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## **Effect of instructional guidelines regarding post-operative activity and mastectomy exercises on breast cancer women's knowledge**

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**Abstract**--Background: Women with breast cancer often are treated with some kind of surgery such as a mastectomy which affects moving the shoulder and arm or going about daily activities, like dressing, bathing, and combing hair. Pain and stiffness can cause weakness and limit movement of your arm and shoulder. Exercise can help get movement back. Aim: To investigate the effect of instructional guidelines regarding post-operative activity and mastectomy exercises on breast cancer women's knowledge. Design: A quasi-experimental design was used to accomplish this study (pre/post-test). Setting: The research will be carried out in the Oncology Inpatient and Outpatient clinic at Beni-Suef University Hospital, Egypt. Subject: The study subjects included a convenient sample of 100 women after mastectomy. Tools: *Four tools were used* Tool 1: Structured

interviewing questionnaire: developed by the researchers to assess patient demographic, clinical data, and knowledge, Tool 2: Activities of Daily Living scales, Tool 3: The Pain Disability Index, and Tool 4: Observational checklist. Results: The results revealed that there was a positive significant correlation ( $P < 0.001$ ) between post-mastectomy women's knowledge scores pre and post-instructional guidelines implementation. There were highly significant improvements in post-mastectomy women's knowledge and post-operative activity and mastectomy exercises pre and post-instructional guidelines implementation ( $P < 0.005$ ). Conclusion: The instructional guidelines implementation had a significant positive effect on improving women's knowledge regarding post-operative activity and mastectomy exercises. Recommendations: The instructional guidelines regarding post-operative activity and mastectomy exercises should be conducted, discussed, integrated into the rehabilitation programs, and taught to the women using the booklet and illustrated pamphlets for each one to improve their information and replication of the current study with a larger sample of patients in different settings is required for generalizing the results.

**Keywords**---Instructional guidelines; Post-Operative Activity and Mastectomy exercises, Women's knowledge.

## Introduction

Breast cancer is the most common type of disease among women, with over 250,000 Americans receiving a diagnosis each year. Lower mortality and greater five-year survival rates have been achieved in contrast to therapy advancements (90.8, 95% CI = 90.5% to 91.1%) (**Desantis et al., 2017**).

The high incidence and fatality rates of breast cancer make it a critical global public health concern. In addition to having an impact on every part of a woman's life while receiving treatment, breast cancer is a complicated illness. Furthermore, they may feel helpless since they are unable to manage their daily tasks and take care of their family and themselves. For everyday activities to be improved and pain impairment to be reduced, breast cancer patients express urgent, unmet requirements for information, support, and education. Therefore, after breast cancer surgery, it is frequently advised for women to exercise (**Breast Cancer Resource Center, 2017**).

A mastectomy is a surgical procedure that removes one or both breasts entirely or partially. It is also used as a prophylactic strategy. There are various distinct types of mastectomy, including simple mastectomy, modified radical mastectomy, skin-sparing mastectomy, subcutaneous mastectomy, and extended radical mastectomy (**Apantaku et al., 2018**). Although a mastectomy is a very safe treatment, there are some possible adverse effects, including discomfort, wound infection, bleeding, hematomas, lymphedema, and numbness in the upper arm.

Exercise will keep joints flexible, stretch and soften scar tissue, help recruit (open up) new lymphatic, stimulate blood flow, and even aid minimize clot formation, all of which may lessen the discomfort of phantom breast sensations after surgery.

Studies have shown that many women experience phantom breast sensations after mastectomy (**Breast Cancer Resource Center, 2017**).

The mastectomy process frequently causes muscle tightness, lymph node removal may result in nerve pain, and cording, which is common after the mastectomy and radiation treatments, may cause a frozen shoulder and other related problems.

Reviewers who carefully examined the study found that both early and delayed exercise did not affect the incidence of lymph edema, even though starting exercise training and physiotherapy straight away after surgery was most effective in reducing shoulder mobility loss (**Voogd et al., 2019**).

Pain is frequently felt in the areas that have been harmed by the local therapy of breast cancer (axilla, medial arm, and/or anterior wall of the thorax on the affected side) (**Couceiro et al., 2018**). Tightness in the axillary, medial, and upper regions of the arm as well as/or in the thorax, as well as burning, needle pain, and sensations mimicking brief electric shocks, are among the indications and symptoms. It is also defined as rapid and intense and connected to chronic hyperesthesia, and it might begin right soon following the procedure, six months, or even a year after the treatment. The ailment doesn't respond well to medication and gets worse while you're going about your regular business and lingers even while you're at rest (**Vilholm et al., 2018**).

It is also characterized as rapid and severe and connected to chronic hyperesthesia, and it can begin right soon following the procedure, six months, or even a year after the treatment. The ailment doesn't respond well to medication and gets worse while you're going about your regular business and lingers even while you're at rest (**Robin et al., 2014**).

