Efficacy of drainage self-care management on mastectomy patients' outcomes

Neima Ali Riad, Seham Mohamed Abd Elalem, Omima Said M.H. Shehata, Om Elhana Kamel Abo Shehata

Medical Surgical Nursing Department, Faculty of Nursing, Menoufia University, Egypt.

Abstract

Background: Self-management following surgical treatment of breast cancer is an effective way to promote optimal coping and improve health through the participation of patients and their families in the decision making, acquiring knowledge and skills that help them in dealing with their illness. **Aim:** The aim of our research was to evaluate the efficacy of drainage self-care management on mastectomy patients' outcomes. Design: A quasi-experimental research design was used**. Sitting**: The study was carried out at the general surgical department in emergency Hospital of Menoufia University Hospital at Shebin El-Kom District, Menoufia Governorate, Egypt**. Sample:** the sample size was one hundred and fifty breast cancer patients that were assigned alternatively and randomly into 2 equal groups a study and a control group, each one consisted of seventy-five patients. **Tools:** Five tools were used; Tool 1: An Interviewing Questionnaire sheet. Tool II: Patient's knowledge, Tool III: observational checklist. Tool IV: The Cancer Behavioral Inventory-Brief (CBI-B). Tool V: drainage complications assessment. **Results:** There was a highly statistically significant increase in knowledge and self-efficacy scores, practice level, and decrease in the occurrence of drain complications of a study group than a control group. **Conclusions:** Self-management of drainage care is one of the key concepts for increasing patient's knowledge, practice, and self-efficacy that help for reducing drain complications. **Recommendation:** self-management of drainage care after mastectomy should be taken into account when providing nursing care to increase patient's self-efficacy and improve outcomes through enhancing patient's knowledge, practice, and role management.

Keywords: Self-care management, Mastectomy, Patients' outcomes

Introduction

Breast cancer is the most common cancer among women worldwide. In 2020, according to the American Cancer Society's 2020 report, There are 276,480 new cases of breast cancer among women and 2,620 cases among men in the United States, and 42,690 deaths due to breast cancer (42,170 women, 520 men) (American Cancer Society, 2020). In Egypt, breast cancer accounts for 22038 (16.4%) of all new cancer cases for the year 2020 and is the second cause of death from cancer representing 9148 (10.3) from all cancer death (The Global Cancer Observatory, 2020).

Surgical treatment of breast cancer depends on the tumor size, hormone receptivity, histology markers, presence or absence of metastasis, comorbidity, patient's age, and preference. Surgical options may be a lumpectomy, mastectomy, and breast-conserving surgery (lumpectomy) (O'Sullivan,

Loprinzi, and Haddad, 2018).Surgical treatment of breast cancer has advanced progress and may become complex in many cases, this complexity comes from the multidisciplinary needs of patients and the ability of the health care team to maintain the balance between disease outcomes and treatment-related complications, so that to achieve optimal success the patients should be informed with the treatment and the care provided to be an active participant and make a decision about the plan of care (Warburton, et al., 2018).

Hematoma formation, surgical wound infection, and seroma formation are considered the most common postoperative complications following modified radical mastectomy, therefore these direct complications can be attributed to the drainage of the surgical wound (Stoyanov, et al., 2017). There are different types of surgical drains; the most typically used for breast surgeries is the Jackson-Pratt

drainage system. Jackson Pratt drain is placed within the surgical field and is attached to flexible tubing that passes through and is stitched to the skin. The tubing is capped with a soft plastic bulb that catches and holds the fluid, and a stopper outside the body. The drain will stay 1 to 3 weeks (McKenna, 2021).Jackson Pratt drain tube may become occluded due to tissue, blood clots, or mechanical compression. This can increase the risk of infection by preparing the ground for hematoma formation. Although pain varies depending on the patient, it can reach levels that may affect patients at a serious level, from mild to inhibition of mobilization. The ugly scar is a cosmetically bad scar tissue formation, especially when the drain needs to stay for a long time. Surgical nurses have important duties in drain care including careful follow-up of the drain in terms of color, odor, and quantity, follow-up in terms of signs of infection, performing evidence-based practices to prevent infection, follow-up of the drain in terms of complications, taking measures to prevent unwanted events, training of patients and their relatives are among the duties of the nurse. Drain care constitutes is an important part of the health care offered by surgical nurses (Öztaş, Dursun, and Öztaş, (2020) and Knowlton. (2015).

Post-mastectomy patients may experience feelings of diminished self-efficacy related to functional deficits resulting from their physical limitations ((AziziFini et al., 2011). Self-efficacy was defined by Albert Bandura as "one's belief in one's ability to succeed in specific situations or accomplish a task. One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges" (Rosland, Heisler and Piette, 2012), Patients with high self-efficacy would be more likely to deal with life stressors with confidence and engage in the necessary behaviors to preserve or restore health(Machado, et al., 2016). Self-efficacy is considered as one of the major components towards developing a successful self-management practice throughout a chronic disease condition such as breast cancer. Research has shown that self-efficacy beliefs affect many aspects of personal performance (Maddux, 2016).

