

NEED FOR REHABILITATION AMONG THE PATIENTS OF BREAST CANCER AFTER MASTECTOMY: A RETROSPECTIVE STUDY

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ABSTRACT: The Breast Conservative Therapy is the standard treatment for early-stage breast cancer in the western world. On the other hand, in India BCT is not preferred by the surgeons and patients (11-23% vs. >60-70%). Patients suffer from cancer, its treatments and the side-effects of treatment. The majority of them encounter breast cancer multiplicity of physical and psychological difficulties after finishing cancer treatment. Without rehabilitation these difficulties may lead to functional limitations, disabilities, and mental issues. The breast cancer survival rate has increased, due to improvements in early diagnostic procedures and more aggressive therapies. Because of increased survival rate need of rehabilitation has been increased. The study was conducted with the aim of being able to determine the need of rehabilitation in patients of breast cancer after MRM in alleviating the disability also, to assess post MRM complication and to assess the psychological impairment and quality of life of breast cancer survivors. It was observed that out of 90/122 (73.77%) individuals were scoring below 40 which was suggestive of poor quality of life also, out of 122 patients 18 patients developed lymphedema. Amongst the 122 patients 54.97% wanted breast reconstruction & most of them belong to younger age group.

KEYWORDS: Modified radical mastectomy, Psychological impairment, Quality of life, Breast Conservative Therapy, Functional limitations, Survival rate.

INTRODUCTION: Breast cancer is the most common cancer in women all over India and accounts for 25% to 31% of all cancers in women in Indian cities.¹ Incidence statistics have been increasing over the last decades, for both premenopausal and postmenopausal women.

According to Globocan (WHO), for the year 2012, India recorded 70218 deaths due to breast cancer, more than any other country in the world (second: China - 47984 deaths and third: US - 43909 deaths).

The loco regional recurrence rates and overall survival rate with BCT are comparable to that of MRM. Based on the results of a series of trials conducted in Europe and North America, BCT is the standard treatment for early-stage breast cancer in the western world.² On the other hand, in India BCT is not preferred by the surgeons and patients (11-23% vs. >60-70%).³

Indian women do not independently take decision regarding any type of surgery. The reason for opting for either kind of surgery is usually based on surgeon's recommendation or concern about recurrence. Body image was not an issue amongst majority.⁴

The majority of them encounter breast cancer multiplicity of physical and psychological difficulties after finishing cancer treatment. They suffer from fatigue, dizziness, insomnia, lymphedema, discomfort of incision site and other physical symptoms. Breast cancer survivors

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also have to deal with decreased upper-body flexibility and strength, weight gain, and osteoporosis. In addition, they experience mental anguish characterized by fear that influences their social lives including relationships with their husbands and families which was in accordance with Allen et al, Burnet et al, Robinson et al, and O'Shaughnessy et al.^{5,6,7}

Breast cancer patients need rehabilitation to regain their former functions and to adopt their chronic conditions. Although much research and clinical attention has focused on saving lives of women with this condition, less focus has been devoted to rehabilitation aspects as stated by Silveret al.⁸

Without rehabilitation these impairments and difficulties may lead to functional limitations, disabilities, and mental issues.

The breast cancer survival rate has increased, due to improvements in early diagnostic procedures and more aggressive therapies. Because of increased survival rate need of rehabilitation has been increased. The main purpose of the study was to determine the effect of mastectomy the need of rehabilitation in patients of breast cancer after Modified Radical Mastectomy in alleviating the disability along with post MRM complications and its psychological impairment and quality of life of breast cancer survivors.⁹

INCLUSION CRITERIA: All Post-MRM females operated in last five years.

EXCLUSION CRITERIA:

1. All male breast cancer patients.
2. All breast cancers patients having undergone simple mastectomy.
3. All patients with inoperable disease.
4. Patient not willing to participate in the study.

MATERIAL AND METHODS: The present study was carried out in by identifying the patients of breast cancer from Hamidia Hospital, JNCH (Jawaharlal Nehru Cancer Hospital), and Navodaya Cancer Hospital at Bhopal. The corresponding information in data base of last 5 years from January 2008 to December 2012 was collected from the respective institutes.

The patients were followed by every possible means of communication and assessment of disability and post MRM side effects was done with the help of sf-36 quality of life questionnaire in Hindi language.

