IMPACT OF REHABILITATION BREAST RECONSTRUCTION PROGRAM ON PHYSICAL ACTIVITY AMONG CANCER PATIENT

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ABSTRACT

Breast has an important role in sense of femininity and sense of self and sexual attractiveness among females. So, when a female complain of abnormality in the breasts from deformities or cancer patients might undergo mammoplasty surgery for enhancement, either by augmented, reduction, or reconstruction. This may cause pain that affect maintenance of physical activity and need for rehabilitation to minimize it. Therefore the aim of this study was to investigate the impact of rehabilitation breast reconstruction program on physical activity among cancer patient. The researcher hypothesized that; there will be significant difference on level of independency in physical activity before and after implementing the program. A convenient sample of 30 female patients with breast reconstructive surgery admitted to surgical departments in Cairo university hospitals was recruited to fulfill the aim of this study. Data were collected utilizing; socio-demographic data, Assessment of Patient knowledge, Physical Activity tools. The study results revealed that, there was differences in knowledge mean score before and after implementing the program ($0.90 \pm 3.17 \& 56.90 \pm 6.20$) respectively. Also, there were statistically significant differences at (p=000) in level of dependency of physical activity before and after implementing the program. It can be concluded that, enrichment of patients' knowledge and practices in relation to their condition and utilization of the educational program could have appositive impact and an improvement of patients' outcomes. This study included two type of surgery (latissimus dorsi LD flap and breast implant) so, the researcher recommends the replication of program on different techniques of surgery flap to test the difference.

KEYWORDS: Rehabilitation, Physical Activity, Reconstruction

INTRODUCTION

Breast cancer is the most common malignant neoplasm in women. Surgical treatment options include radical mastectomy (RM), breast conservative treatment (BCT), radical mastectomy and immediate (IBR) or delayed breast reconstruction (DBR). Treatment of breast malignancies is currently focused on reducing surgical intervention while still eradicating the neoplasm. (Parker et al., 2010.)

Breast reconstruction attempts to renovate a patient's breast(s) as closely as possible to pre-mastectomy size, shape and appearance. The goal of breast reconstruction is to create a breast mound that matches the opposite breast and to achieve symmetry. Nowadays the rate of breast reconstruction after mastectomy increased from 8% to 42%. This wide variation is attributed to geographic locations, ethnicity, patient's age, education & social status as well as cancer stage (Elder et al., 2010 and Rietman et al., 2013).

Cancer treatments resulted in numerous of adverse physiologic effects during active disease treatment (i.e., surgery, chemotherapy, radiation, and endocrine therapy) but may resolve spontaneously upon treatment withdrawal. Whereas some of them contribute to early physical impairments, others occur months or years after withdrawn of treatment. As a result of these impairments, breast cancer patients often attenuate their activities and develop decreased tolerance to activity. Patients have described the need for education about treatment-related impairments as well as information to help them return to exercise and activity. Rehabilitation care reduces the incidence of breast cancer–related physical impairments (Nicole et al., 2012)

Kristin et al. (2012). Found that, Persistent arm morbidity (i.e., pain, reduced range of motion, limited strength) after surgery and adjuvant treatment for breast cancer has been documented, along with a reduction in upper extremity function. In addition, limitations in upper extremity function in breast cancer survivors have been linked to a reduction in perceived ability to complete activities of daily living (ADLs) and lower health-related quality of life (HRQOL.

In Study done by Chan, Lui, & So. (2010). stated that, ongoing education is necessary to raise the patient's awareness of the late effects from treatment and to promote a proactive approach to their diagnosis and treatment. Moreover, enhance using of health-promoting behaviors such as exercise, weight control, and physical activity continues. Also, supports education for exercise promotion regardless of presence or absence of impairments.