Self-care management describes the person's ability to cope with the symptoms of a disease, the method of treatment, the physical and psychological consequences, and changes in lifestyle to cope with a chronic conditionFoster, et al. (2018), Barlow, et al., (2002) and VanHoutum, et al., (2015). The self-management process consists of patient's active participation in their care, self-monitoring, and problem solve abilities, and contribute to decision-making with the health care team (McCorkle et al., 2011). Lorig and Holman, (2003) mentioned that three components of a self-management program were medical care, emotional care, and role management also it is very important for effective self-management interventions that should combine aspects of patient education to increase knowledge of their disease, the health care system and resources available to them, and to incorporate theory-based problem solving and decision-making skills training.

Nurses have a major role in managing patients with mastectomy before and after the surgery and later on at the follow-up periods. Preoperative nursing care includes providing education and preparation for the patients who are going to perform surgical treatments, as well as improve the coping ability of the patients, and promoting their decision-making ability. The postoperative nursing interventions include such as managing postoperative sensations, promoting positive adjustment and coping ability as well as help the patients for managing potential complications, link to home and community-based care, teaching patients self-care, and maintain patients' satisfaction level with the care provided (Hinkle, 2014). In the literature, limited studiesthat evaluate the practices of nurses on Jackson-Pratt drain care have been found. Therefore, with the current study, it is planned to open the door to discuss the evidence-based information of self-care management about drain care and to determine the knowledge, patients' practices post-mastectomy and examine drainage complications problems they experience while doing drain care. So, it guides nursing practices in drain care, which is an important part of nursing care in the surgical department.

Aim of work

The study aimed to evaluate the efficacy of drainage self-care management on mastectomy patients' outcomes.

Operational definition

Patients' outcomes meanpatient's knowledge, practice, self-efficacy, and drainage complications.

Research hypotheses

H1. Knowledge scores will be improved in a study group patient compared to control group patients after implementing drainage self-caremanagement.

H2. Self-scare management of drainage practice scores will be improved in a study group patient compared to control group after implementing drainage self-care management.

H3. Self-efficacy scores will be improved in a study group of patientscompared to a

control group after implementing drainage self-care management.

H4. Drainage complications will be decreasedin a study group of patients compared to a control group after implementing drainage self-care management.

Subject and Methods

Design: Quasi-experimental research design was used to fulfill the study aim.

Setting: The study was carried out at the general surgical department in the emergency Hospital of Menoufia University Hospital at Shebin El-Kom District, Menoufia Governorate, Egypt.

Subject: A purposive sample of 150 female patientsundergoing modified radical mastectomy surgery that calculated according to the power analysis of this study using the following formula (n)= $(Z^2 pq \ / \ e^2)$ at 80% power with a 95% confidence level. The sample was selected and assigned alternatively and randomly into 2 equal groups each one consisted of 75 patients:

Group 1 (study group): was given drainage self-care management in addition to routine hospital care.

Group 2 (control group): was given routine hospital care. They were selected according to the following inclusion and exclusion criteria:

Inclusion criteria:

- Adult female patients

- Conscious and agreed to participate in the research

- Recently diagnosed with breast cancer,

- Undergoing modified radical mastectomy.

The exclusion criteria

- Recurrence breast cancer

- Preoperative chemotherapy.

- Psychological problems

- Chronic disease as diabetes.

Tools for data collections

The following tools were used to collect data:

Tool 1: patient's socio-demographic and medical data: It was developed by researchers; and was divided into two parts:

Part I: Patients' socio-demographic of the patients such as age, sex, level of education, occupation, marital status, residence, and income.

Part II: Medical data:it included present and past history of medical disease as family history of cancer, previous hospitalization, previous surgery, and stage of breast cancer.

Tool 2: Patient's knowledge: It was used to assess the patient's knowledge of drainage care that consisted of 14 questions (open ended questions) as what is the importance of changing drainage dressing, equipment used for drainage dressing.

Scoring system for patient's knowledge: Each question scored from 0-2 marks as zero indicating the wrong answer, 1 indicating correct incomplete answer and 2 indicating correct and complete answer, then all scores of all questions were summed up to give the total knowledge score from 0-28 and classified as the following:

more than 60% (more than 16.8) indicating satisfied, and less than 60% (less than 16.8) indicating unsatisfied.

Tool 3: Self-care management of drainage practice observational checklist: It was developed by the researcher after thorough review of relevant literature; it consisted of 19 items to assess patient's practice for the following, wound care around drain, drainage care, drainage evacuation and measuring amount of the drain.