Breast-conserving surgery (lumpectomy), surgical breast biopsy, lymph node removal, and mastectomy are all common surgical treatments for breast cancer in women. Any of these can impair a person's ability to move their shoulder and arm or perform daily tasks including getting dressed, taking a shower, and combing their hair. The arm and shoulder's range of motion may be restricted by pain and stiffness but movement can be aided by exercises (**Vilholm et al., 2018**).

After a mastectomy, the physician and nurse will advise the patient to engage in regular exercise to hasten to heal. The patient may experience stiffness in the arm on the side where the breast was removed. Patients can help themselves by performing simple arm exercises to help them regain their full range of motion, ease pain and stiffness, and reduce edema (**Couceiro et al., 2018**). After a mastectomy, it is advisable to start an exercise routine within the first 24-48 hours to prevent muscle contracture and tightening in the arm, chest, and upper back muscles (**Dell, 2020**). Exercise also relieves muscular stress, rebuilds muscle mass and flexibility in joints and muscles that have been damaged by surgery, and prevents the formation of scar tissue (**Lisa, 2019**).

The diagnosis, care, and treatment of patients with breast cancer depend heavily on nurses as one of the treatment team members (**Cheema et al., 2018**). They spend more time with the patient than the other members of the treatment team, thus they may be the first to recognize the requirements of patients and be effective in minimizing disease consequences and therapy as well as boosting patients' quality of life, which includes daily living (**Milne et al., 2018**)

### **Significance of the study:**

About half of all women are affected by post-mastectomy, also referred to as the condition where pain or physical restrictions develop after breast cancer surgery. But many women are helped by treatments including medication, physical or occupational therapy, and lymphedema therapy. Following surgery for breast cancer, a lot of women experience persistent pain and fatigue in the chest or breast area. This syndrome can occur in as many as 50% of breast cancer patients (**Langford et al., 2018**).

The researchers felt that there is a great need for conducting instructional guidelines regarding post-mastectomy exercises for patients who are having a mastectomy because of the high prevalence rates of breast cancer. An effective evidence-based postoperative physical therapy program is required because of this to treat postoperative pain and limited range of motion and prevent other impairments of the upper limb and limitations in activities of daily living in the long term. Additionally, the researchers were encouraged by the fact that these exercises could be carried out without the use of any complicated equipment, and patients only needed to decide to undertake the exercises. Additionally, failing to perform exercises properly due to a patient's ignorance can result in persistent complaints. A person with limited knowledge may also be unable to recognize this shortcoming, making it more dangerous than ignorance because an uneducated person may seek assistance.

### **Aim of the study:**

The study aimed to investigate the effect of instructional guidelines regarding post-operative activity and mastectomy exercises on breast cancer women's knowledge through:

- Assessing breast cancer women's knowledge pre and post-instructional guidelines.
- Designing and implementing instructional guidelines based on women's needs.
- Evaluating the effect of instructional guidelines regarding post-operative activity and mastectomy exercises on breast cancer women's knowledge.

**Research hypothesis:**

H1: Women's knowledge was expected to improve post-receiving instructional guidelines regarding post-operative activity and mastectomy exercises post-intervention than pre-intervention.

H2: Post-operative activity was improved post-intervention of instructional guidelines regarding post-operative activity and mastectomy exercises post-intervention than pre-intervention

**Subjects and Method:****Research design:**

A quasi-experimental design was used to accomplish this study (pre/post-test)

**Setting:**

The research was carried out in the Oncology Inpatient and Outpatient clinic of Beni-Suef University Hospital, Egypt. This setting was selected because it serves the most populated region and high prevalence of patients.

**Subjects:**

The study subjects included a convenient sample of 100 women after mastectomy.

**Data collection tools:**

Four tools were utilized by the researchers based on the review of the related literature.

**Tool 1: Structured interviewing questionnaire:** it was developed by the researchers to assess women's demographic, clinical data, and knowledge. It consisted of the following two parts:

**Part 1: demographic data** such as age, education level, and occupation

**Part 2: Women's knowledge assessment;** this part was used to assess the knowledge regarding breast cancer as a disease and post-mastectomy exercises, which included two sections:

Section A: disease knowledge; included eight questions related to the definition, types, risk factors, clinical manifestations, diagnosis, treatment modalities, types of mastectomy, and mastectomy complications.

Section B: knowledge regarding post-operative activity and mastectomy exercises; it included five questions related to the definition, benefits, what about, how to perform, and time.

### **Scoring System:**

The knowledge sheet had thirteen questions, and the correct answers received one point while the incorrect or don't know responses received zero. The total scores achieved varied from 0 to 13. Since a significant portion of the women in the study had knowledge levels of more than 30%, the total grades were added up, translated to total score percentages, and computed using the formula as (patient's score x 100) ÷ total score and ranked as follows: Poor: < 30%, Fair: ≤ 50 %, Good: > 50 % - 64%, Very good: > 65 % - 84%, Excellent: ≥ 85 % (**Bahgat et al., 2016**).

