

The Efficacy of tele physiotherapy and comparison with routine physiotherapy treatment for patients underwent modified radical mastectomy

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ABSTRACT

Breast Cancer is a leading cause of women death in India and it is measured to have one out of every 28 Indian women are under risk of developing breast cancer. And as a part of treatment, Modified Radical Mastectomy can be considered as a best treatment procedure. But that to have some complications like Decreased Shoulder ROM, Pain & Disabilities. To overcome these complications we can have conventional physiotherapy protocol. But In India it is tough to have a physiotherapist in every rural area. So, this study is mainly focuses on the tele physiotherapy protocol and helps us to find out weather tele physiotherapy is helpful or not and if it is helpful, than comparison with the routine physiotherapy. So, after having this research study we have found out that the tele physiotherapy is helpful for reducing the complications like pain, ROM & Disabilities but it is not as much beneficial as routine physiotherapy. So, for the patients who resides in rural area where physiotherapy facilities are not available, those patients can be benefited by having tele physiotherapy than compared to No Physiotherapy at all.

INTRODUCTION

Breast cancer is a growing concern in India, with increasing incidence and mortality rates¹. According to recent studies, breast cancer is the leading cause of mortality among women in India¹. In fact, it is estimated that one in every 28 Indian women is at risk of developing breast cancer in her lifetime². In light of the growing concern of breast cancer in India, it is essential to explore treatment options that can offer the best chance of recovery and long-term survival. One such option is the Modified Radical Mastectomy, a surgical procedure involving the removal of the entire breast, including the breast tissue, nipple, and sentinel lymph nodes³.

After undergoing a Modified Radical Mastectomy, individuals may experience various complications that could impact their recovery and long-term well-being⁴. These complications can include lymphedema, a condition characterized by swelling in the arm on the side of the surgery, as well as limited mobility and discomfort⁴. Additionally, some individuals may experience psychological distress, body image issues, and emotional challenges following the removal of the breast⁴.

In conclusion, physiotherapy after a Modified Radical Mastectomy is an essential component of comprehensive care for individuals diagnosed with breast cancer in India⁵. It plays a vital role in improving physical function, emotional well-being, and overall quality of life after the surgery⁵. By integrating physiotherapy into the post-operative care plan, healthcare providers can support individuals in their journey towards recovery and long-term well-being⁶.

Tele physiotherapy has emerged as a valuable option for individuals undergoing post-operative care, especially in the current global health crisis⁷. In India, tele physiotherapy offers a convenient and effective way for individuals to receive physiotherapy services remotely⁸. Through virtual consultations and guided exercises, individuals can access professional support from experienced physiotherapists without the need for in-person visits⁸. Tele physiotherapy sessions can include guided exercises, movement assessments, and educational resources to empower individuals in actively participating in their recovery process⁹.

In conclusion, tele physiotherapy has emerged as a valuable tool for individuals undergoing post-operative care, particularly those recovering from breast cancer treatment in India⁹. It provides convenient access to professional support, especially for those in

rural or remote areas¹⁰. Furthermore, it reduces the burden of travel and promotes a comfortable recovery environment at home¹⁰. The use of tele physiotherapy in India has proven to be a significant advancement in delivering comprehensive care to individuals undergoing breast cancer treatment¹¹.

METHODOLOGY:

Here we have conducted this study to check about the effectiveness of tele physiotherapy for patients underwent for modified radical mastectomy as well as we have compared the effectiveness of tele physiotherapy and the routine physiotherapy by the terms of ROM, Pain & Disability for the patients underwent for modified radical mastectomy.

For this study we have selected patients underwent for modified radical mastectomy in the Amreli district of Gujarat during the period of Jan 2022 to Dec 2023.

