Effect of Instructional Guidelines on Women Awareness Regarding Nutrition after Breast Cancer Surgery

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Abstract

Understand the women with cancer about knowledge and practices regarding their nutrition are very important to maintain healthy body weight and eat nutritious foods. Hence, **the study was aimed to** evaluate the effect of instructional guidelines on women's awareness regarding nutrition after breast cancer surgery. **Subjects and method: Design:** A quasi-experimental research design was used with a pre-and post-test. **Setting:** the research was conducted at the inpatient and outpatient clinic of Fayoum Oncology Center. **Subjects**: A purposive sample of 130 women was included. **Three tools were used:** Tool (I) women' structured interviewing questionnaire, it included two parts: (a) demographic characteristics; (b) women' medical data, Tool (II) women' knowledge regarding nutrition sheet, and Tool (III) women' practice regarding nutrition sheet (pre/post). **Results**: More than half of women were having a family history of cancer. The majority of women reported that the main source of information regarding nutritional knowledge after breast cancer surgery was doctors. There was a positive correlation (P=0.005) between women's knowledge scores and their practice post-one-month nutritional instructional guidelines implementation. There were marked improvements in women's knowledge and practices regarding nutrition after breast cancer surgery post instructional guidelines implementation (P=0.005). **Conclusion:** The instructional guidelines implementation regarding nutrition had a positive effect on improving women's knowledge and practices after breast cancer surgery. **Recommendations:** The instructional guidelines should be conducted regularly for women after breast cancer surgery to discuss and teach them different aspects about nutrition and replication of the current study with a larger sample.

Keywords: Instructional guidelines, women awareness, nutrition, after breast cancer surgery

Introduction:

Breast cancer is considered a serious health topic, and it is the second of most common diseases in many countries around the world. Breast cancer accounts for about 45.1% of all cancers among women and is considered the second leading cause of death among women after lung cancer (**Sathian et al., 2014**).

Although adjuvant treatment, particularly chemotherapy, is essential to control the growth of tumor cells, it presents a systemic cytotoxic effect that might affect both tumor and healthy cells, which can cause toxicity and adverse effects, such as pain, nausea, and alterations in taste and smell. Those may lead to changes in food intake and patients' nutritional status, possibly worsening prognoses and increasing the risk of disease recurrence **(Ferreira et al., 2016 & and Drareni et al., 2019).**

The nutritional status of breast cancer women weakens as the treatment sessions and procedures take place. This change is due to factors such as tumor size, negative digestive symptoms, increased nutritional requirements, and a generalized misconception of a healthy diet by either the patient or health care professionals. In women with breast cancer, their weight may negatively affect and their nutritional status because it leads to a decrease in their muscle mass and strength **(Hébuterne et al., 2014).**

During postoperative treatment after mastectomy, different eating behaviors were verified, such as the increased intake of energy-dense and nutrient-poor foods and a decrease in the intake of fiber-rich and antioxidant foods

like fruits, vegetables, and whole grains. The current evidence suggests that a higher intake of red meat, fat, and alcohol can indicate risk factors, while a higher intake of fruits and vegetables can help lower the risk of cancer recurrence, due to antioxidant nutrients **(Drareni et al., 2019)**.

The availability of sufficient information about nutrition enables women to gain knowledge about dietary guidelines that should be followed depending on the immunohistochemical of breast cancer (**Simone et al., 2016**). A healthy diet has been associated with a positive prognosis of breast cancer and may prevent negative health outcomes due to poor nutritional status. Understand the women about knowledge and practices regarding their nutrition. Women with cancer need to maintain healthy body weight and eat nutritious foods (**American Cancer Society, 2016**).