SIGNIFICANCE OF THE STUDY

Breast reconstruction is the third most common form of cosmetic surgery in Egypt, behind liposuction and breast reduction (Hussam & Raafat, 2012). According to statistics and medical records of the operating room at El Kaser El Aini hospital (2011&2012) the estimated number of breast plastic surgery was 8 and 41 for breast reconstruction, 39and 103for breast reduction respectively

It has been observed over a period of working in the surgical department that the number of patients admitted for breast surgery increased, those patients take time to get back to normal activities and a full range of movement resulting from over stretching of breast tissue and surgery, and decreased mobility/range of motion, decreased strength that interferes with a woman's ability to perform activities of daily living with ease and without pain. Also, patients developed several complications related to lack of knowledge about care after surgery. It is important that the patient follow the exercise plan to prevent shoulder stiffness and help them to regain and maintain full movement of the shoulder, improve circulation and healing of scar tissue. Patient rehabilitation is one of essential nursing interventions provided to patient undergoing such surgery. So, the purpose of the current study is to investigate the impact of rehabilitation breast reconstruction program on physical activity among cancer patient. Hoping that, this will help the patient to overcome this problem and decrease the complication.

AIM OF THE STUDY

The current study was conducted to investigate the impact of rehabilitation breast reconstruction program on physical activity among cancer patient.

MATERIALS AND METHODS

Hypotheses: To achieve the purpose of the current study, the following research hypothesis is suggested: There will be a significant difference on physical activity before and after implementing the program.

Research Design: Quasi-experimental research design (pre/post-test) was utilized.

Sample: A convenient sample of 30 female patients with breast reconstructive surgery admitted to surgical departments at Cairo University Hospitals (from August 2014 to December 2015). Who are free from medical problem that may interfere with implementing the program as heart or chest problems, and diabetes. They have not received any mammoplasty rehabilitation. The length of hospital stay ranged between 3 to 4 days.

Setting: The study was conducted in 2 places; first place was 28 plastic surgery department in 3rd floor at El Kaser El Aini hospital. The flow rate of Patient in this department was ranged between 30 to 60 patients with different plastic surgery as face, breast, abdomen, upper and lower limps, ear, and nose plastic surgery within 2 days weekly (Sunday and Wednesday). The second place was the surgical department in the 2nd floor of National Cancer Institute branch at Nacre City. This department specialized for all breast surgery as biopsy, mastectomy, wire placement or removal and breast plastic surgery. Patient flow in that department was ranged between 13 to 26 patients to perform different breast surgery.

Tools: In order to achieve the purpose of the study the following tools were developed:

Socio-demographic, Medical and Surgical Data: It was designed by the researcher to assess relevant socio-demographic variables such as age, gender, level of education, marital status, employment status, and co-morbidity etc.

Assessment of Patient Knowledge: It was developed by the researcher after reviewing the literature to assess the patient knowledge regarding the rehabilitation post-surgery. It encompasses 63 items covering two main sections; the first one is related to the patient's knowledge regarding exercise contain 24 items. The second section is pertinent to Patient information about general guideline after surgery contain 39 items and divided to 7 categories includes: skin care 8 items, Wound care 5 items, Breast examination after surgery 4 items, Notice need for calling the doctor 6 items, Patient precautions after surgery 7 items, patient information about Clothing Specifications 4 items, and proper nutrition 5 items. **Scoring system.** Each right answer for any item takes one grade with total score of 63 grades. The scores of knowledge will be added and converted into a percent score. Satisfactory knowledge: If score is 50% or more, unsatisfactory knowledge: Scores less than 50%.

Assessment of Physical Activity: It was developed by the researcher after reviewing the literature to assess the patient level of dependency on maintaining basic physical activity of daily living. It consists of 17items which include bathing, toileting, combing hair, Food preparation/Eating etc.,. **Scoring system:** Each item organized using the following scoring system; Independent (3), partially dependent (2), completely dependent (1). The higher score means the higher level of independency; this tool completed by the researcher before the patient discharge, after month from the surgery then repeated after 6 months. The total score for this scale 51 score which divided as the following independently ranged from 34 to 51 score, partially dependent from 33 to 17 score, dependently bellow 17 score.