The present study was carried out in the Department of Surgery, at Hamidia Hospital and at other institutes like Jawaharlal Nehru Cancer Hospital and Navodaya Cancer Hospital at Bhopal. A total of 122 patients of breast cancer with mastectomy were included in the study operated from January 2008 to December 2012.

Quality of life measures such as the SF-36 have become increasingly important this century with the changing pattern of ill-health. The rise in chronic and nonfatal disease has meant that traditional mortality based measures of population health status do not provide a full picture of the extent of ill-health (the 'burden of disease') in a society.¹⁰

It is a questionnaire that is used primarily for the purpose of evaluating individual patient's health status, researching the cost-effectiveness of a treatment and Monitoring and comparing disease burden.

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The SF-36 questionnaire consists of 36 questions (items) measuring physical and mental health status in relation to eight health concepts:

- Physical Functioning.
- Role Limitations Due To Physical Health.
- Bodily Pain.
- General Health Perceptions.
- Vitality (Energy/Fatigue).
- Social Functioning.
- Role Limitations Due To Emotional Health.
- General Mental Health (Psychological Distress/Wellbeing).

As it is very well known that SF-36 being a standard questionnaire, it does not include specific complications pertaining to MRM. These were also considered while interviewing the patients. Some of these include issues related to recurrence of the disease, lymphedema, disability due to restricted shoulder movements, and need of breast reconstruction etc.

After interviewing the questions scoring and reverse scoring was done and categorised in different category of quality of life according to her score. Patients having score less than 20 kept under very poor quality of life & score of 20-39 kept under poor quality of life. Score of 40 -59 having average quality of life. Score between 60-79 have good & 80 or >80 very good quality of life.¹¹

RESULTS AND OBSERVATIONS: This retrospective study was designed for the evaluation of psychological, physical and emotional effects on patients who have undergone mastectomy and the need for rehabilitation amongst them to eradicate the side-effects associated with it.

The study included 122 patients who had been operated for breast cancer in the last 5 years from Hamidia Hospital, JNCH (Jawaharlal Nehru Cancer Hospital), and Navodaya Cancer Hospital at Bhopal.

It was observed that 12/122 (9.82%) experienced recurrence. 18/122 (14.75%) experienced lymphedema and 26/122 (21.31%) experienced impairment of upper limb activities of daily living (ADL).

SUMMARY MEASURES FOR QUALITY OF LIFE IN STUDY PARTICIPANTS:

- Total no. of participants: 122.
- Maximum score in study: -113.
- Minimum score in study: -4 (reverse scoring for surgery related complication).
- Average score of participants in my study: 41.246.
- More score indicate good quality of life, and less score indicate poor quality of life.

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Sl. No.	Score	Quality Of Life	No. of Participants	Proportion Value with Confidence
1	<20	Very poor	22	0.18 (0.116- 0.2602)
2	20-39	Poor	68	0.5574 (0.4688-0.6424)
3	40-59	Average	19	0.1557 (0.1012-0.2313)
4	60-79	Good	11	0.0902 (0.0496-0.1557)
5	80 and above	Very good	02	0.0164 (0.0008-0.0615)

TABLE 1: CONFIDENCE INTERVAL BY MODIFIED WALD METHOD

Comment (Table 1): Therefore, in my study 90/122 (73.77%) have below average quality of life calculated by SF-36 questionnaire. So the majority of the breast cancer patients have need for rehabilitation.

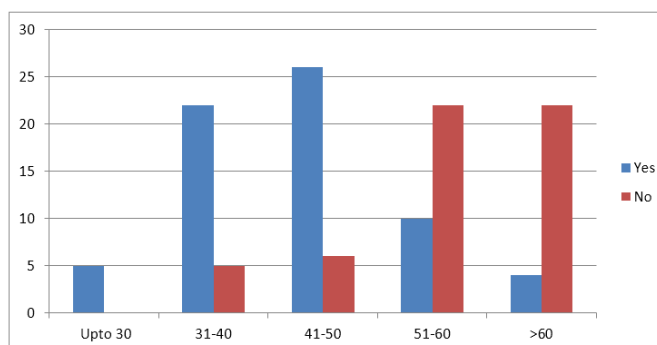
Age (in yrs)	No. of patient	Quality of Life				
		Very poor	Poor	Average	Good	Very good
<30	5	3	2	0	0	0
31-40	27	7	16	3	1	0
41-50	32	6	18	5	2	1
51-60	32	4	19	6	3	0
>60	26	2	13	5	5	1

TABLE 2: QUALITY OF LIFE IN BREAST CANCER PATIENT

Comment (Table 2): It has been observed that 60% of the age group less than 30 yr having very poor quality of life & remaining have poor quality of life. So Psychosocial effect is grossly affected in younger population where as it is less affected in older population.