Scoring system for patient's practice: Each step scored from 0 – 2 marks as zero was given when the patient didn't perform the step, 1 mark was given when the patient performing the step incorrectly, and two marks were given when the patient performing the step correctly, then all scores of all steps were summed up to give the total practice score from 0 - 38 and classified as the following: a total score of less than 75% (less than 28.5) means incompetent practice and a total score more than 75% (more than 28.5) indicating competent practice.

Tool 4:The Cancer Behavioral Inventory-Brief (CBI-B): It is composed of twelve items and was used to assess self-efficacy to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events and modified by Heitzmann et al., 2011 and translated into Arabic by Algamdi (2016)

Scoring system: Each item of the scale is measured on nine points likert scale with (one, two, and three) indicating not at all confidence, (four, five, and six) indicating somewhat confidant, and (seven, eight, and nine) indicating confident. The sum of all items gave the total scale score that ranges from (1-108) and indicates the level of self-efficacy of cancer patients, with a high score reflecting higher-level of self-efficacy while a low score indicating lower level of self-efficacy.

Tool 5: Drainage complications assessment: It was developed by the researcher to assess and evaluate drain complications as an increase in drainage, infection, loss of vacuum pressure, tube obstruction, slips off the tube suture, increase swelling, fluid leakage around the tube, fever, accidental injury to tubing, pain around the tube, drainage that changes from light pink to dark red, sudden increase or decrease in the amount of drainage, drainage is bright red for more than two or three days.

Methods

Formal approval: an official letter was taken from the Faculty of Nursing, Menoufia University, to the director of the University Hospital by agreeing to conduct the research in the general surgery department.

Protection of patients' rights: After obtaining approval for the research application the researchers selected the patients who had the inclusion criteria and informed them about the aim of the present research to obtain their acceptance to participate in the study. Written consent was taken from the patients. Patient's confidentiality and anonymity were assured.

Validity of tools: the validity of tools was determined by a group of experts in the field of medical surgical and general surgery to assure relevance and completeness of the content and clarity of the questions then the required modification was applied accordingly.

Reliability of tools: a test retest method and a person correlation coefficient formula were utilized; it was 0.90 for tool (2), 0.89 for tool (3), 0.76 for tool (4), and 0.86 for tool (5). The interval between every test was 2 weeks. The reliability for Instrument (3) was tested by Algamdi (2016).

Pilot study: A pilot study was conducted for 10% of subjects which equals 15 patients to assess the constructed tools for feasibility, applicability, and the necessary modifications were done. The results of the pilot study were excluded from the actual study.

Time for collection of data: Data collection for the current study was conducted through a period of time from the beginning of May 2020 to the beginning of November2020.

Data collection was conducted through four phases: assessment, planning, implementation, and evaluation.

Assessment phase:

During the assessment phase the researchers obtained a basic data about patient's socio-demographic and medical data using tool 1, drainage care knowledge using tool 2, Self-care management of drainage practice using tool 3 and self-efficacy using tool 4 at the preoperative period one week before surgery in the outpatient clinic during patient preparation. The researchers had done fourth assessments for the study and the control group, the first one at the preoperative period (pre-intervention), the second one at the second day postoperative, the third one at the fifth day postoperative, and the fourth one at the seventh day postoperative by using tool 2, 3, 4, and 5.

Planning phase:

During the planning phase the researchers construct the plan to design illustrative booklet and brochure for self-management of drainage care (suction drain) of mastectomy through extensive review of literature based on the current study goals, priority of care and expected outcomes criteria.

Implementation phase:

During the implementation phase the researchers interviewed with all patients in the study group individually at the surgical outpatient clinic and the surgical department to conduct and learn study group patients self-management of drainage care during three sessions at the preoperative period one week before surgery in the outpatient clinic during patient preparation, each session took from 45 to 60 minutes according to patient's understanding by using a designed brochure, lecture, discussion, simulation, demonstration, and return demonstration.

Sessions that were given during the intervention to the study group were described as the following:

- **1st session**: included giving verbal instruction about drainage definition, purpose, signs of infection around the tube, and types of drain complications. These instructions were supplemented by brochure, lecture and discussion.

- **2nd session**: included giving instruction about drainage self-care and reinforcing the need for adherence with drainage care and infection control that's supplemented by an illustrative guidance through simulation, brochure for more clarification to patients.

- **3rd session:** included demonstration and return demonstration about drainage care technique, then the researchers ending the session by doing quick revision for the previous two sessions and gave patients the chance for asking any question.

Self-management of drainage care contained the following steps: Chim, Borsting, and Thaller, (2016) and Heskin et al., (2019).

• Wash hands with soap and water: wet hands, apply soap, rub them together for at least 20 seconds then rinse and dry hands with a towel and use that same towel to turn off the faucet, if using an alcohol-based hand sanitizer, cover hands with it and rubbing them together until evaporated.

• If the drainage bulb is attached to a surgical bra or wrap, first remove it from there.

• Unplug the stopper on top of the bulb this will make the bulb expand, don't touch the inside of the stopper or the inner area of the opening on the bulb.