Nutritional education is important to improve diet and decrease the risk of breast cancer recurrence. Since nutritional interventions in women with breast cancer focus on various diet components, their effectiveness may be measured by instruments of global diet assessment, such as dietary indexes, making it possible to vastly evaluate food intake **(Yang et al., 2014 & and Limon et al., 2017)**. In this context, dietary indexes have been used to assess associations between diet quality and breast cancer. Few studies, however, use dietary indexes to assess the quality of diets after an educational nutritional program, especially for breast cancer, even though such indexes have been proven effective for this type of evaluation. Thus, this article assesses the outcome of an educational nutritional intervention program in the quality of the diet of women with breast cancer in adjuvant treatment **(Department of Agriculture, Agricultural Research Service, 2017)**

Maintain a healthy weight by avoiding weight loss by getting enough calories every day. For people who are obese, this may mean losing weight. Ask obese women should try to lose weight during treatment. Get essential nutrients. These include protein, carbohydrates, fats, and water. Be as active by taking a daily walk. Providing nutrition counseling may help people with cancer get essential nutrients, such as protein, vitamins, and minerals. It can also help them maintain healthy body weight. Vitamin D from foods and sunlight exposure may help protect as trusted source against breast cancer. Vitamin D is present in eggs, cold-water fish, and fortified products. A person can consult a doctor to check their vitamin D levels. If these are low, the doctor may recommend a supplement. Green tea may have several beneficial health effects. It contains antioxidants, and these may help strengthen the immune system and reduce the risk of breast cancer (**The Cancer Net Editorial Board, 2019)**.

Significance of the study:

Nutritional education can help women to adhere to healthy behavioral practices and controlling other associated health risk factors to maintain women's health. World Health Organization (WHO) also recommends that health providers should provide adequate and acceptable nutrition-related advice to the clients during care. It is preferred to women after breast cancer surgery to receive information about nutritional advice in the form of a written booklet from their healthcare professionals. In contrast, listening to teachers and healthcare professionals was the best way to learn about nutrition and help maintain healthy behaviors, improve diet and minimize the risk of breast cancer recurrence (**The Cancer Net Editorial Board, 2019)**.

Aim of the study

To evaluate the effect of instructional guidelines on women awareness regarding nutrition after breast cancer surgery through:

- Assessing women' knowledge regarding nutrition after breast cancer surgery
- Assessing women' practices regarding nutrition after breast cancer surgery
- Designing and implementing guidelines for improving women's knowledge and practices regarding nutrition after breast cancer surgery.
- Evaluating women's knowledge and practices regarding nutrition after breast

cancer surgery after implementing instructional guidelines.

Research hypothesis:

H1: Women's knowledge and practices regarding nutrition after breast cancer surgery will be improved after implementing the instructional guideline.

H2: Women's practices regarding nutrition after breast cancer surgery will be improved after implementing the instructional guideline.

H3: Instructional guidelines regarding nutrition after breast cancer surgery will have a positive effect on women's awareness.

Subjects and Method:

Research design:

A quasi-experimental research design (pre and post-test) was utilized in this study.

Setting:

The study was conducted at Inpatient and Outpatient Clinic affiliated with Fayoum Oncology Center, Egypt, this setting was selected due to the high prevalence of women in the selected setting, and also it serves the biggest region of the population.

Subjects:

A purposive sample of 130 women was included from a population who have met the inclusion criteria within six months and received care from the previously mentioned setting. The inclusion criteria were women after breast surgery and who visited the previously mentioned setting, and agree to participate in this study.

Data collection tools:

Three tools were used to collect the data of the study as the following:

Tool I: A structured interview questionnaire was developed by the researchers after reviewing the related literature and research studies **(Brown & Ligibel, 2018; Greenlee, et al., 2017; Aycinena et al., 2017),** it included two parts:

Part (1): It included demographic data of women such as age, educational level, occupation, and residence.

Part (2): It included medical data related items such as duration of disease, stages of the disease, treatment received, type of tumor, family history, and types of complaints.

Tool (II) women's knowledge regarding nutrition sheet (pre/post): It was developed by the researchers and included 12 questions. It was designed to assess women's knowledge regarding nutrition after breast cancer surgery such as dietary habits, common guidelines to avoid obesity, the balanced weight, recommended foods, and sources of information regarding their knowledge.