**Tool II: Activities of Daily Living scales:** included two parts as follows: **Part 1: The Katz Index of Independence in Activities of Daily Living** is the most measurement of the client's ability to perform activities of daily living independently because it assesses basic activities of daily living. The Index rates how well people accomplish the six tasks of bathing, dressing, using the restroom, transferring, maintaining continence, and feeding. For each of the six functions, patients receive a yes/no score based on their independence. Full function is indicated by a score of 6, moderate impairment by 4, and severe functional impairment by a score of 2 (**Isik et al., 2020**).

**Part 2: The Lawton Instrumental Activities of Daily Living Scale (IADL)** is an appropriate instrument to assess independent living skills (**Coyne et al., 2019**).

According to the Katz Index of ADLs, these skills are seen as being more sophisticated than fundamental daily activities. The Lawton IADL scale evaluates eight domains of function. Customers are graded across all 8 functional categories. The highest level of functionality a client might have in that category determines their score. An overall score for clients goes from 0 (low function, dependent) to 8 (high function, independent).

**Tool III: The Pain Disability Index (PDI) of living activities:** It was developed by (**Tait et al., 1990**). Patients were asked to rate how much their pain interferes with seven different living activities: family/home, recreation, social, occupational, sexual, self-care, life support, and average in a self-report questionnaire designed to measure the severity of a patient's pain experience. A numerical rating scale with a range of 0 to 10 is used by participants. The PDI's dependability throughout tests and at rest was 44 and the internal consistency was 0.86 (Cronbach alpha rating).

### **Tool IV Observational checklist:**

To monitor patient compliance with an exercise regimen, researchers developed it. The performance was categorized as being done correctly and entirely (3-points), correctly but not entirely (2-points) , and incorrectly (1-point).

### **Data Collection:**

Data collection took place between the first of June 2021 and the first of December 2021. The researchers started gathering data by first gathering

demographic and health information. The knowledge of each participant was then evaluated using tools I and II, together with III, for pain disability, daily living activities, and post-mastectomy exercises as baseline data. The information gathered was utilized as a pretest to evaluate the impact of instructional recommendations for post-operative activity and mastectomy exercises.

For patients' further understanding of the condition and post-mastectomy activities, the researchers provided written materials that were reinforced by spoken instructions and presented with graphics. The researchers created this visual handout after reading a review of the literature, considering the findings and recommendations of earlier studies, as well as the suggestions of healthcare professionals. They also had it content-tested.

During the preoperative period, each patient was scheduled for a minimum of five teaching sessions throughout five consecutive visits. Each session lasted fifteen minutes for each patient. Patients were given an illustrated guide with pictures to better explain the post-mastectomy exercises they should perform during the first few days following surgery. These exercises include deep breathing, pumping up their hands, shoulder shrugs and circles, arm lifts, and shoulder blade squeeze.

Perform the aforementioned exercises three to four times per day.

After a week, additional sessions were held to reinforce the information given and address patients' exercises. Patients also received a visual guide with pictures to help explain additional post-mastectomy exercises that they should perform during the first six weeks following surgery, including 1) arm stretches, 2) wand exercises, 3) winging the arm, 4) snow angles, 5) wall climbing, 6) side wall stretches, and 7) side bends. Perform the workouts mentioned above 1-2 times each day. Six-week follow-up: Each patient underwent three assessments and rounds of monitoring (pre-instructional guidelines regarding post-operative activity and mastectomy exercises, after one week, and after 6 weeks) using tools II, III, IV to assess the effect of instructional guidelines regarding post-operative activity and mastectomy exercises on knowledge among women post-mastectomy.

### **Validity of the tools:**

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

### **Reliability of the tools:**

Test-retest was used to determine the reliability of the knowledge tool, and Pearson correlation coefficients are used which = (0.92), Reliability of the reported practice was determined through the use of the inter-observation method. The reliability of the coefficient was ( $r = 0.832$ ).

**Methods of data collection:****Fieldwork:**

The researchers collected data from the women who attended previously selected settings two days / a week from 9 Am to 2 Pm (Sunday and Monday). Data were collected within 6 months from the beginning of from first of June 2021 to the first of December 2021. Approximately, 30-35 minutes were taken to complete each interview questionnaire.

The current research was divided into three stages: preparatory, implementation, and evaluation.

**A-Preparatory phase:**

The researchers met women individually at waiting areas present at previously selected settings and explain the aim of the study after introducing themself to patients.

**A pilot study**

A pilot study was conducted on 10% (10 women) of the total sample to test the clarity and feasibility of the research process. No modifications were carried out to develop the final form of the tools. Women who were in the pilot study were included in the research study.

**B- Implementation phase:**

The data collection tools were distributed to the studied women twice; (1) pre-test to assess their knowledge regarding post-operative activity and mastectomy exercises pre-implementing instructional guidelines. (2) Post-test to assess women's knowledge regarding post-operative activity and mastectomy exercises post two months of instructional guidelines implementation.