• Remove the old bandage, wash hands again, then wet cotton and clean around the incision and tube site with normal saline solution, clean the skin or use warm soapy water.

• Put a new bandage on the incision and tube site, make the bandage large enough to cover the whole incision area then tape the bandage in place. Hold the tubing where it leaves the skin with one hand to keeps it from pulling on the skin, pinch the tubing with the thumb and first finger of the other hand, slowly and firmly pull the thumb and the first finger down the tubing, and hold an alcohol swab between fingers and the tube to lubricate the tubing.

- If the pulling hurts or feels like it's coming out of the skin, stop and begin again more gently.

Emptying the drain

- Wash and dry hands before emptying the drain, turn the bulb upside down, and gently squeeze it.

- Pour the drainage into the measuring container and record the amount of fluid each time emptying the drainage, turn bulb right side up then squeeze the bulb until fingers feel the palm or hear air coming out of the bulb and close the opening, continue to squeeze the bulb while replug the stopper and check to see that the bulb stays fully compressed to ensure a constant gentle suction.

- Check the color of drainage in the measuring container. The first couple of days after surgery, the fluid may be a dark red color. This is normal as continues to heal it may look pink or pale yellow.

- Flush the drainage down the toilet and rinse the measuring container with water.

- Check for signs of infection as more redness than usual, sometimes the drain causes redness about the size of a dime at the insertion site, this is normal, swelling or warmth around the incision or tube, foul-smelling drainage, fever (body temperature 38°C), fluid leaking around the tube, incision seems not to be healing, stitches become loose and vomiting, increased pain around the tube.

- Call for health care provider (physicians) if any of the following signs appear: tube falls out, drainage that changes from light pink to dark red, a lot of fluid around the drain, blood clots in the drainage bulb, a sudden increase or decrease in the amount of drainage (over 30 mL), cannot remove a clot from the tube by milking the tube, drainage fluid is bright red for more than two or three days, bulb loses suction, accidental injury to tubing

Measuring the amount of drainage

- It was done at about the same time every day (about 8am), Put the bottle on a flat surface, measure the amount of fluid in the bottle since the last measurement (24-hour drainage) and also the total amount in the bottle (total drainage), record the volume of fluid, mark the level of the drainage (fluid level) on the white stripe with an indelible pen (a biro or permanent marker) on the side of the drainage bottle when the drainage is less than 30 mL in 24 hours, this indicates good wound condition and if the amount more than 30 mL in 24 hours notify the physician.

Drain management chart:

Date	Time	mL in bottle	24 hr total

- At the time of wound cleansing, all skin is carefully inspected for color, any signs of redness, breakdown, or local infection.

- At the beginning of each session, the researcher had refreshed the previously given instructions then started the new one so.

- Each patient was allowed to ask any question and also they were advised to carry out the routine hospital care as prescribed by the health care provider (treating physicians and nurses).

- The patients were checked for the acquisition of knowledge and practice.

- Each patient was followed up by the researcher using the telephone to be sure that they follow the instructions and demonstrate the practice as illustrated by the researchers

Evaluation phase:

- During this phase all patients in the study and control group were evaluated for knowledge and practice related to self-management of drainage care, self-efficacy and drainage complications three times, the first time of evaluation in the second day post-operative, the second time of evaluation in the fifth day post-operative, and the third time of evaluation in the seventh day postoperative by using tool 2, 3, 4, and 5.

- A Comparison was done between both groups at pre-intervention and three times of

evaluation to evaluate the efficacy of drainage self-care management on mastectomy patients' outcomes.

Statistical Analysis

- Statistical tests that were used to check test of significance between study and control group were: chi-square test (χ^2) used to study the association between two qualitative variables, student t-test used to compare between study and control group with the normal distribution of quantitative variables,Repeated-Measures ANOVA used when we had a single line of data for each participant, with the repeated measures entered as separate variables on that same line.

- P-value was considered non- statistically significant when it was more than 0.05, while it was statistically significant when it was less than 0.05, and highly statistically significant when it was less than 0.001.

Results

Table 1 describes that more than halfof the studied groups were married 74.7% & 69.3% with mean age 44.05±9.12 and 45.16±8.04 for a study and a control group respectively. Concerning educational level, more than one-third of the studied group42.7% &40% for a study and a control group respectively were read and write. Regarding occupation more than half of the studied groups 62.7% and 58.7% were housewives and more than half of them have insufficient income 65.3% and 70.7% and coming from rural area 66.7% and 72% for a study and a control group respectively. There was no statistically significant difference between a study and a control group regarding sociodemographic characteristics.

Table 2 reveals that more than half of the studied groups didn't have a family history of cancer 85.3% and 88% for a study and a control group respectively. Concerning the previous hospitalization about half of the studied groups 54.7% and 49.3% for a study and a control group respectively admitted to hospital previously and less than half of the 38.7% and 45.3% for a study and a control

group respectively was performed to the previous surgery. Regarding stage of cancer around half of a study and a control group had stage II of cancer.