Scoring system:

The woman' was given 1 when the answer was ‘yes’ and if the answer was ‘no’ the score was given 0. Women' who scored from 1 to 4 were considered to have poor knowledge (< 50%), those who scored between 5 and 8 (50% - < 75%) were considered as having average knowledge, and those who scored between 9 and 12 were considered to have good knowledge (≥75%).

Tool (III) women's practice regarding nutrition sheet (pre/post): It included six steps were developed by the researchers. It was designed to assess women's practice regarding nutrition after breast cancer surgery related to using whole grains, vegetables, fruit, and beans consumption and minimizes red and processed meat, fast foods, and other processed foods high in fat, starches, or sugars. The scoring system was calculated as zero for "no answer", and one for "yes answer". The total score was 0 – 6. The total score was categorized into "good and poor practices" as follows: poor less than 50% and good more than 50%.

Validity of the tools:

The content validity of the tools and the instructional guideline, its clarity, comprehensiveness, appropriateness, and relevance were reviewed by five experts in medical-surgical nursing, oncology, and community health nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

Reliability of the tools:

The Cronbach's α test was used to assess the reliability of the questions relating to knowledge, which was 0. 88 and the reliability of the questions relating to reported practice was 0.86.

Methods of data collection:

Fieldwork:

The study included 130 women. The researchers attended previously selected settings two days / a week from 9 am to 1 pm. Data was collected within 6 months from August 2020 until the end of January 2021. Approximately, 25-35 minutes were taken to complete each interview questionnaire.

A pilot study

A pilot study was conducted on 10% (13 women) of the total sample. The clarity and testing of the feasibility of the research process needed for modifications were carried out to develop the final form of the tools. Women who were in the pilot were excluded from the study.

After selecting the women, who met the inclusion criteria, the purpose and importance of the study were explained. The researcher collected data by distributing questionnaires to studied women; each question was explained to the studied women then answered by them.

The questionnaires were distributed to the studied women twice; (1) pre-test to assess women's knowledge and practices before implementing instructional guidelines. (2) Post-test to assess women's knowledge and practices after implementing instructional guidelines.

The booklet was used as a supportive material and given to women in the simplified Arabic language to cover all the knowledge and practical parts of healthy nutrition after reviewing the related literature based on the assessment of the actual needs of the studied women. Different teaching methods were used such as lectures, discussion, pictures, and posters were used.

The researchers designed and implemented the instructional guidelines about nutrition after breast cancer surgery in the form of a theoretical part and practical part **(Sheng et al., 2018; Ligibel et al., 2019):**

The theoretical part was included women's knowledge about nutrition after breast cancer surgery. It was implemented through lectures, posters, educational films, scenarios, and role-plays. The interview took approximately 25-35 minutes for each women to answer and fill the questionnaire to assess the knowledge of women regarding nutrition. An educational booklet written in simple language and illustrative pictures were prepared by the researchers was given to the women.

The instructional guidelines included knowledge about nutrition as follow:

- Maintaining a healthy weight
- Body mass index (BMI)
- Common guidelines to avoid obesity
- Managing weight issues after treatment and balanced weight.
- Make food balanced
- Manage quantities and portions.
- Understanding food labels
- Planning a healthy diet
- About nutritional supplements
- Eat well during breast cancer treatment
- Eating instructions for those receiving chemotherapy
- Dietary supplements during cancer treatment

The practical part was contained information about nutritional practices. The interview took approximately 25-35 minutes for each woman to answer and fill the questionnaire to assess the nutritional practices of women. It was implemented through lectures, posters, educational films.

The instructional guidelines included nutritional practices after breast cancer surgery as follow:

- Using whole grains
- Vegetables and fruit consumption
- Beans consumption
- Minimizes red and processed meat
- Fast foods
- Processed foods high in fat, starches, or sugars

Evaluation occurred after one month, each woman was re-interviewed to assess their

knowledge and nutritional practices. Re-assessment of a woman was done using the same tool (II and III).

