Original Article

Effect of an instructional scheme on post mastectomy exercises in breast cancer

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ABSTRACT

AIM To study the effect of implementing an instructional scheme for mastectomised women regarding post mastectomy exercises in breast cancer.

METHODS Fifty-four female patients were studied at the oncology clinic of Port-Said General Hospital in Port-Said city, Egypt. A one-group pretest-posttest pre-experimental research design was used to conduct this study, with pretest, posttest and follow-up assessments. The assessments were used to evaluate the effect of an implemented instructional scheme for mastectomised breast cancer women in improving knowledge and practice towards arm exercises.

RESULTS There was significant improvement in patients' knowledge on the importance of arm exercises post-mastectomy following implementation of the instructional scheme from 53.7% to 100%. Non compliance with exercises also significantly declined following the implementation of the instructional scheme.

CONCLUSIONS Implementation of an-instructional scheme for mastectomised breast cancer patients is useful in increasing and improving patients' level of knowledge and compliance with exercises.

Keywords: Instructional models; Mastectomy; Exercise; Breast cancer; Egypt.

INTRODUCTION

Breast cancer is the most common and the third most frequent cancer among women in the world. [1] In Egypt the number of new cancer patients per year was estimated to be 65,000 in 2001. [2] Accumulated patients represent about three times the number of new cases. The number of cancer patients in Egypt is expected to increase as the population continues to grow and age, and as the prevalence of known etiological factors increases. [3] Surgical treatment is the oldest and usually the first line of treatment for solid cancers. Surgery for breast cancer is often followed by adjuvant chemotherapy and radiation. These predispose patients to additional complications such as: lymphoedema, infection, seroma and cellulitis. [4-5] Lymphoedema after breast cancer treatment occurs, on average, in 30% of patients at risk. [6] The high incidence of breast cancer makes post mastectomy complications a significant topic. [7-8]

The prevalence of lymphoedema in the United States is estimated at 2.5 million, and 10 million people are affected worldwide. Complications like lymphoedema impact quality of life and functional ability as well as body image, self esteem, and social standing. [9] Effective management requires a knowledge base regarding the epidemiology, prevention, and treatment of these complications. Early physiotherapy administered by experienced physiotherapists could be an effective intervention in the prevention of secondary lymphoedema. [10] Physical exercise may also improve shoulder mobility which may in turn improve physical functioning and cardiopulmonary activity. [11] Other benefits of physical exercise include improvement in quality of life outcomes and control of weight gain. [12-13] Physiotherapist-based services are costly, [14] more so within the settings of limited resources. As such it is desirable to explore ways to motivate patients to carry out home-based, self-administered exercise programmes.

This study was carried out to design, implement and evaluate an instructional scheme for the prevention of complications in breast cancer women post-mastectomy.

METHODS

The design for this study was a one-group pretest-posttest pre-experimental research design with pretest, posttest and follow-up assessments to evaluate the effect of implementing an instructional scheme to improve the knowledge and practice of mastectomised women towards post mastectomy exercises. Study patients included 54 women from the oncology clinic of Port-Said General Hospital in Port-Said city with the following criteria: (1) female patients 2 weeks after lumpectomy, modified radical, standard radical, extended radical mastectomy with axillary node dissection, or simple mastectomy with axially lymph node dissection; and (2) received radiotherapy and chemotherapy.

Data was collected using three tools. Tool I – patient interview: a questionnaire was designed by the study team based on literature review. It was constructed in simple Arabic language to facilitate understanding by all study participants. It took 20-30 minutes for participants to complete the questionnaire. Tool II - observational checklist of exercises: this assessed patients' actual performance of exercises that prevented complications like lymphoedema. It was developed based on Ann et al (2001) [15] and Hess (2006). [16] It included 11 forms of exercises in different positions as follows: (1) shoulder roll in standing or sitting position; (2) front bar lift in standing or sitting position; (3) front bar side push in standing position ; (4) back bar side push in standing position; (5) side triceps extension in sitting or standing position; (6) side lying horizontal arm lift while lying on unaffected side with head on small rolled towel or cushion; (7) shoulder rotation stretch in standing position; (8) shoulder down, neck straight, and abdomen in, forward ball stretch in prone position with knee on floor with Swiss ball in front of the patient; (9) single leg raises lying on back with small cushion or rolled towel under head on firm bed or floor; (10) prone butterfly exercise for posterior shoulders in knee on floor flexed with Swiss ball in front of the patient; and (11) deep abdominal or diaphragmatic breathing exercises in supine positions with double leg curl or bent on floor or ball. Tool III - The instructional scheme: based on patients' knowledge and practice assessment in pretest and review of related nursing literature.

The study was covered in four phases: pretest, instructional scheme planning, instructional scheme implementation and evaluation phases. During the pretest phase assessment of patient's knowledge and practice about prevention of arm lymphoedema was done using tools I and II. The instructional scheme planning phase involved development of the scheme as described above using the base line information gathered in phase I, it was improved by retesting and checking cycles. Checking was done by an oncologist and two nursing professors with relevant expertise. Instructional scheme implementation was done in 6 groups of 7-9 patients each group. The phase lasted three months at a rate of one session per week. Each session took about 1 hour a day according to availability of study participants in the period 7 July to 5 October 2007. The instructional scheme was presented in a clear and concise form, and was focused on the point of learning, using different teaching methods such as discussions and demonstrations. A booklet, a pamphlet , wall charts, and various teaching objects were used. The impact of the developed instructional scheme was evaluated

2 times first at 3 months then at 6 months after the instructional scheme implementation.