Table 3 shows that there is a highly statistically significant increase inthe level of drainage care knowledge of a study group as the subjects had satisfied knowledge (64%, 81.3%, and 92%) versus a control group (37.3%, 50.7%, and 60%) at 2nd day post-operative, 5th day post-operative and 7th day post-operative.

Figure 1reveals that there is a highly statistically significant increase in the mean value of total drainage care knowledge score for the study group 16.79±3.50, 18.75±3.36, and 18.92±3.02 at 2nd day post-operative, 5th day post-operative and 7th day post-operative.

Table 4 illustrates that there is a highly statistically significant improvement in the drainage care skills of a study group as the subjects had competent practice (58.7%, 76%, and 86.7%) versus the control group (30.7%, 42.7%, and 48%) at 2nd day post-operative, 5th day post-operative and 7th day post-operative.

Figure 2 describes that there is a highly statistically significant increase in the mean value of total drainage care skills score for the study group 20.08±5.80, 22.27±4.11, and 23.67±2.42 at 2nd day post-operative, 5th day post-operative and 7th day post-operative.

Figure 3 reveals that there is a highly statistically significant increase in the mean value of self-efficacy score for the study group than the control group at 2nd day post-operative, 5th day post-operative and 7th day post-operative.

Table 5 shows that there is a statistically significant decrease in the occurrence of drainage complications for infection and pain around the tube at the first time of follow up and second time of follow up, in addition to there is a statistically significant decrease in the occurrence of drainage complications for slips of the tube suture and tube obstruction at 2nd day post-operative, 5th day post-operative and 7th day post-operative for a study group than the control group.

Table (1): Percentage distribution of the studied groups according to sociodemographic characteristics. (n=150).

Socio-demographic Characteristics	study (n=75)		Control (n=75)		χ2 p value
	No.	**%**	**No.**	**%**	
Age / years ($\overline{X}$ ±SD)	44.05±9.12		45.16±8.04		t- test= 0.788 p value= > 0.05
Marital status Married Single Widow	60 3 12	80.0 4.0 16.0	57 2 16	76.0 2.7 21.3	0.848 > 0.05
Level of education: Illiterate Read and write Secondary education Higher education	0.00 32 24 19	0.00 42.7 32.0 25.3	0.00 30 29 16	0.00 40.0 38.7 21.3	0.793 > 0.05
Occupation: Housewives Have a work	47 28	62.7 37.3	44 31	58.7 41.3	0.251 > 0.05
Income: Insufficient Sufficient	49 26	65.3 34.7	53 22	70.7 29.3	0.490 > 0.05
Residence Rural urban	50 25	66.7 33.3	54 21	72.0 28.0	0.502 > 0.05

χ2 (Chi-square test**)   t- test (student t-test)**

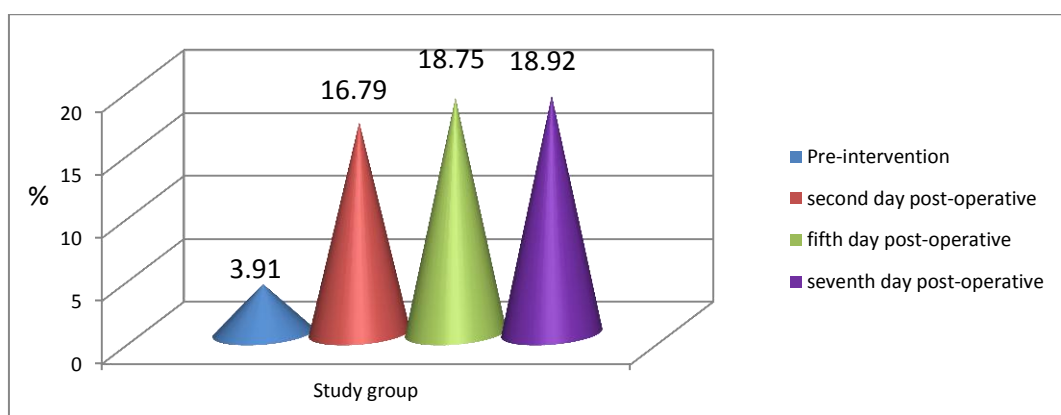**Table (2):** Percentage distribution of the studied groups according to medical data. (n=150)

| Medical data	study (n=75)		Control (n=75)		χ2 p-value
	No.	**%**	**No.**	**%**	
Family history of cancer Yes No	11 64	14.7 85.3	9 66	12.0 88.0	0.231 > 0.05
evious hospitalization Yes No	41 34	54.7 45.3	37 38	49.3 50.7	0.427 > 0.05
evious surgery Yes No	29 46	38.7 61.3	34 41	45.3 54.7	0.684 > 0.05
Stage of cancer Stage I Stage II Stage III	15 39 21	20.0 52.0 28.0	18 33 24	24.0 44.0 32.0	0.973 > 0.05