Ethical considerations:

Before the research started, Approval of the Ethical Research Committee of the Faculty of Nursing was obtained before conducting the study. The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and take their approval. Written consent was obtained from the women to gain their cooperation. The aim of the study was explained and the expected outcomes from the implementation of the study were included in this letter to obtain permission for data collection. The objective of the study was explained to the women. The researcher informed the women that, the study was voluntary; they were allowed to refuse to participate in the study. Women had the right to withdraw from the study at any time, without giving any reason. Women were assured that their information would be confidential and used for research purposes only.

Administrative design:

Administrative permission was obtained through an issued letter from the Dean of Faculty of Nursing, Fayoum University to the Directors of the Inpatient and Outpatient Clinic affiliated with Fayoum Oncology Center to achieve this study.

Statistical analysis:

Data entry and statistical analysis were performed using SPSS for Windows, version 20. Frequencies and percentages for quantitative variables and mean and SDs for qualitative variables were represented descriptive statistics. Differences between the two means tests (t-test) were used. Chi-square (x2) test was used to compare qualitative parameters. Pearson's correlation coefficient (r) test was used. Statistical significance was considered at P-value <0.05.

Results:

Table (1): Reflected that 68% of the studied women were between 40 < 60 years. (50%) of them had secondary education, 64% were not working, majority of them (72%) were living in urban residences.

Table (2): Showed that (94%) of the studied women have cancer from < one year, (40%) of the studied women were in stage 2 of the disease, regarding types of treatment of cancer (38%) of them were received chemotherapy and surgery.

Figure (1): Illustrated that the majority (80%) of women had a non-spreading tumor.

Figure (2): Showed that more than half (57%) of women were having a family history of cancer.

Figure (3): highlighted that (47%) of women had a lump in the breast.

Figure (4): Revealed that 70% of the studied women reported that the main source of information regarding nutritional knowledge after breast cancer surgery was doctors.

Table (3): Portrayed that there was an improvement in the studied women's knowledge post implementing instructional guidelines as compared to pre-implementing guidelines. There was a highly statistically significant difference between nutritional knowledge pre/post one month of instructional guidelines implementation (P-value <0.000).

Table (4): Revealed highly statistically significant differences were found between the studied women's total knowledge pre and post-instructional guidelines implementation (p<0.001).

Figure (5) clarified that the total practices score of the women pre and after one-month post-instructional guidelines implementation. It observed that most of the women (93%) had poor nutritional practices after breast cancer surgery and pre- instructional guidelines implementation and decreased to become 11% after one-month post- instructional guidelines implementation. Reversely, 7% of the women had good practices pre- instructional guidelines implementation in comparison to 89 % after one-month post-instructional guidelines implementation.

Table (5): Revealed that there was a positive correlation (P=0.005) between women's knowledge scores and their practice post-one-month nutritional instructional guidelines implementation.

Table (1): Distribution of the studied women regarding their demographic characteristics (n=130)

Items	No.	%
Women ' age in years		
21≤ 40 years	42	32
40 ≤ 60 years	88	68
Women ' education		
Illiterate	0	0.0
Read and write	6	5.0
Secondary education	65	50.0
Higher education	59	45.0
Occupation		
Working	47	36.0
Not working	83	64.0
Residence		
- Rural	36	28
- Urban	94	72

Table (2): Distribution of the studied women regarding their medical data (n=130)

Item	No.	%
Duration of disease:		
< one year	122	94
≥ one year	8	6
Stages of disease		
Stage 1	19	15
Stage 2	52	40
Stage 3	33	25
Stage 4	26	20
Treatment received		
Radiotherapy	9	7
Chemotherapy	33	25
Chemotherapy and surgery	49	38
Surgery	39	30