We have found total of 81 patients who underwent for the modified radical mastectomy but among of them we have selected only 69 patients as 12 patients either didn't match the inclusion criteria or they have denied to participate in the study. Patients were selected for the study if they fulfil the following criteria. Female at the age of 25 to 70 years suffering with stage I -III breast cancer that was treated by modified radical

INTERVENTION:

Group A - Tele Physiotherapy Group

1. Active exercise and active mobilization to reduce lymphedema and active muscle contraction of upper limb muscles.
2. Active Exercises to improve the shoulder range of motion that includes Flexion, extension and hyper extension exercises either in sitting or in standing position.
3. Strengthening of the muscles of the shoulder girdle was provided either by using dumbbell and Thera bands.
4. Functional activities were been educated for the upper limb like shifting objects from the floor to the cupboard, grooming activities, dressing activities, occupational activities and all other decided activities of the patient's choice which are feasible.
5. General aerobic exercises were provided to increase the cardio respiratory endurance and also to increase the chest wall expansion which might be altered following the surgery.
6. Endurance exercises were provided with less weight and more frequency of movement for of the upper limb.

Group B - Routine Physiotherapy Group

1. Exercise and mobilization to reduce lymphedema in the form of massage, stockings and active muscle contraction of upper limb muscles.
2. Exercises to improve the shoulder range of motion that includes scapular mobilization stretching of the Latissimus dorsi, Serratus anterior, Deltoid and Pectoralis major and based on case-to-case basis which ever muscles are tight.

1.1. Within Group Analysis - Pain:

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	9.943	4.917	.831	8.254	11.632	11.964	34	.000
Pair 2	Post Test 1 - Post Test 2	14.971	6.560	1.109	12.718	17.225	13.503	34	.000
Pair 3	Pretest - Post test 2	24.914	6.900	1.166	22.544	27.285	21.362	34	.000

mastectomy within last 3 months of period. Subjects were excluded from the study if they had a history of previous shoulder and neck surgery, neuro muscular skeletal conditions that may affect the shoulder and neck function, mental illness, subjects having any legal issues patients who did not understand the communication languages selected for the study (Gujarati, Hindi English) patient having cognitive defects that may interfere with the intervention and outcome.

Before starting the study, we have given an introduction to all participants about the research and had taken written consent to participate in the study.

A total of 69 patients had participated in the study and they had been given 2 choices;

1. They can stay at their home and can join the tele physiotherapy session regularly for 1 hour - Tele Physiotherapy Group - Group A
2. They can come regularly at the physiotherapy clinic for the physiotherapy treatment - OPD group - Group B

So, among of those 69 patients, 35 patients have selected to join group A and 34 patients have selected to come regularly at physiotherapy department and joined group B.

3. Strengthening of the muscles of the shoulder girdle was provided either using manual resistance or dumbbell and Thera bands.
4. Functional activities was be educated for the upper limb like shifting objects from the floor to the cupboard, grooming activities, dressing activities, occupational activities and all other decided activities of the patient's choice which are feasible.
5. General aerobic exercises were provided to increase the cardio respiratory endurance and also to increase the chest wall expansion which might be altered following the surgery.
6. Endurance exercises were provided with less weight and more frequency of movement for of the upper limb.

The treatment duration is for 60 minutes concentrating equally all the components for 10 minute each and 5 times in a week. Rest was incorporated on a case-to-case basis as per the expertise of the researcher. - for both the groups. For the group A - A tele physiotherapy session has been conducted by zoom meeting every time.

We have asked both the group patients to visit the physiotherapy clinic at the end of 2nd week and at the end of 5th week of intervention for the further assessment.

ANALYSIS:

Here in this research, we have analysed the data by means of within group analysis to check the effectiveness of treatment protocol and between group analysis to check which treatment protocol is superior among of two. For both the groups we have measured 3 different outcome measures of Pain, Flexion ROM & SPADI Score at 3 different intervals:

- i. Baseline, before starting the treatment - Pre-Test
- ii. At 2 weeks of intervention - Post Test 1
- iii. At 5 weeks of intervention - Post Test 2

Paired Sample t test had been performed for within group analysis for the pain in tele physiotherapy group and routine physiotherapy group and it showed the significant difference between Pretest & Post test 1, Post Test 1 & Post test 2 and Pretest & Post Test 2 in both the groups with having p value of < 0.005 in both the group at every interval.