χ2 (Chi-square test**)**

Table (3): Percentage distribution of drainage care knowledge among studied groups at pre-intervention, 2nd day post-operative, 5th day post-operative and 7th day post-operative.   (n = 150)

| Drainage care knowledge	study (n=75)		Control (n=75)		χ^2 p-value
	No.	%	No.	%	
pre-intervention					
- satisfied	7	9.3	5	6.7	0.362
- unsatisfied	68	90.7	70	93.3	> 0.05
2nd day post-operative					
- satisfied	48	64.0	28	37.3	10.67
- unsatisfied	27	36.0	47	62.7	< 0.05
5th day post-operative					
- satisfied	61	81.3	38	50.7	15.72
- unsatisfied	14	18.7	37	49.3	< 0.001
7th day post-operative					
- satisfied	69	92.0	45	60.0	21.05
- unsatisfied	6	8.0	30	40.0	< 0.001

χ^2 (Chi-square test)

Figure (1): Mean value of total drainage care knowledge score for the study group at pre-intervention, 2nd day post-operative, 5th day post-operative and 7th day post-operative

Table (4): Percentage distribution of drainage care practice among studied groups at pre-intervention, 2nd day post-operative, 5th day post-operative and 7th day post-operative.   (n = 150)

Drainage care skills	study (n=75)		Control (n=75)		χ^2 p-value
	No.	%	No.	%	
pre-intervention					
- Competent	5	6.7	3	4.0	0.528
- Incompetent	70	93.3	72	96.0	> 0.05
2nd day post-operative					
- Competent	44	58.7	23	30.7	11.90
- Incompetent	31	41.3	52	69.3	< 0.05
5th day post-operative					
- Competent	57	76.0	32	42.7	17.27
- Incompetent	18	24.0	43	57.3	< 0.001
7th day post-operative					
- Competent	65	86.7	36	48.0	25.49
- Incompetent	10	13.3	39	52.0	< 0.001

χ^2 (Chi-square test)
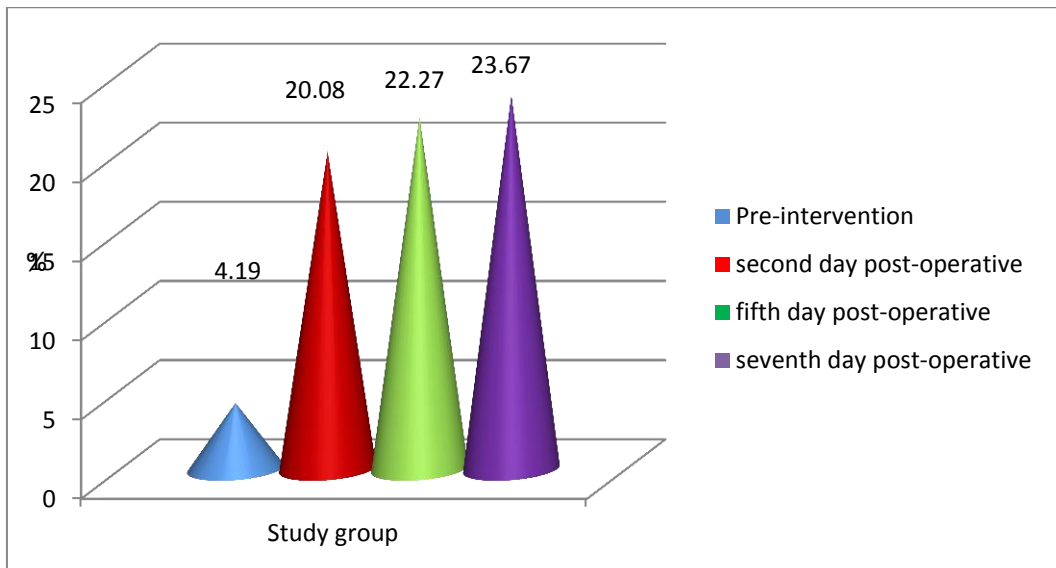
Figure (2): Mean value of total drainage care practice score for the study group at pre-intervention, 2nd day post-operative, 5th day post-operative and 7th day post-operative
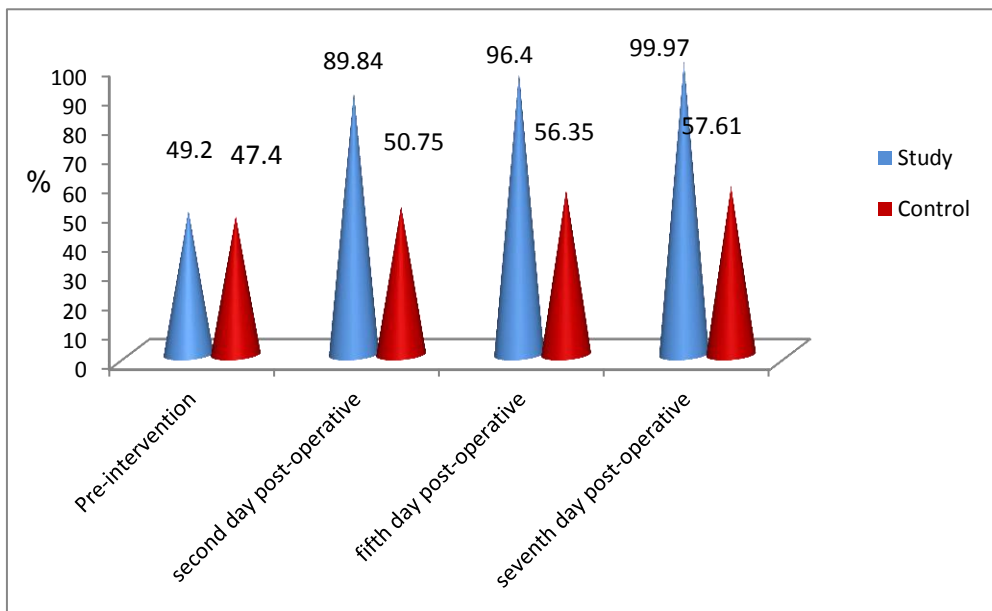
Figure (3): Mean value of self-efficacy score for the studied groups at pre-intervention, 2nd day post-operative, 5th day post-operative and 7th day post-operative