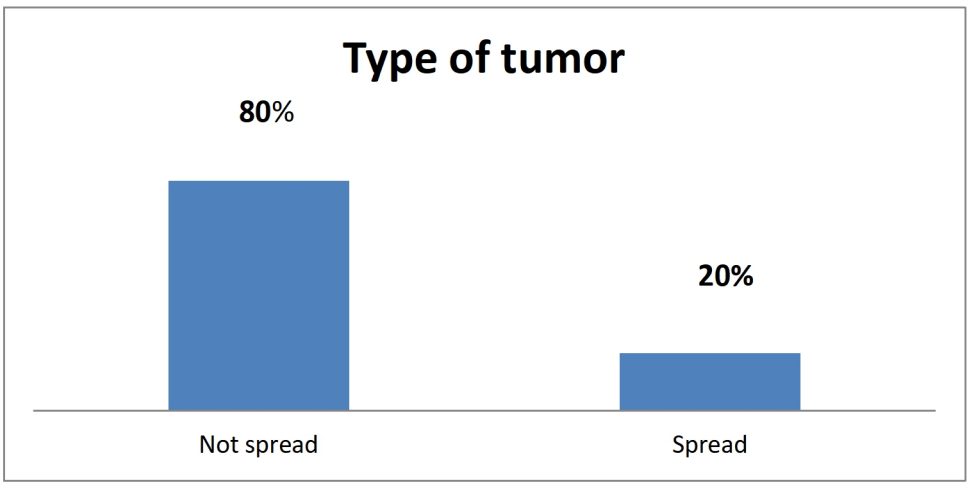


Figure (1): Frequency distribution of the studied women regarding their type of tumor (n=130)

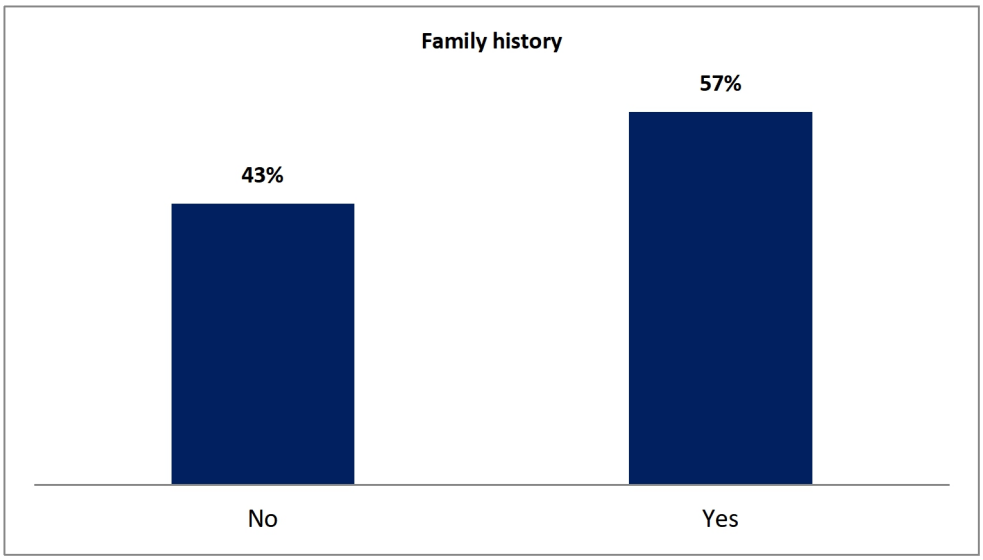


Figure (2): Distribution of the studied women regarding their family history (n=130)

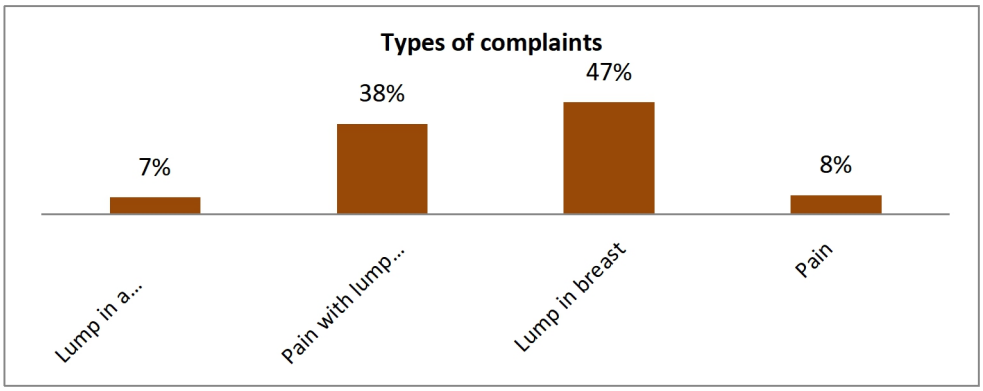


Figure (3): Distribution of the studied women regarding their types of complaints (n=130)