Content Validity: Tools were checked and revised by a panel of five experts of medical surgical nursing to test content validity. Modifications were carried out according to panel judgment on clarity of questions and appropriateness of content.

Pilot Study: Pilot study conducted on 10% of the total sample who fulfilled the inclusion criteria to evaluate the content and test the feasibility, objectivity, clarity, relevancy and applicability of the study tools. Also test retest reliability was calculated to check reliability of the study tools.

ETHICAL CONSIDERATION

Information and explanation of the ethical observations of the study were provided to the subjects and they were asked to sign a consent form. After explaining the nature and the benefits of this research. The patients were free to withdraw from the study at any time, and they were reassured that the decision whether or not to participate in the study would not prevent them from receiving the care that they would normally receive. The subjects were coded to guarantee anonymity.

TECHNIQUES FOR DATA COLLECTIONS

Structured interview was utilized to fill out the study tools.

Procedure: The current study was carried out on the following phases; assessment, planning, implementing and evaluation phase.

Assessment Phase: This phase was concerned with managerial arrangement to carry out the study in addition to construction and preparation of different data collection tools, designing the program, the entire patient's teaching materials and aids as patient's instructional booklet & Videos. As regards managerial arrangement, the researcher prepared a formal request from the post graduate studies affairs of the faculty of nursing, Cairo University directed to the head of Cairo University Hospital and the head of National Cancer Institute to obtain the acceptance. The researcher assessed the patient knowledge regarding postoperative care (wound care, exercise, follow up care and precaution), socio-demographic and medical data related surgical procedure also completed.

Planning Phase: The proposed educational program was designed by the researcher to be given to participants. It includes two parts about knowledge and practice relevant to physical rehabilitation following breast reconstruction. Part one cover the theoretical component of the program which was focus on general knowledge about wound care, follow up care, precaution after surgery and diet. Part two cover the practical component which focused on exercise program following surgery. Also, prepare visual material as photos, videos which used as teaching aides. Construction of pre post patient knowledge and physical activity assessment sheet by the researcher after reviewing the literature. The tools were given to five experts (jury) in the field of Medical Surgical Nursing to examine the content validity; modifications of the content were done according to the judgment of the jury. Pilot study was conducted on 10% of total sample to test the feasibility, objectivity and applicability of the study tools.

Implementation Phase: Data of the current study were collected from August 2014 to December 2015. Once the official permission was granted to proceed with the proposed study. The purpose and nature of the study were explained to patients admitted to surgical departments of Cairo university Hospitals for breast reconstructive and augmentation surgery

preoperatively; also their agreements to participate in the study were confirmed. The researcher emphasized that participation in the study was entirely voluntary; anonymity and confidentiality were assured through coding the data. Initially each patient interviewed individually preoperative and medical data records reviewed to fill out Socio-demographic and medical data sheet, also patient knowledge regarding postoperative physical care. Then the study subject was subjected to the designed program in two sessions. Each session was taken between 30-60 minutes according to patient understanding to theoretical part and mastering of the required skill. In the first session, the researcher give theoretical knowledge about physical care post-surgery regarding skin care, diet, wound care, precaution, etc…. The other session the researcher was demonstrate specific exercise using Visual material as photos, videos as teaching aides using the researcher special computer.

Evaluation of the Program: Evaluation of rehabilitation program was executed immediately after program implementation and one, six months afterward. Patient knowledge assessment sheet was completed twice before and after the program implementation. Physical Activity questionnaire completed before patient discharge, after 4 week, and 6 months from surgery to assess the impact of program on the patient outcome. Evaluation was based on finding difference or no difference before and after administering the program.