Table (5): Percentage distribution for occurrence of drain complications among the studied groups at 2nd day post-operative, 5th day post-operative and 7th day post-operative.   (n=150)

Drain complications	study (n=75)		Control (n=75)		χ2	p-value
	No.	%	No.	%		
Infection						
day post-operative: - Yes	6	8.0	8	10.7	0.315	> 0.05
- No	69	92.0	67	89.3		
5th day post-operative: - Yes	11	14.7	29	38.7	11.05	< 0.05
- No	64	85.3	46	61.3		
7th day post-operative: - Yes	4	5.3	16	21.3	8.31	< 0.05
- No	71	94.7	59	78.7		
Slips off the tube suture						
day post-operative: - Yes	5	6.7	14	18.7	4.88	< 0.05
- No	70	93.3	61	81.3		
5th day post-operative: - Yes	9	12.0	22	29.3	6.87	< 0.05
- No	66	88.0	53	70.7		
7th day post-operative: - Yes	3	4.0	13	17.3	6.99	< 0.05
- No	72	96.0	62	82.7		
Tube obstruction						
day post-operative: - Yes	8	10.7	18	24.0	4.65	< 0.05
- No	67	89.3	57	76.0		
5th day post-operative: - Yes	11	14.7	36	48.0	19.30	< 0.001
- No	64	85.3	39	52.0		
7th day post-operative: - Yes	4	5.3	17	22.7	9.36	
- No	71	94.7	58	77.3		< 0.05
Pain around tube						
day post-operative: - Yes	69	92.0	71	94.7	0.429	> 0.05
- No	6	8.0	4	5.3		
5th day post-operative: - Yes	32	42.7	56	74.7	15.84	< 0.001
- No	43	57.3	19	25.3		
7th day post-operative: - Yes	14	18.7	28	37.3	6.48	< 0.05
- No	61	81.3	47	62.7		
The sudden increase in the amount of drainage						
day post-operative: - Yes	3	4.0	5	6.7	0.528	> 0.05
- No	72	96.0	70	93.3		
5th day post-operative: - Yes	5	6.7	9	12.0	1.26	> 0.05
- No	70	93.3	66	88.0		
7th day post-operative: - Yes	2	2.7	6	8.0	2.11	> 0.05
- No	73	97.3	69	92.0		

χ2 (Chi-square test**)**

Discussion

Breast cancer and its treatment are associated with short and long term consequences that affect mobility, function, and quality of life so drainage self-care management is important for increasing patients' knowledge and participation in a care plan that results in increasing self-efficacy and reducing surgical drain complications, so the research paper aimed to determine the efficacy of drainage self-care management on mastectomy patients' outcomes.

Sociodemographic characteristics and medical data of the study and control group

Regarding sociodemographic characteristics of the studied sample: Concerning age, the current research presented that the mean age for the study group was 44.05±9.12 years while for the control group was 45.16±8.04 years. These findings supported by Costa et al.,(2017) reported that most breast cancer women were between forty to fifty years and rates were also overrepresented in the middle age groups, moreover, Rastegar et al., (2020) stated that the mean age of breast cancer sample was forty-one years old.

Concerning marital status: the majority of the studied groups were married. These findings are supported by Sisman et al., (2017) who stated that all of the breast cancer patients were married and the majority were housewives, also Costa et al., (2017) mentioned that half of the studied sample of breast cancer patients were married.

Considering education level and occupation, the majority of both study and control groupscould read and write. Thisresult is also inconsistent with Costa et al., (2017) who stated that more than half of the breast cancer patients had only received an elementary school education.The number of patient's illiterate were zero from the researcher point of view the number of illiterate people in Menoufia governorate is very low.