Age group (yrs)	Yes	No
Up to 30	5	0
31-40	22	5
41-50	26	6
51-60	10	22
>60	4	22

TABLE 3: NEED OF BREAST RECONSTRUCTION



Graph 1

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NEED OF BREAST RECONSTRUCTION: On asking leading question from patients that if they have an option of breast reconstruction then what they do, in response to this question majority of the younger population say yes for breast reconstruction.

Socio-economic status	Quality of life				
	Very poor	Poor	Average	Good	Very good
Upper	9	8	0	1	0
Middle	7	28	4	1	0
Lower	6	32	15	9	2

TABLE 4: QUALITY OF LIFE AND PSYCHOSOCIAL EFFECT IN POST MASTECTOMY PATIENTS WITH DIFFERENT SOCIO-ECONOMIC STATUS

Comment (Table 4): Women belonging to upper socioeconomic class having more depression and anxiety (psychological impairment).

DISCUSSION: Breast cancer is the leading cause of cancer in women worldwide. The breast cancer survival rate has increased, due to improvements in early diagnostic procedures followed by more tailored and/or more aggressive therapies. More patients are long-term survivors and live with the long-term side effects of the disease and treatment.¹²

Breast cancer survivors face a cascade of post-treatment challenges, principally surveillance for recurrence, but also near-term and long term, Treatment-related medical and psychological sequelae.¹³

Amongst 122 women it was observed that 14.75% of females were suffering from lymphedema which is a common complication post-mastectomy. Whenever the normal drainage pattern in the lymph nodes is disturbed or damaged (as often happens during surgery to remove the lymph nodes), severe swelling of the arm may occur. This swelling, caused by an abnormal collection of too much fluid, is called lymphedema. The swelling can be noticed in the arm, chest, and breast area on the side of surgery. When the lymph nodes under the arm have been removed, a woman is at higher risk of lymphedema for the rest of her life. Lymphedema may occur immediately following surgery, or months or years later. Not every woman who has a mastectomy will experience lymphedema.¹⁴

Symptoms may include:

- Feeling of fullness or tightness in the affected arm, chest, or armpit area.
- Aching or pain in the affected arm.
- Swelling in the hand (may be evidenced by rings that no longer fit).
- Weakness in the affected arm.

Protection of the arm on the side of the surgery is very important after breast surgery. Poor drainage of the lymphatic system may cause that arm to be more susceptible to infection and less sensitive to extreme temperatures.¹⁵ People who have had surgery to remove lymph nodes in the arm pit should be aware of those activities that put too much pressure on the affected arm.

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Protective measures to avoid injury and infection include:

- All injections are to be given and blood tests are drawn in the unaffected arm.
- Avoid wearing nightgowns or clothing with elastic cuffs.
- Carry a handbag or heavy packages in the unaffected arm.
- Use an electric shaver to shave underarms.
- Avoid sunburns and other burns to the affected arm.
- Ensure blood pressure tests are done on the unaffected arm.
- Clean the skin of the affected arm daily and apply lotion. When drying the arm, be gentle, but thorough.
- Keep the arm elevated when possible.
- Do exercises regularly to improve drainage, but first consult with your doctor or physical therapist.
- Eat a well-balanced, low-sodium diet.¹⁶
- Avoid extreme hot or cold temperatures on the affected arm, such as heating pads or ice packs.
- Take proper care of the fingernails and avoid cutting cuticles.
- Clean all cuts with soap and water, and then apply antibacterial ointment and a sterile dressing.
- Protect your fingers from needle pricks and sharp objects. Use a thimble when sewing.
- Avoid vigorous, repetitive movements against resistance (such as scrubbing, pulling, or pushing) with the affected arm.¹⁷