Aboveresult of within group Analysis shows that both the treatment protocol of tele physiotherapy & routine physiotherapy is effective for the treatment of pain in the patients underwent for the modified radical mastectomy

Paired Samples Test - Routine Physiotherapy Group									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	23.529	7.684	1.318	20.848	26.211	17.855	33	.000
Pair 2	Post Test 1 - Post Test 2	17.088	6.017	1.032	14.989	19.188	16.560	33	.000
Pair 3	Pretest - Post test 2	40.618	8.038	1.378	37.813	43.422	29.466	33	.000

1.2. Within group analysis - ROM:

Paired Sample t test had been performed for within group analysis for the flexion ROM in tele physiotherapy group and routine physiotherapy group and it showed the significant difference between Pretest & Post test 1, Post Test 1 & Post Test 2 and Pretest & Post Test 2 in both the group p value of < 0.005 in both the group at every interval.

Aboveresult of within group analysis shows that both the treatment protocol of tele physiotherapy & routine physiotherapy is effective for the treatment of improving flexion ROM in the patients underwent for the modified radical mastectomy

Paired Samples Test - Tele physiotherapy Group									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	16.429	7.582	1.282	19.033	13.824	12.819	34	.000
Pair 2	Post Test 1 - Post Test 2	29.886	6.614	1.118	32.158	27.614	26.730	34	.000
Pair 3	Pretest - Post test 2	46.314	8.109	1.371	49.100	43.529	33.791	34	.000

Paired Samples Test - Routine Physiotherapy Group									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	-8.529	5.512	.945	-10.453	6.606	-9.024	33	.000
Pair 2	Post Test 1 - Post Test 2	23.794	8.913	1.529	-26.904	20.684	15.566	33	.000
Pair 3	Pretest - Post test 2	32.324	10.92	1.873	-36.134	28.513	17.259	33	.000

1.3. Within Group Analysis - SPADI:

Paired Samples Test - Tele Physiotherapy Group									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	24.314	7.177	1.213	21.849	26.780	20.041	34	.000
Pair 2	Post Test 1 - Post Test 2	15.457	7.927	1.340	12.734	18.180	11.535	34	.000
Pair 3	Pretest - Post test 2	39.771	6.044	1.022	37.695	41.848	38.927	34	.000

Paired Samples Test - Routine Physiotherapy Group									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Post Test 1	37.882	7.235	1.241	35.358	40.407	30.530	33	.000
Pair 2	Post Test 1 - Post Test 2	24.735	8.483	1.455	21.776	27.695	17.003	33	.000
Pair 3	Pretest - Post test 2	62.618	8.038	1.378	59.813	65.422	45.425	33	.000

Paired Sample t test had been performed for within group analysis for the SPADI Score in tele physiotherapy group and routine physiotherapy group and it showed the significant difference between Pretest & Post test 1, Post Test 1 & Post Test 2 and Pretest & Post Test 2 in both the group p value of < 0.005 in both the group at every interval.

Above result of within group comparison shows that both the treatment protocol of tele physiotherapy & routine physiotherapy is effective for the treatment of improving SPADI Score in the patients underwent for the modified radical mastectomy

2.1. Between Group Analysis - Pain:

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing pain in both the groups and found no significance of difference in the value of pain at Pretest analysis with having F value of 2.74 and p value of > 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing pain in both the groups and found a significance of difference in the value of pain at Post test 1 with having F value of 10.96 and p value of < 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing pain in both the groups and found a significance of difference in the value of pain at Post test 2 with having F value of 2.09 and p value of < 0.005. Above mentioned result showed that the routine physiotherapy group was much more effective in reducing the pain than compared with tele physiotherapy group.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Pretest	Equal variances assumed	2.738	.103	-.418	67	.677	-.680	1.625	-3.924	2.565
Post Test 1	Equal variances assumed	10.955	.002	9.209	67	.000	12.907	1.401	10.109	15.704
Post Test 2	Equal variances assumed	2.097	.152	14.267	67	.000	15.024	1.054	12.921	17.126