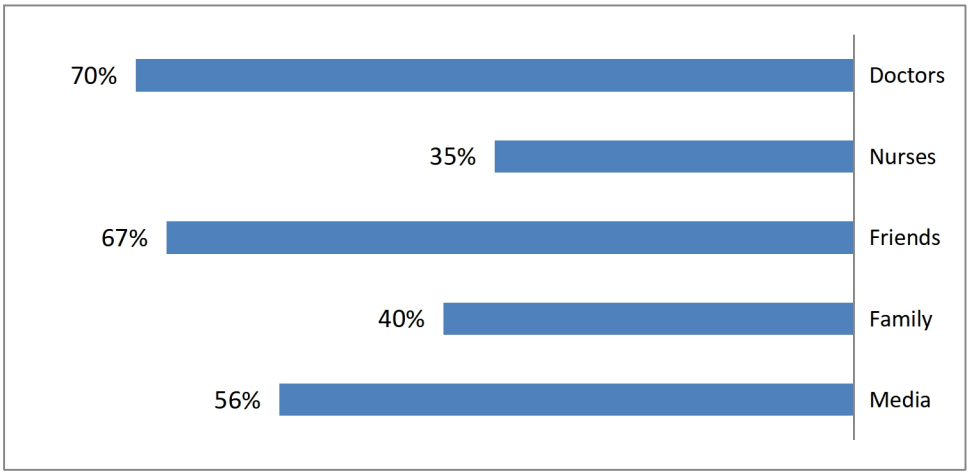


Figure (4): Distribution of the studied women regarding their source of nutritional knowledge after breast cancer surgery

Table (3): Differences between pre and post-one-month implementation of instructional guidelines implementation among studied women regarding nutritional knowledge

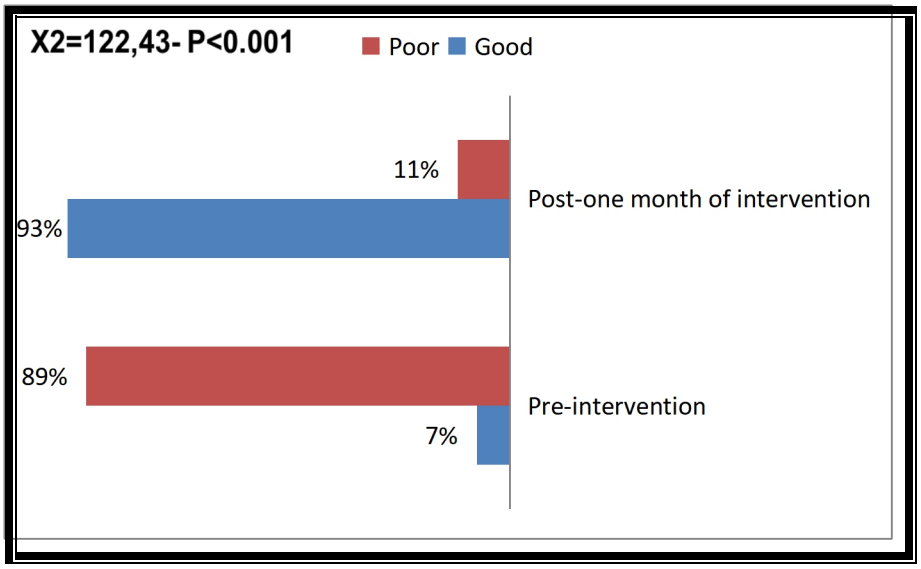
Items	Pre		Post		X 2 P-value
	No.	%	No.	%	
Healthy dietary habits					
- Don't know	74	57	4	3	12.0
- Know	56	43	126	97	0.001*
Common guidelines to avoid obesity					
- Don't know	85	65	13	10	32.308
- Know	45	35	117	90	0.0001*
Balanced weight					
- Don't know	72	55	29	22	18.468
- Know	58	45	101	78	0.0001*
Nutritional supplements					
- Don't know	83	64	16	12	36.36
- Know	47	36	114	88	0.0001*
Eating instructions during breast cancer treatment and receiving chemotherapy					
- Don't know	75	58	13	10	38.52
- Know	55	42	117	90	0.0001*