The simplified booklet was used as supportive material and given to the studied women in the Arabic language to cover all items regarding the knowledge about post-operative activity and mastectomy exercises after reviewing the related literature based on the assessment of the actual needs of the studied women.

Different teaching methods such as lectures, discussions, pictures, and posters were used.

The researchers designed and implemented the instructional guidelines regarding post-operative activity and mastectomy exercises in the form of a theoretical part and a practical part. The theoretical part included women's knowledge regarding post-operative activity and mastectomy exercises. It was implemented through lectures, posters, educational films, scenarios, and role-plays. An educational booklet written in simple Arabic language and illustrative pictures prepared by the researchers was given to the women.



Data on sociodemographic characteristics and health were the first to be gathered by the researchers. The knowledge of each participant was then evaluated using tools I and II, together with III, for pain disability, daily living activities, and post-mastectomy exercises as baseline data. The information gathered was utilized as a pretest to gauge the impact of a planned educational program for post-mastectomy activities.

The researchers provided patients with written materials that were illustrated with photos as well as spoken instructions to further explain the disease and post-mastectomy workouts. Based on a review of the literature, the findings and suggestions of other studies, as well as the views of healthcare professionals, the researchers developed this illustrative handout as well as were tested for its content.

In the five days before surgery, each patient was scheduled for a minimum of five training sessions, each lasting 15 minutes. Patients were given a visual guide with illustrations to help them understand the post-mastectomy exercises they should perform in the first few days following surgery. These exercises include deep breathing, pumping up their hands, shoulder shrugs and circles, arm lifts, and shoulder blade squeeze. 3–4 times per day, execute the exercises mentioned above.

After a week, the other sessions were held to reinforce the knowledge given and address patients' exercises. Patients also received an illustrated guide with pictures to provide further clarification on additional post-mastectomy exercises that they should perform in the first six weeks following surgery including 1) arms reach, 2) and exercise, 3) winging the arm, 4) snow angles, 5) wall climbing, 6) side wall stretch, and 7) side bends. The previously mentioned exercises perform 1-2 times a day.

#### **Evaluation phase:**

Occurred after two months, each woman was re-interviewed to assess their knowledge regarding post-operative activity and mastectomy exercises. Re-assessment of the patient was done using the same tool used as pretest tools.

#### **Ethical considerations:**

The researchers met both the medical and nursing directors of the selected setting to clarify the purpose of the study and take their approval. Written consent was obtained from patients 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 adult patients. The researchers informed the adult patients that, the study was voluntary; they were allowed to refuse to participate in the study.

Adult patients had the right to withdraw from the study at any time, without giving any reason. Adult patients were assured that their information would be confidential and used for research purposes only.

**Administrative design:**

Administrative permission was obtained from the director of the previously selected settings to achieve this study.

**Statistical analysis:**

Data entry and statistical analysis were performed using SPSS for Windows, version 20. Frequencies and percentages for qualitative variables and mean and SDs for quantitative variables were represented as descriptive statistics. Differences between the two means tests (t-test) were used. Chi-square ( $\chi^2$ ) 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: Frequency and Percentage distribution of the studied women regarding their demographic data**

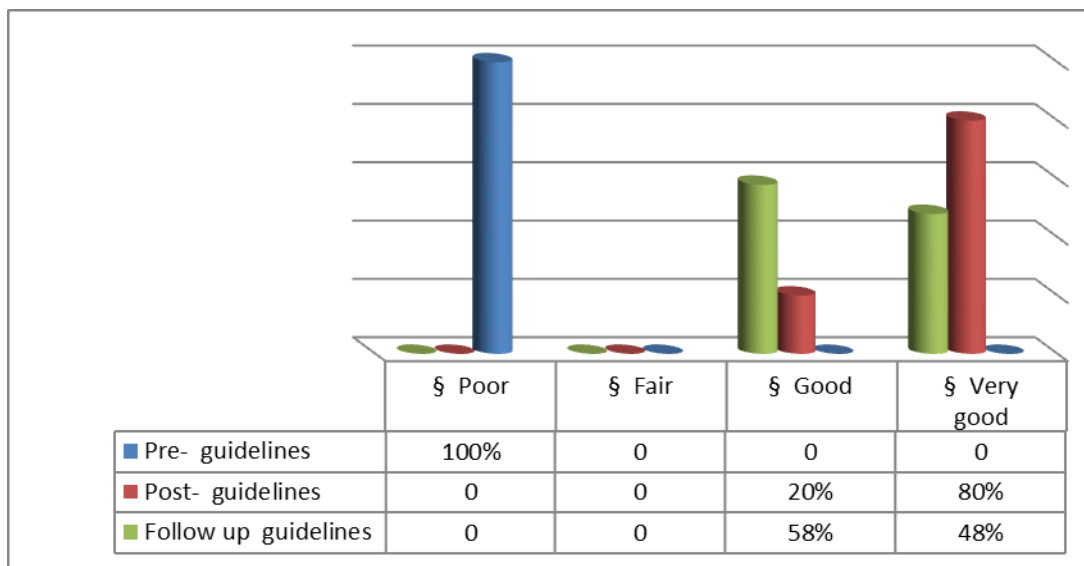
<b>Demographic characteristics</b>	<b>(No=100) No. %</b>	
<b>Educational Levels:</b>		
Illiterate	12	12.0
Read & write	12	12.0
Basic	6	6.0
Secondary education	48	48.0
High education	22	22.0
<b>Occupation:</b>		
Work	56	56.0
Housewife	44	44.0
<b>Residence:</b>		
Urban	42	42.0
Rural	58	58.0
<b>Age (years): Mean + SD</b>	47.67 + 6.34	