STATISTICAL ANALYSIS

Statistical package of the social science (SPSS version 22) was used for statistical analysis of the data. Descriptive statistics included frequency, percentage distribution, mean and standard deviation. The inferential statistics tests of significance were performed to test hypotheses; paired t-test used to test the differences, the threshold of significance was fixed at the 5% level (p-value). A p-value > 0.05 indicates non-significant result and the p-value < 0.05 indicates a significant result and the p-value is a degree of significance. The smaller the p-value obtained, the more significant is the result.

RESULTS

Socio-demographic and Medical Data

Table 1: Frequency and Percentage Distribution of Socio-Demographic and Medical Data among Study Sample (n=30)

Socio-Demographic	No	%
Age		
20-	9	30
30-	8	26.67
40 $\geq$	13	43.33
Mean ± SD =	36.83±1.05	
Marital status		
Single	4	13.3
Married	25	83.3
Divorced	1	3.3
Occupation		
Not working	25	83.3
Working		
Manual work	4	13.3
work office	1	3.3
Education Level		
Cannot read &write Primary	4	13.3

Secondary	4	13.3
University	15	50.0
Place of Residence		
Urban area	7	23.3
Rural area	28	93.3
Medical and Surgical History		
Hypertension	2	6.7
Breast augmentation	2	6.7
Since one year	1	3.3
Developed Seroma and Infection	1	3.3

Table 2: Frequency and Percentage Distributions of Current Surgical Data among those who Responding Positively from the Study Sample (n=30)

Current Surgical Data	No	%
Type Surgery		
1. Augmentation (Implant)	6	20.0
2. Reconstruction using		
a. Upper back LD flap	21	70.0
b. Abdominal DIEP/SIEA flap	1	3.3
c. Using flap and Implant	2	6.7
Affected Side		
RT side	7	23.3
LT side	21	70
Both side	2	6.7
Type of Breast Implant (N.8)*		
Silicone	8	100
Reason for Surgery to:-		
Improve Body image.	13	43.3
Resolve problem from previous breast surgery.	1	3.3
Improve psychological status.	2	6.7
improve Body image & psychological status	14	46.7

*The total No of patients is different as, 2 patients done two techniques in the same time (flap & implant).

Table 3: Frequency and Percentage Distribution of Pre and Post Knowledge Score among Study Sample (N=30)

	Pre Program (n=30)		Post Program (n=30)	
Score	N	%	N	%
* 0-16	29	96.7	0	0
*16-31	1	3.3	0	0
**31-46	0	0	1	3.3
**46 <	0	0	29	96.7

**Satisfactory level of knowledge
*Unsatisfactory level of knowledge

Table 4: Frequency and Percentage Distribution to Level of Independency among the Study Sample as Regard Physical Activity Before, after 1month and 6month of Implementing the Program and Total Mean Scores (n=30)

Level of Independently	Physical Activity before Program (n=30)		Physical Activity after 1month (n=30)		Physical Activity after 6 Month (n=29)*	
	No	%	No	%	No	%
Independent	1	3.3	29	96.7	29	100%
Partial Dependent	27	90	1	3.3	0	0
Dependent	2	6.7	0	0	0	0
Mean ± SD	28.20 ± 6.37		47.46 ± 4.35		$51 \pm .00$	

*the total No of patients is different as one patient died

Table 5: Comparison Paired T-Test for the Mean Differences of Physical Activity Score before and after Implementing the Program (n=30)

Items	Mean ±SD	T	Df	P
Physical Activity before and after month	1.92±6.03	17.48	29	.000*
Physical Activity before and after 6 month	2.26 ± 6.43	18.95	29	.000*
Physical Activity after month and after 6 month later	3.44±4.40	4.21	28	.000*

*Significant at the P value ≤ 0.05 probability level

There was a highly statistical significant difference in the mean score of physical activity for the patient before the program, and after implementing the program one month with the following t and p-value (t=17.48 at p= .000) and mean score 1.92±6.03. Also, before program and 6 months later (t=18.95 at p .000) with mean score 2.26 ± 6.43 and between one month and 6 months later as the following (t=4.21 at p=.000) with mean score3.44±4.40.