*Statistically significant level at P < .05

Table (4): Total nutritional knowledge of the studied women pre and post-instructional guidelines implementation

Total knowledge	Pre		Post		T	P-value
	No	%	No	%		
Poor (1-4)	83	64	4	3	4.063	<0.001*
Average (5-8)	39	30	31	24		
Good (9-12)	8	6	95	73		

*Statistically significant level at P < .05



*Statistically significant level at P < .05

Figure (5): Comparison of pre and post-one-month instructional guidelines implementation of women total' practices regarding nutrition after breast cancer surgery (n=130)

Table (5): Correlation coefficient between total studied women' knowledge and practice scores during pre and post-one-month nutritional instructional guidelines implementation

Knowledge	Practice			
	Pre instructional guidelines implementation		After one-month instructional guidelines implementation	
	R	P	R	P
- **Total knowledge pre-test**	0.036	0.815(N.S)	---	---
- **Total knowledge post-test**	---	---	0.413	0.005

Discussion:

Breast cancer is the leading cause of death from cancer in women worldwide. In Brazil, according to the National Cancer Institute, the mortality from breast cancer in 2013 was 14.35 deaths per 100,000 women. In 2018, there were about 134,632 new cancer cases and 89,042 cancer-related deaths in Egypt. Liver and breast cancers are the most common tumors in terms of incidence and mortality. Providing women had breast cancer with sufficient knowledge and practices helps to maintain healthy body weight and eating nutritious food **(Bray et al., (2018) & WHO, (2020)**). There is an improvement in their knowledge and practices compared to before instructional guidelines implementation. Therefore, it ensures the importance of instructional guidelines implementation nutrition on improving women knowledge and practices after breast cancer surgery which reflects on their healthy behaviors.

The results of the current study revealed that women were mostly aged 40 ≤ 60 years. These results are in the same line with **Bei et al., (2015)** who studied the factors in the prioritization of information needs among breast cancer patient and reported in their results that the mean age of women was around fifty years.

The findings of the present study indicated that less than three quarters of women were living in urban residences. This result is similar to **Sayed et al., (2017)** who done a study about "Informational that the women Needs who Newly Diagnosed Breast Cancer" and found the same results**.**

The current study results revealed that, less than half of the studied women were in stage 2. This result is in the same line with the study performed by **El Shinawi et al., (2013)** who found in their study that assessing the level of breast cancer awareness among recently diagnosed patients in Ain Shams University Hospital, less than half of Egyptian patients diagnosed at stage two.

The current study revealed that, more than half of women were having a family history of breast cancer. This result is supported by **El-Shinawi et al., (2013)** who observed that the majority of the studied patients have family history of breast cancer. Also, this result is in the same line with **American Cancer Society, (2016)** that reported; breast cancer increases with an increasing risk factors including family history.

The results of the current study revealed that, less than one half of women were had a lump in the breast at the first time. This result is in accordance with **El-Shinawi et al., (2013)** who found that the majority of patients recognized a painless breast mass as a breast cancer symptom.

The finding of the present study indicated that more than two-thirds of the women reported that the main source of information regarding nutritional knowledge after breast cancer surgery was doctors. This is indicated the desire of women to know healthy and correct information from confident sources.

The results of the present study revealed that there was an improvement in the studied women's knowledge and a highly statistically significant difference was observed between pre/post one month of instructional guidelines implementation regarding nutritional practices after breast cancer surgery (P-value <0.000). This result reflects the positive effect of instructional guideline implementations, which met the women's needs and provide them with sufficient knowledge to maintain healthy and balanced nutrition.