Regarding patient's knowledge and practice related to drainage self-care management among study and control groups at pre and post-intervention

The results of the present study confirmed the first hypotheses as it revealed that the majority of patients in the study and the control groups had an unsatisfactory level of knowledge and practice before the application of the drainage self-care managementwhile after implementing the drainage self-care management, a study group patients had a highly significant improvement than those of a control group. The explanation of this result from the researcher's point of view was due to lack of an educational program for patients whether orally or as written instructions about the plan of care so patients considered passive participants in the care provided at the pre-intervention while at the post-intervention the implementation of drainage self-care managementfor a study group results in increasing patients' awareness and they became active participants in the plan of care through discussion, written knowledge and training sessions that given by the researchers as compared to a control group.

This result was following Soliman et al., (2018) who stated that there was a statistically significant increase in the mean value of knowledge and practice score related to breast cancer and arm exercises following mastectomy at pre-intervention, follow up, and post-intervention. In addition to Bahgat et al., (2016) proved that there was a statistically significant

increase in total knowledge and practice for a study group than a control group at post-intervention of mastectomy care protocol. Also, these findings were in the same line with Hashem et al., (2020) who found that the most of patients in the studied groups had an unsatisfactory level of knowledge at pre-application of the educational program related to nursing care following mastectomy, while at post-application of the educational nursing intervention a study group subjects had a highly statistically significant improvement of all items of knowledge than a control group. this finding also was supported by Estevesb et al., (2013) who proved that mastectomy women had a greater level of knowledge related to the management of the surgical drain following the practical training and demonstration correctly to the steps of this procedure.

Concerning self-efficacy for the study and the control group at pre and post-intervention

The research findings confirmed the second hypothesis as it revealed that there is no statistically significant difference between a study and a control group related to self-efficacyat pre-intervention while at post-intervention there is a highly statistically significant increase in the self-efficacy mean value of the study group than the control group. The logical explanation of this finding from the researchers' opinion was related to an increased level of knowledge and practice after the application of the drainage self-care managementleading to increase patients self-efficacy in a study group than in a control group.

This result was consistent with Hashem et al., (2020) who found that the implementation of an educational program for the study group affects positively women following mastectomy for their performance and self-efficacy. In addition toBerger et al., (2018) found that patients acquired a higher level of knowledge about their disease and planned treatment which informed by physicians and other health care personnel throughout their treatment period hada positive effect on patients' satisfaction rather than patients with the lower level. Also Rastegar et al., (2020) according to their results obtained, the two groups had no significant differences before counseling in terms of their self-care score; in other words, the two groups were matching in terms of their

self-care knowledge at baseline, but after the intervention, the scores obtained showed a greater increase in the mean score of self-care immediately and three weeks after the intervention in the intervention group compared to the control group. Moreover, Lohet al., (2013) proved that there ispreliminary evidence that the 4-week self-management intervention enhances the quality of life of breast cancer women by enabling them to better self-manage the numerous medical, emotional, and role tasks.

Regarding the occurrence of drain complications among the studied groups at different times of evaluation at post-intervention.

The research findings confirmed the third hypothesis as it proved that there is a statistically significant decrease in the occurrence of drainage complications for infection and pain around the tube at the first time of follow up and second time of follow up, in addition to there is a statistically significant decrease in the occurrence of drainage complications for slips of the tube suture and tube obstruction at three days post-operative, first time of follow up and second time of follow up for a study group than the control group.

An explanation of this result from the researchers' point of view is that as a result of the application of drainage self-care management and the continuous follow-up of the study group patients, there was an increase in self-efficacy which was reflected in the patients' performance in increasing their participation in the application of the treatment plan prescribed to them and thus led to a reduction in the occurrence of drain complications. The findings of the current study agree with Baker and Piper (2017) who reported that drains are associated with increased patient discomfort, postoperative pain, and longer hospital stay. Also, Wrye et al., (2003) explained that the 49 participants were given a questionnaire asked about the comfort level (including pain) of each breast (i.e. comparison of the drained breast with the nondrained one) on the day of discharge. His results showed that 17/19 respondents (89%) found the nondrained breast more comfortable in the postoperative period, either the drained breast was more painful. In addition, Pessaux et al., (2003) illustrated that drain may also constitute a potential source of infection because acting as a foreign body. Moreover, Guo et al., (2020) stated

that Evidence-based nursing intervention leads to effect reduction of the occurrence of postoperative complications and improves the quality of life for cancer patients.

Conclusions:

Self-management of drainage care is one of the key concepts for increasing patient's knowledge, practice, and self-efficacy that help for reducing drain complications

Recommendation:

Self-management of drainage care after mastectomy should be taken into account when providing nursing care to increase patients' self-efficacy and improve outcomes through enhancing patient's knowledge, practice, and role management.

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