**Table (1):** It was revealed that the mean age of the studied women was 47.67 + 6.34 years. Regarding education level, it was noticed that 48% of the study group had secondary education. As regards, occupation 56% of studied women are working. Moreover, it is also observed that 58% of the studied women lived in rural areas.

**Table 2: Comparison between of the studied women's pre, post, and follow-up instructional guidelines implementation regarding known knowledge about breast cancer disease and post-mastectomy exercise**

Knowledge	Pre- instructional guidelines implementation		Post-instructional guidelines implementation		Follow-up instructional guidelines implementation		X <sup>2</sup>	P
	No	%	No	%	No	%		
<b>• Knowledge about breast cancer:</b>								
• Know	11	22.0	80	80.0	90	90.0	102.64	0.000
<b>• Type of breast cancer.</b>								
• Know	4	6.0	84	84.0	80	80.0	124.013	0.000
<b>• Risk factors of breast cancer</b>								
• Know	12	16.0	86	86.0	96	96.0	142.42	0.000
<b>• Clinical manifestation of breast cancer:</b>								
• Know	34	34.0	86	86.0	84	84.0	73.97	0.000
<b>• Diagnosis of breast cancer</b>								
• Know	0	0.0	78	78.0	66	66.0	161.99	.000
<b>• Treatment modalities of breast cancer</b>								
• Know	8	8.0	58	58.0	50	50.0	123.43	.000
<b>• Types of mastectomy</b>								
• Know	6	6.0	80	80.0	94	94.0	132.89	.000
<b>• Complication of mastectomy</b>								
• Know	0	0.0	70	70.0	80	80.0	141.99	.000
<b>• Knowledge about exercise</b>								
• Know	14	14.0	68	68.0	70	70.0	24.099	0.000
<b>• Benefits of Exercise</b>								
• Know	6	6.0	88	88.0	94	94.0	136.94	0.000
<b>• What about exercises</b>								
• Know	8	8.0	90	90.0	88	88.0	156.44	0.000
<b>• How to perform the exercise</b>								
• Know	0	0.0	88	88.0	92	92.0	130.55	0.000
<b>• Time of exercise</b>								
• Know	0	0.0	90	90.0	94	94.0	134.34	0.000
• Mean + SD	<b>.93+0.83</b>		<b>10.45+ 2.59</b>		<b>11.59+1.34</b>		146.65	0.000

**Table (2):** revealed that there were highly significant differences concerning to definition of breast cancer, type of breast cancer, risk factor, clinical manifestations, diagnosis, treatment modalities, types of mastectomy, and complications of mastectomy pre, post and follow-up instructional guidelines implementation regarding knowledge about breast cancer at (P<0.000). Also, there were highly significant differences in the definition of exercise, benefits, what about exercises, how to perform, and time pre, post, and follow-up instructional guidelines implementation regarding knowledge about post-operative activity and mastectomy exercise.at (P<0.000).



**Figure 1: Knowledge levels of the studied women pre, post, and follow-up instructional guidelines implementation**

**Figure 1:** Shows statistically significant improvement in the knowledge levels pre, post, and follow-up instructional guidelines implementation among the studied women.

**Table 3: Mean and standard deviation of total Katz index (independence inactivity of daily living) among the studied women pre, post, and follow-up instructional guidelines implementation**

Katz index level	Pre-instructional guidelines implementation		Post-instructional guidelines implementation		Follow-up instructional guidelines implementation		T	P. value
	Mean	SD	Mean	SD	Mean	SD		
▪ Bathing	.802	.401	.267	.445	.904	.303	23.62	.000
▪ Dressing	.432	.499	.267	.445	.864	.343	18.14	.000
▪ Toileting	.832	.371	.267	.445	.764	.423	23.043	.000
▪ Transferring	.832	.371	.132	.342	.934	.253	22.55	.000
▪ Continence	.762	.422	.232	.427	.104	.000	24.19	.000
▪ Feeding	.902	.302	.267	.445	.934	.253	26.05	.000
Total score (X±SD)	<b>2.46±.83</b>		<b>1.16±.37</b>		<b>2.94±.36</b>		176.68	0.000