DISCUSSIONS

The present study delineated that, all the study sample their age range between (20-62 years). Slightly less than half of the studied sample their age equal or more than forty years with mean age 36.83±1.05. Also, the majority of them were married, and not working, the majority of them coming from urban areas, and half of the subject had secondary school as shown in table (1). From the researcher point of view this is age of productivity and social contact which reflect the desired of patient to restore own body image within the social contact and maintain self-esteem, therefor patient chose to reconstruct the breast after mastectomy.

This result incongruent with Benditte, et al (2014) they found that, average age was 51.6 year ranged between (33-82 years). All patients were Caucasian, well-educated and employed. Also, study by El Shafiey et al. (2011) found that, Male breast carcinoma happen at older ages than females, usually in advanced stage, Median age was 59years.

The current result to some extent, Supported by Homaei et al. (2015) who found that, the mean of patients' age was 46± 9.4 years and about half of the subject belongs to age group of 35-45 years old. Eighty percent of them were married, (11%) were single, about seventy were housekeeper, thirty one had university education and sixteen percent had only a high school diploma. Fathy. (2011) found that, the subject Age ranged between 21 and 70 years old with mean age 51 years. 15 patients are married, 3 are widow, one is single and one is divorced. Regarding health problem 25% from the subject had hypertension, 5% had diabetes and ischemic heart disease.

Regarding medical data in the current study, the majority of the subject done not had health problems while the minority of them was hypertension. Regarding previous plastic surgery, only one patient from the subject had done breast augmentation surgery from one year; while almost of them don't have previous mammoplasty surgery. Concerning the purpose from current surgery approximately half of the subject had done mammoplasty surgery to improve body image or combination of improving body image and psychological status.

Comparative study by El tahir et al. (2013) Found that, patient with satisfied breast reconstruction were significantly more satisfied with the appearance of their chest/breasts and get on better psychosocially and sexually than patient with mastectomy alone. Furthermore, they functioned better physically, experiencing less pain and fewer limitations.

Incongruence of this result with Clara, et al (2009) they found that, most of the studies of quality of life (seven of eleven), not find statistically significant differences in quality of life between patient with reconstruction and who had mastectomy only. Additionally, three studies reported better quality of life among patient who had mastectomy with reconstruction compared to mastectomy only. Nine of the sixteen studies that evaluated body image found no significant differences between patient who had reconstruction and who had mastectomy only. Seven studies reported better body image in patient who had reconstruction.

It was noticed in the current study that, slightly more than two third of the subject done reconstruction of the breast using upper back LD flap, near quarter of the subject done augmentation using silicone implant and it implanted sub-glandular, one subject had reconstruction using transverse rectus abdominis musculocutneous (TRAM)flap. Two of them done LD flap and silicone implant at the same time. About two third of the study subject was left affected side, one quarter was right side.

Contradicting the current result with Young et al. (2014) the authors stated that, 31 patient underwent total mastectomy with reconstruction (TM-R) distributed as the following; TRAM flap ($n = 25$) and a tissue expander followed by an implant ($n = 6$) was performed. Patients who underwent TM-R were younger than those who underwent BCS or TM.

The current study supported by Kim et al. (2012) who reported that, among 65 patients underwent skin sparing mastectomy (SSM) and LD IBR without prosthetic implant; (76.5%) had LD flap reconstruction, (12.9%) had LD flap with prosthetic implant, and (10.6%) had TRAM flap reconstruction. Furthermore, Donor site morbidities occurred for 22 patients; dorsal seroma in eight, marked scarring in eight, and back pain in six.

The researcher point of view suggest that, possible reasons for this increase in the reconstruction include a growing population of younger patients who require mastectomies and lack sufficient adiposity for autologous reconstruction, in addition to a possible cultural shift in breast aesthetics with a preference for a non-ptotic appearing breast. Another reason is a possible increasing acceptance of silicone implants since after its re-approval for general use.