2.2. Between Group Analysis - FlexionROM:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Pretest	Equal variances assumed	.684	.411	-.962	67	.339	-2.046	2.126	-6.290	2.197
Post Test 1	Equal variances assumed	3.905	.052	3.124	67	.003	5.853	1.874	2.113	9.593
Post Test 2	Equal variances assumed	5.152	.026	6.144	67	.000	11.945	1.944	8.064	15.825

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of improving ROM in both the groups and found no significance of difference in the value of ROM at Pretest analysis with having F value of 0.68 and p value of > 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of improving ROM in both the groups and found a significance of difference in the value of pain at Post test 1 with having F value of 3.90 and p value of < 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of improving ROM in both the groups and found a significance of difference in the value of ROM at Post Test 2 with having F value of 5.15 and p value of < 0.005.

Above mentioned result showed that the routine physiotherapy group was much more effective in improving the ROM than compared with tele physiotherapy group.

2.3. Between Group Analysis - SPAD Score:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Pretest	Equal variances assumed	.054	.817	-2.167	67	.034	-2.658	1.227	-5.107	-.209
Post Test 1	Equal variances assumed	.359	.551	7.077	67	.000	10.910	1.542	7.833	13.987
Post Test 2	Equal variances assumed	.189	.665	14.959	67	.000	20.188	1.350	17.494	22.882

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing SPADI Score in both the groups and found no significance of difference in the value of ROM at Pretest analysis with having F value of 0.54 and p value of > 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing SPADI Score in both the groups and found a significance of difference in the value of SPADI Score at Post test 1 with having F value of 0.36 and p value of < 0.005.

Independent Sample t Test had been performed to compare the effectiveness of treatment by means of reducing SPADI Score in both the groups and found a significance of difference in the value of SPADI Score at Post Test 2 with having F value of 0.19 and p value of < 0.005.

Above mentioned result showed that the routine physiotherapy group was much more effective in reducing the SPADI Score than compared with tele physiotherapy group.

DISCUSSION

Here in this study, we have collected the data and analysed it with having within group analysis and between group analysis and found that both the treatment protocol was ineffective by means of improving in Pain, ROM & SPADI score but while compared both the group result at 3 intervals, we have found the routine physiotherapy group was much more effective than compared to tele physiotherapy group.

In a developing country like India, we are facing a huge lack of healthcare workers especially in the rural areas. So, patients suffering from many conditions like having post operative complication of modified radical mastectomy couldn't receive a proper treatment because they don't have proper medical facility available at their home town.

So, in the era of 21st century, when we are having a proper technology like tele medicine and when the health & family welfare department of government of India is also promoting the tele physiotherapy. Then why can't we as a physiotherapist take a step forward in this direction & provide a tele physiotherapy to patients who are unable to come at clinic regularly. So, these types of patients can have a better life ahead.

This study was to check the efficacy of tele physiotherapy in the patients underwent the modified radical mastectomy and had been proved that a tele physiotherapy can be a better option for the patients who can't go to the physiotherapy clinic regularly than having a no physiotherapy treatment at all.

No doubt a tele physiotherapy can't be as much beneficial as the routine physiotherapy at physiotherapy clinic. But we can provide better life for those patients who can't come for the routine physiotherapy at clinic regularly.

CONCLUSION

The results of the study suggest that

1. Tele Physiotherapy and Routine Physiotherapy both are beneficial for reducing pain, improving ROM and Reducing disability index for the patients underwent for modified radical mastectomy.
2. Before starting the physiotherapy treatment, at Pretest analysis, we have found both the group were similar and have not found significantly different in the terms of pain, ROM & SPADI.
3. Routine physiotherapy group was quite more beneficial while compared to tele physiotherapy group at both the intervals of Post Test 1 & Post Test 2.

According to the result we got after having data analysis, routine physiotherapy would always be having an upper hand than compared to tele physiotherapy, and it is preferred for the patients to take the physiotherapy regularly at physiotherapy clinic whenever it is possible.

But while it is not possible for the patients to come at physiotherapy clinic regularly, it is preferred to have a tele physiotherapy at home and make a regular follow up at physiotherapy clinic whenever asked.

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