**Table (3):** Illustrates the mean and standard deviation of pre-post and follow of total Katz index (independence in activities of daily living) of the studied women. It revealed that there was a highly statistically difference between pre, post, and follow-up instructional guidelines implementation between the total Katz index (independence in activities of daily living) of the studied women ( $P < 0.000$ )

**Table 4: Mean and standard deviation of instrumental activities of daily living among the studied women pre, post, and follow-up instructional guidelines implementation**

Instrumental activities of daily living	Pre-instructional guidelines implementation		Post-instructional guidelines implementation		Follow-up instructional guidelines implementation		T	P. value
	Mean	SD	Mean	SD	Mean	SD		
▪ Ability to use the telephone	.863	.342	.834	.375	.334	.416	18.14	.000
▪ Dressing	.432	.493	.864	.345	.264	.446	18.17	.000
▪ Food preparation	.903	.303	1.04	.000	.304	.466	26.18	.000
▪ Housekeeping	.803	.406	.904	.305	.204	.406	23.56	.000
▪ Laundry	.867	.343	.902	.306	.134	.348	24.55	.000
▪ Mode of transport	.807	.403	1.02	.000	.364	.488	27.46	.000
▪ Responsibility for own Medications	.607	.493	.902	.306	.084	.288	19.40	.000
▪ Ability to handle finances	1.07	.000	.932	.256	.304	.468	29.93	.000
▪ <b>Total score</b>	<b>6.73</b>	<b>1.26</b>	<b>7.34</b>	<b>.91</b>	<b>1.87</b>	<b>1.24</b>	<b>32.42</b>	<b>.000</b>

**Table (4):** This table shows the mean and standard deviation of instrumental activities of daily living of the intervention group, it revealed that there was a highly statistically difference between instrumental activities of daily living of the intervention group ( $P < 0.000$ ) pre, post and follow up instructional guidelines implementation

**Table 5: Mean and standard deviation to pain disability of living activity score among the studied women pre, post, and follow-up instructional guidelines implementation**

Pain disability of living activity	Pre-instructional guidelines implementation		Post-instructional guidelines implementation		Follow-up instructional guidelines implementation		T	P. value
	Mean	SD	Mean	SD	Mean	SD		
▪ Family home responsibility	6.14	1.65	2.34	1.04	4.24	1.152	35.32	.000
▪ Recreation	4.84	1.37	2.49	.978	3.54	.974	45.33	.000
▪ Social activity	6.68	1.47	2.56	.929	4.054	.764	35.17	.000
▪ Occupation	6.98	1.32	4.85	.767	5.56	.964	65.17	.000
▪ Sexual behavior	6.48	.998	5.014	.646	5.47	.564	77.18	.000
▪ Self-care	7.07	1.27	5.37	.795	5.49	.954	45.64	.000
▪ Life support	6.09	1.22	3.28	1.093	4.36	.964	45.85	.000
<b>Total score (X± SD)</b>	<b>53.56±13.97</b>		<b>25.76±2.49</b>		<b>31.67±5.98</b>		198.63	0.000

**Table (5):** Shows the mean and standard deviation of pre, post, and follow pain index disability scores of the studied women. It revealed that there was a high statistical difference regarding pain index disability score among the studied women pre, post, and follow-up instructional guidelines implementation ( $P < 0.000$ ).

**Table 6: Distribution of the studied women regarding exercise performance pre, post, and follow-up instructional guidelines implementation**

Exercise Performance	Pre-instructional guidelines implementation	Post-instructional guidelines implementation	Follow-up instructional guidelines implementation	X <sub>2</sub>	P-value
	%	%	%		
▪ <b>Deep Breathing</b>					
▪ Correct and complete	8.0	66.0	86.0	178.772	0.000
▪ Correct and incomplete	32.0	30.0	10.0		
▪ Wrong  Don't know	60.0	4.0	4.0		
▪ <b>Pump arm up</b>				185.182	0.000
▪ Correct and complete	6.0	68.0	96.0		
▪ Correct and incomplete	14.0	22.0	2.0		
▪ Wrong  Don't know	80.0	10.0	2.0		
▪ <b>Shoulder shrugs circles</b>					
▪ Correct and complete	10.0	64.0	88.0	136.637	0.000
▪ Correct and incomplete	12.0	30.0	10.0		

▪ Wrong  Don't know	78.0	6.0	2.0		
▪ <b>Arm lifts</b>					
▪ Correct and complete	6.0	76.0	0.0	216.24 8	0.000
▪ Correct and incomplete	4.0	20.0	88.0		
▪ Wrong  Don't know	90.0	4.0	12.0		
▪ <b>Shoulder blade squeeze</b>					
▪ Correct and complete	0.0	6.0	82.0	215.17 6	0.000
▪ Correct and incomplete	16.0	90.0	10.0		
▪ Wrong  Don't know	84.0	4.0	8.0		
<b>Total score (X± SD)</b>	<b>5.87±.962</b>	<b>13.31±1.841</b>	<b>14.18±1.010</b>		

**Table (6):** This table shows the performance of the exercises in the study group. It revealed that there was a highly statistically difference between pre, post, and follow-up instructional guidelines implementation ( $P < 0.000$ )

### Discussion:

Major health issue: breast cancer. Treatment for invasive breast cancer involves a modified radical mastectomy. Early postoperative physical therapy is frequently used as a treatment. The doctor, nurse, or physical therapist can recommend and carry out exercises that aid in strengthening the arm and shoulder as well as reducing stiffness and soreness and enhancing daily activities (**Robin et al., 2018**).