The results of the present study illustrated that highly statistically significant differences were found between the studied women's total knowledge pre and post-instructional guidelines implementation ($p<0.001$). This result reflects the need of the studied women to increase their awareness and know adequate practicing to improve their information about nutrition after breast cancer surgery and this clarifies the importance of instructional guidelines implementation. These results are very logical because they were giving the guidelines and there is an increase in their knowledge, which reflects the need of those participants for effective guidelines about nutrition after breast cancer surgery.

The present study revealed an improvement regarding nutritional practices among most of the women after one-month post- instructional guidelines implementation. From the researchers' point of view, it reflected the noticeable good impact of nutritional instructional guidelines in improving practices**.** These are confirmed the significant modifications in the women's practices that reflected the main goals of the implementation of the instructional guidelines.

The finding is supported by several studies conducted by **Boltong et al., (2014)** who studied the effects of adjuvant breast cancer chemotherapy on taste function, food liking, and appetite and associated nutritional outcomes, **Drareni et al., (2019)** who conducted a study titled with "Relationship between food behavior and taste and smell alterations in cancer patients undergoing chemotherapy", and **Vries et al., (2017)** who studied "Differences in dietary intake during chemotherapy in breast cancer patients compared to women without cancer" they reported that the educational nutritional intervention was effective to improve the consumption of fruits and reduce the consumption of red and processed meat of women after breast cancer surgery.

The present study revealed that there was a positive correlation ($P=0.005$) between women's knowledge scores and their practice post-one-month nutritional instructional guidelines implementation. These indicated the importance of improving the women's knowledge and practices to help to learn and acquiring good knowledge and apply it. This association is explained by that when the studied women had sufficient knowledge they can practice good.

The results of the current study revealed that instructional guidelines implementation was effective in improving the knowledge, and practice of women regarding nutrition after breast cancer surgery. These results were supported with the aim and hypotheses of the present study. These results are in the same line with **Cecilia et al., (2015)** who studied " Nutrition education intervention for women with breast cancer: effect on nutritional factors and oxidative stress" and found that nutrition education intervention has improved dietary habits among women with breast cancer.

Also, the finding is supported by **Feng-Lan et al., (2017)** who conducted a study titled "Beneficial Effect of Educational and Nutritional Intervention on the Nutritional Status and Compliance of Breast Cancer Patients Undergoing Chemotherapy" and reported that nutritional and educational interventions have provided beneficial effect on the nutrition status of women undergoing postoperative chemotherapy.

The same results were found by **Chang et al., (2018)** who conducted a study about "Impacts of Nutrition Education Programs on Cancer Survivors' Nutritional Status," and reported that nutritional guidance can effectively help women with cancer to achieve adequate calories intakes and maintain body weight to prevent the occurrence of malnutrition by providing nutritional supplements services.

These findings are similar to the result in a study conducted by **Mohammadshahi et al. (2014)** who investigated the effects of a 3-month nutritional intervention on the diet quality of Iranian obese women and observed that the nutritional intervention contributed to improving the diet quality of such women.

Such results are also reported in the study done by **Snyder et al., (2017)** in the United States, which assessed the effectiveness of a nutritional intervention for a 12-month follow-

up, aiming to improve the diet between breast cancer women.

Conclusions:

Based on the findings and hypotheses of the current study, the study findings concluded the results support the research hypothesis in which implementing instructional guidelines regarding nutrition had a positive effect on improving women's knowledge and practices after breast cancer surgery. There was a positive correlation (P=0.005) between women's knowledge scores and their practice post-one-month nutritional instructional guidelines implementation. There were marked improvements in women's knowledge and practices regarding nutrition after breast cancer surgery post instructional guidelines implementation (P=0.005).

Recommendations:

In light of the current study results, the following recommendations are proposed:

The instructional guidelines should be conducted regularly for women after breast cancer surgery to discuss and teach them different aspects about nutrition and replication of the current study with a larger sample. Further researches are required on a larger sample of women to be generalized.

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