, there was a highly statistically significant positive correlation between total knowledge and total attitudes scores among studied female nursing students regarding breast self-examination and mammography $p \leq 0.001$. The above-mentioned findings answered the study questions.

Recommendations

- Breast cancer prevention and screening methods such as BSE and mammography should be added to nursing curriculum at the faculty of nursing.
- The importance of conducting health education programs, seminars, simulation and counseling regarding BSE, mammography, breast cancer prevention issues for female students in secondary schools and universities in their educational activities (extra-curricular activities).

Further Studies: -

- Further studies should be conducted to replicate the present study on large sample size in different settings to increase knowledge and attitudes of female students regarding BSE and mammography for protection from breast cancer.
- Future research is proposed to explore and generate the effect of health educational program to motivate students towards BSE and mammography screening.

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معلومات واتجاهات طالبات التمريض فيما يتعلق بالفحص الذاتي والتصوير الشعاعي للثدي

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يعتبر سرطان الثدي هو السبب الرئيسي للوفاة بين النساء في جميع أنحاء العالم، وهو أيضا ثاني أكثر الأورام الخبيثة التي تحدث في العالم. في مصر، يعد سرطان الثدي أكثر أنواع السرطان انتشارا بين النساء، حيث يمثل ١٨,٩٪ من إجمالي حالات السرطان وهوما يمثل حوالي ثلث حالات السرطان بين النساء في جميع أنحاء العالم. لذا هدفت هذه الدراسة إلى تقييم معلومات واتجاهات طالبات التمريض فيما يتعلق بالفحص الذاتي والتصوير الشعاعي للثدي. وقد أجريت هذه الدراسة في كلية التمريض – جامعة بنها على ٢٢٠ طالبة تمريض. وقد خلصت الدراسة إلى أن أكثر من ثلثي طالبات التمريض كانت اجمالي درجات معلوماتهن ضعيفة فيما يتعلق بسرطان الثدي والفحص الذاتي والتصوير الشعاعي للثدي. وكانت حوالي ثلثي طالبات التمريض كانت اجمالي درجات اتجاهاتهن سلبية فيما يتعلق بسرطان الثدي والفحص الذاتي والتصوير الشعاعي للثدي. ايضا، كانت هناك علاقة إيجابية ذات دلالة إحصائية عالية بين اجمالي معلومات واتجاهات طالبات التمريض المشاركات في الدراسة فيما يتعلق بالفحص الذاتي والتصوير الشعاعي للثدي.