Women most frequently experience pain as a breast symptom. It could be severe enough to obstruct regular everyday activities. A significant issue is a discomfort following breast cancer surgery. In addition, about the National Journal of Advanced Research, 8 half of all cases involving postoperative pain syndromes involve women who have had a mastectomy. Following a mastectomy, patients may have severe nociceptive pain and chronic neuropathic pain syndromes (**Couceiro et al., 2019**).

Patients' day-to-day activities are significantly impacted by having breast cancer and undergoing treatment for it. After receiving a diagnosis, patients most typically perceive changes to certain daily activities negatively (**National Cancer Institute, 2019**). Therefore, the purpose of the current study was to ascertain how women with breast cancer's knowledge were affected by instructional recommendations for post-operative activity and mastectomy exercises.

The current study found that the mean age of the investigated women was 47.67 + 6.34 years in terms of demographic information. This finding is consistent with a study by **Omar et al., (2019)** entitled "Breast cancer in Egypt: a review of disease presentation and detection strategies " which noted that breast cancer in Egyptian patients has a younger age distribution with the majority of cases occurring at 30-60 years of age

In addition, **Pakseresht et al., (2019)** found that with a median age of 46 years, breast cancer is the most common cancer among Egyptian women and accounts

for less than one-third of all young female cancer cases reported to the National Cancer Institute. Additionally, this result was consistent with **Hussien, (2017)**, who discovered that the majority of the women in the study were above the age of 40. This study was named "Nurses' Role in Early Detection of Breast Cancer via Mammography and Genetic Screening and its Impact on Patients Outcomes." Additionally, this finding was consistent with a study about the "Effect of an educational program for therapeutic activities for women having mastectomy" **Shabaan, (2019)**, which was conducted mentioned that the majority of studied samples ranged in age between 40-55 years .

According to the present study's findings, more than half of the study group had at least a secondary education. This result agrees with **El- Badawy, (2016)**, who stated that roughly one-third of both study groups had secondary education. Additionally, this discovery was consistent with a study by **Beiki et al. (2018)** entitled "Breast cancer incidence and case fatality among 4.7 million women concerning the social and ethnic background," which found that women with the highest educational level experienced a significantly higher incidence of breast cancer than those with lower education. This is consistent with a study conducted regarding this by **(Abd El Razik et al., 2020)** "The Effect of Educational Program on Quality of Life for Patients with Cancer Undergoing Chemotherapy", who reported that the highest percentage of the studied groups were illiterate. As well as this finding is not supported by **Ali, (2010)**, in a study carried out about "Informational needs and concerns among women with breast cancer after surgery", who found that more than one-quarter of the study sample were illiterate .

Furthermore, the results of the current study showed that more than half of the study group had resided in rural areas. These results are backed by research done by **Hameed, (2003)** who noted that the patients in their investigations resided in rural areas.

Further supporting this finding was research by **Milne et al. (2018)** titled "The Efficacy of Protocol of Care on Post Mastectomies Women Outcomes," which showed that more than half of the control group and around half of the study group both resided in rural areas.

The fact that many breast cancer patients reside in urban settings was further evidenced by **Pakseresht et al., (2019)**, who also validated this finding.

The results showed that there were highly significant differences in knowledge of the definition of breast cancer, the type of breast cancer, risk factors, clinical manifestation, diagnosis, treatment modalities, types of mastectomy, and complications of mastectomy before, after, and during follow-up instruction. There were also highly significant differences in knowledge of the definition of excisional breast cancer. According to the researchers, the application of instructional guidelines had a positive impact on the knowledge of the women who were the subject of the study.

The results showed that there were highly significant variations in knowledge of breast cancer before, during, and throughout the application of instructional



guidelines for knowledge about post-mastectomy exercise, as well as knowledge about defined exercise. According to the researchers, the application of instructional guidelines had a positive impact on the knowledge of the women who were the subject of the study.