Data from data collection sheets was cleaned and graphs were drawn using Microsoft excel 2007. Descriptive and analytical data analyses were carried out using statistical package for social sciences (SPSS). A p-value of less than 0.05 was considered significant. Chi square Fisher's exact tests were used as appropriate.

RESULTS

The 50-59 age group had the highest number of participants (43.4%), Table 1. All participants were housewives. A large number (32.6%) were illiterate. All had had the diagnosis of breast cancer for less than a year and it was their first time to undergo breast surgery. Four (7.4%) of the patients developed lymphoedema post-surgery and half of these were from the illiterate group.

There was significant improvement in patients' knowledge of the importance of arm exercises post-mastectomy following implementation of the instructional scheme. In the pretest assessment, 53.7% of the participants agreed that arm exercises were useful in preventing complications like lymphoedema and in the posttest assessment 100% of the participants agreed (Table 2). Compliance with exercises also significantly improved (Table 2).

Non compliance with exercises significantly declined following the implementation of the instructional scheme (Table 3).

DISCUSSION

The percentage of lymphoedema complications in this study is comparable to previous studies, one of which - using strict methods of measurement of limb volume - detected acute lymphoedema at 3 months in 5% of the sample, and at 6 months in 11% of the sample. [15] Another study found a high percentage of mild degree of lymphoedema (42.5%), 25% for moderate and 15% for severe degree of lymphoedema after 3 months postoperatively . [17] Lymphoedema may be underestimated after breast cancer surgery. [18] It is estimated that as many as 60% of breast cancer survivors report symptoms of lymphoedema.

Concerning patients' knowledge and practice towards arm exercises post mastectomy, the present study found significant improvement between pre, post and follow-up after implementation of the instructional scheme. This finding is encouraging in view of the findings of Mcwayne and Heieny (2005) that an educational program in the prevention of arm

Table 1. Sociodemographic characteristics of study participants

Personal data	Groups	No	Percentage
Age (years)	< 40 yrs	5	9.4
	40-49	20	37.7
	50-59	23	43.4
	60-69	5	9.4
	Mean ± SD	49.46 ± 8.12	
Housewives		53	100
Level of education	Illiterate	18	32.6
	Read and write	10	20.3
	Primary education	12	22.6
	Secondary education and above	13	24.5
	Total	53	100
Post mastectomy complication: patients who developed lymphoedema per level of education	Illiterate	2 (11.1%)	50
	Read and write	1 (10%)	25
	Primary education	1 (8.3%)	25
	Secondary education and above	0	0
	Total	4	100
Time of diagnosis below one year		53	100
No previous breast surgery		**53**	100

Table 2. Comparison between pretest, posttest and follow-up periods regarding patients' knowledge towards arm exercises.

Parameter	Pretest (n=54)		Posttest (n=53)		Follow-up (n=52)		p-value
	Yes	No	Yes	No	Yes	No	
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Importance of exercises	29 (53.7)	25 (46.3)	53 (100)	0 (0)	52 (100)	0 (0)	<0.001
Effects of exercises on prevention of complications such as arm lymphoedema	5 (9.3)	49 (90.7)	51 (96.2)	2 (3.8)	50 (96.2)	2 (3.8)	<0.001
Compliance with exercises	4 (7.4)	50 (92.6)	46 (86.8)	7 (13.2)	45 (86.5)	7 (13.5)	<0.001

Table 3. Non-compliance with exercises

Exercises non compliance practicing	Instructional scheme						P-value
	Pre-instructional scheme (N=54)		Three months Post scheme (N=20)		Follow-up At 6 months post scheme (N=33)		
	No	%	No	%	No	%	
Shoulder rolls	52	96.3	7	13.2	7	13.5	<0.001
Front bar lift exercise	53	98.1	7	13.2	7	13.5	<0.001
Front bar, side push	53	98.1	12	22.6	9	17.3	<0.001
Back bar, side push	53	98.1	9	17	22	42.3	<0.001
Side triceps extension	49	90.7	20	37.7	11	20.8	<0.001
Side lying horizontal arm lift	53	98.1	20	37.7	12	23.1	<0.001
Shoulder rotation stretch	53	98.1	14	26.4	9	17.3	<0.001
Forward ball stretch	53	98.1	11	20.8	6	11.5	<0.001
Single leg raises	54	100	11	20.8	11	21.2	<0.001
Prone butter flies for posterior shoulders	50	92.6	20	37.7	33	63.5	<0.001
Deep abdominal or diaphragmatic breathing	53	98.1	9	17	7	13.5	<0.001

lymphoedema directly promotes patient's quality of life. [19] Exercises might be difficult soon after surgery as the body might be weak but they are an important part of an active and health life style, breast cancer survivors can benefit on two fronts by giving themselves a workout while helping to prevent complications like lymphoedema at the same time. [20] Exercises also help with radiotherapy treatment in hand positioning, increased arm flexibility and decreased arm pain.

CONCLUSION

Implementation of an-instructional scheme for mastectomised breast cancer patients is useful in increasing and improving the patient's level of knowledge and compliance with exercises. More studies are required to explore what the best media should be for such instructional schemes as well as the local social, oncology and psychological contexts.

FOOTNOTES

Conflicts of interest: The authors declare no competing conflicts of interest.

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