In current study, the majority of the subject had unsatisfactory level of knowledge before implementing the program. Regarding post program knowledge score, the entire subject had satisfactory level of knowledge after implementing the program.

This finding supported by Lam et al. (2012) they found that, near half (43%) of the subject do not receive information about post mastectomy reconstruction choices prior final breast cancer treatment decisions. Our finding is consistent with Lee et al. (2011) found that, Participants answered 37.9% of knowledge questions correctly. Higher education and having reconstruction were associated with higher knowledge. Patient treated with mastectomy were not well-informed about breast reconstruction. Many patients stated that, their providers discussed the pros of reconstruction, whereas a minority, their providers discussed the cons. Silva, et al (2012) found that, answers to all the questions significantly improved in the posttest, with the exception of a question addressing breast reconstruction (p=0.754), the handbook is a favorable resource to be used in the rehabilitation of patient.

The researcher highlighted that ineffective communication between physicians, other health team and patient may be a barrier and has a negative effect on the regularity for follow-up visits and continuity of care and this the first cause for lack of knowledge in the patient regarding self-care after surgery.

As delineated in table (4) that, the majority of the study subject was had partially level of dependency followed by dependent level regarding the physical activity before the program. After implementing the program (one month and six months later) the same table showed that, the entire subject become independently in applying the physical activity. Also, there are statistical significant differences in physical activity before and after implementing the program, between one month and six months later at (p=.000).

From researcher point of view, the partial dependent level between the study subject may related to; more than 2 third of the study subject not working, left side affected, those patient right dominant hand, and thus not hinder the physical activity. Also, there was relative with the patient help them to perform their activity. Besides that, almost of the patient stay with their family during the recovery period.

The current result supported by Anne, et al (2009) they found that, reconstruction and reduction patients described a range of chest and upper body symptoms such as arm, shoulder, neck, back and breast pain, as well as tenderness, pulling, discomfort. They also, reported limited activity, such as difficulty lifting or moving their arms and difficulty doing vigorous activities such as running, playing sports, or exercising, as well as doing everyday household chores.

To some extent other study by Shea et al. (2014) found that, TRAM flap may cause more difficulties functioning at work or school, performing vigorous physical activities, participating in community or religious activities, and visiting with relatives.

The Michigan Breast Reconstruction Outcome Study (2013) (MBROS). The study found that, there was no differences between immediate and delayed reconstruction in the amount of improvement were observed in general mental health, emotional well-being, or ability to perform normal daily activities. Patients showed statistically significant in psychological and functional gains one year after their operations, regardless of which type of breast reconstruction procedure they chose. There was improvement in mental health, emotional well-being, energy level, ability to perform normal daily activities, and satisfaction with the way their breasts looked among the patient. Also, people who exercise regularly have better health status and better emotional health.

CONCLUSIONS

This study answered one research hypotheses; the first hypothesis was there will be significant difference on physical activity before and after implementing the rehabilitation program. Fortunately, the researcher found that, there was a highly statistical significant difference in the mean score of physical activity for the patient before and after one month, before and 6 months, after I month and 6 month after implementing the program with the following t and p-value (t=17.48 at p= .000, t=18.95 at p .000, & t=4.21 at p=.000) and mean score (1.92±6.03, 2.26 ± 6.43, & 3.44±4.40) respectively.

RECOMMENDATIONS

Based on the previous findings of the present study, the following recommendations are suggested.

- All patients undergoing mammoplasty surgery should receive adequate knowledge and skills regarding to preoperative and postoperative management through booklet, posters.

- Implement the program after two weeks from surgery for the patient to be able to implement the exercise program

with little pain and start by simple exercise during this period.

- Raise the awareness of female personal about how to perform breast examination for early detection of disease and overcome the progress or complications

- This study was implemented on two type of surgery (LD flap and breast implant) so, the researcher recommend the replication of program on different techniques of surgery to test the difference.

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