This research supports **Mahdy & Ali, (2018)**, which indicated that before receiving pre-discharge educational guidelines intervention, patients had insufficient knowledge about arm lymphedema and self-care practices regarding the prevention of arm lymphedema. However, after receiving guidelines intervention, this knowledge was significantly higher for the majority of patients. Additionally, most patients practiced adequate self-care, which resulted in a reduction in arm morbidity during the follow-up period. The study was conducted, **by Qalawa et al. (2017)** and the study findings are consistent with their study about the effect of implementing an instructional scheme for mastectomies women regarding post-mastectomy exercises in breast cancer" it was studied among forty-four female patients at the oncology clinic of port said General hospital in Egypt .

The study's findings demonstrated that, after the adoption of instructional guidelines, patients' knowledge of the value of arm exercises after mastectomy significantly improved. In addition, non-compliance with exercises dramatically decreased when the instructional plan was put in place. In a study titled "Lymphedema: Knowledge, Treatment, and Impact Among Breast Cancer Survivors," **Paskett and Stark (2020)** noted that, on average, women understood very little or nothing about lymphedema before they experienced it. Additionally, this finding is similar to that of **Fu et al., (2017)**, who discovered that patients who got information considerably outperformed those who did not in the cognitive and symptom outcomes of breast cancer survivors reported significantly higher scores in the knowledge test .

In addition to a study conducted by **Bahgat et al., (2016)** which reported on levels of overall knowledge about exercises and preventive care measures of lymph edema of mastectomized women pre and post-protocol of care, the findings of their study revealed that more than half of the study group I have a poor knowledge pre protocol of care compared to no one post protocol of care.

The results of this study demonstrated that there were highly statistically significant differences between the execution of instructional guidelines for pain disability in the pre, post, and follow-up phases. The findings of the present study are consistent with **Rageh's (2013)** statement that "most surgeons recommend a program of early graduated shoulder mobilization within the patient's tolerance of pain starting on the first postoperative day" and with **Carrien et al., (2017)** .'s findings that "physiotherapy, which began for two weeks after surgery reduced shoulder pain in patients with axillary dissection in breast cancer as well as improved shoulder function, quality of life, and shoulder mobility.". **Ullah et al. (2017)** also noted that the majority of the patients in the exercise group showed improvement after 6 weeks in their study. In addition to what **Fordyce et al. (2018)** reported, they also found that patients who were told to perform exercises experienced less severe pain, which lessens their ability to carry out daily tasks.

Pain intensity decreases with increased workout performance. In addition to **Maurits, (2015)** claimed that exercise treatment that comprises individually developed programs, including stretching or strengthening, and is administered under supervision improved pain and function in the intervention group. This finding is very encouraging in light of **McWayne J. Heiney's (2015)** research, which revealed that an educational program for the prevention of arm lymphoedema directly improves patients' quality of life.

The current study's findings revealed the intervention group's mean and SD for the total Katz index (independence in daily living activities) in the pre-post and follow-up periods. The overall Katz index (independent in daily living activities) of the examined women showed a highly statistically significant difference between pre, post, and after-instructional guidelines implementation. This conclusion is supported by **Gosselink et al., (2018)** report that modified radical mastectomy patients experienced greater functional limitations concerning upper limb Activities of Daily Living (ADL) than breast conservation surgery patients.

Additionally, studies have shown that patients with arm swelling faced significant activity limitations at home and work. Increasing numbness and restricted shoulder motion

In addition, this conclusion is consistent with **Rietman et al., (2019)** 's findings, which showed that 9% to 57% of patients reported having limits in daily living activities, which results in a lower quality of life, with daily living activities being one of its drivers. Furthermore, little is known regarding activity restrictions and participation limitations due to impairments in body structures and functions, therefore it is clear that such research is necessary. Little is known about how the type of surgery influences the restrictions on what can be done and who can participate. Lifting, carrying, and reaching out were reported to be the activities most restricted after a breast cancer procedure (**Karki et al., 2015**). Also, this result was accepted by **Fung,( 2017)** in the result of the study entitled "Efficacy of modified 3 phases exercise program for the patient following breast cancer surgery", who concluded that physiotherapy program was proved to be safe and effective in improving shoulder function without major complications. In addition to **McNeely et al., (2019)** illustrated that strengthening exercises should also be included to restore arm strength and prevent difficulties in performing activities of daily living.

This study's findings demonstrated that the study group performed the activities. It was discovered that there was a significant statistical difference between the application of the pre, post, and follow-up instructional guidelines. According to the researchers, this illustrates the significance and potency of instructional guidelines that are frequently linked to bettering knowledge and comprehension among the researched women and practices to support their learning and acquisition of good information and application of it.

### **Conclusion:**

Based on the study findings, the current study concluded that the implementation of the instructional guidelines had a significant positive effect on improving women's knowledge regarding post-operative activity and mastectomy exercises

### **Recommendations:**

The following suggestions are made based on the current study's findings:

- The instructional guidelines regarding post-operative activity and mastectomy exercises should be conducted again, discussed, and integrated into the rehabilitation programs
- Taught to the women using the booklet and illustrated pamphlets for each one to improve their information
- Replication of the current study with a larger sample of patients in different settings is required for generalizing the results.

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