Fear of cancer recurrence (FCR) or cancer progression is one of the most frequent distressing psychological symptoms in cancer patients. Breast cancer can recur at any time, but most recurrences occur in the first three to five years after initial treatment. Breast cancer can come back as a local recurrence (in the treated breast or near the mastectomy scar) or somewhere else in the body. The most common sites of recurrence outside the breast include the lymph nodes, the bones, liver, lungs, or brain. The factors known to increase the risk of local recurrence include young age, status of resection margin, presence of extensive intraductal component and the lymph node involvement.^{18,19}

Also, pain has been attributed as one of the major effects associated with mastectomy causing several interferences in day to day life.²⁰

Pain interfering with quality of life:

- Interference with appetite, sleep, and other physical functions.
- Reduced memory and concentration.
- Decreased ability to work.
- Loss of interest or other barriers to physical intimacy.
- Difficulty participating in home activities (e.g., household chores, caring for children).
- Limited social activity and engagements.
- Decline in financial resources.
- Change in spiritual connections (e.g., fear of dying).
- Loss of autonomy and marginalized at home, at work, and in social contexts.²¹

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The effect of mastectomy has been tremendous and has hampered the quality of life in individuals associated with it to a great extent. Therefore, arises the need for rehabilitation in patients post- mastectomy in order to assess the factors that are associated with affecting the quality of life in these patients and to eradicate it to certain extent so as to improve the patient's condition along with a healthier and faster recovery and also, to minimize the psychological effects associated with them.^{22,23}

SUMMARY & CONCLUSION: Breast cancer is the most common diagnosed malignancy in women worldwide and in India. The burden of breast cancer is increasing in both developed and developing countries. Disease free survival after diagnosis and treatment of breast cancer has been reported as between 63%-74% at 10 years, with overall survival rate of 63-86%.^{24,25} Therefore, it has become the focus of rehabilitation to optimize the quality of care and survival, as well as quality of living of women diagnosed with breast cancer. A planned approach to the physiotherapy management of women after breast cancer surgery with the ability to individualized exercise and education programmes is essential to ensure optimal quality of care and best practice.²⁶ Women with breast cancer have little control over their bodies and that their femininity is at risk. After the surgery, these fears are magnified. Many women see their breasts as a symbol of nurturing motherhood and femininity.²⁷

The aim of breast cancer treatment is to eradicate local disease & control the development of disease - enhancing the survival of women diagnosed. However, there are potential problems such as: Decreased shoulder movement & function secondary to axillary dissection; radical procedures; or fibrosis after radiotherapy.²⁸ Lymphedema of the arm or breast secondary to surgical removal of or radiation damage to axillary lymph nodes & remaining breast tissue. Neural disorders including, Sensory disturbances and neuralgia, Psychological effects Local recurrence or metastatic spread of breast cancer.^{29,30}

FOLLOWING CONCLUSIONS WERE DRAWN FROM THE STUDY:

1. Amongst the 122 samples taken for the purpose of the study it was observed that 90 (73.77%) individuals were scoring below 40 which was suggestive of poor quality of life which was directly associated with poor physical as well as psychosocial status of the patients. Therefore, arises the need for rehabilitation by physiotherapy and psychiatric counseling and social support. Also, women belonging to age group of 30 year and below all required psychological rehabilitation whereas, those belonging to 3rd to 4th decade out of 27 patients 23 required psychological rehabilitation and those belonging to 5th to 6th decade out of 32 patients 24 patients required rehabilitation. On association with the socio-economic status of the patients out of 18 patients belonging to upper class out of 18 patients 17 required psychological rehabilitation, amongst the 40 patients 35 required psychological rehabilitation whereas amongst 64 patients belonging to lower socioeconomic status 38 patients required psychological rehabilitation.
2. Out of 122 patients 18 patients developed lymphedema during post-operative period in the affected side/arm.

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3. It was observed that amongst the 122 samples selected for the study 26 patients have decrease range of motion and impairment of upper limb activities of daily living.
4. The samples selected for the purpose of the study showed 12 patients who experienced recurrence amongst the total 122 patients.
5. Amongst the 122 patients 54.97% wanted breast reconstruction. Out of which all patients belonging to the 3rd decade preferred reconstruction and those belonging to 4th decade of 27 patients 22 preferred breast reconstruction.

Hence, arises the need to bring attention to such physical and mental effects experienced by the patients post-mastectomy and need to be addressed in order to if not completely eradicate it than at least reduce it to certain extent so that the patient can lead a normal life socially as well as physically.

Certain measures can be taken in order to eradicate such conditions some of the steps that can be employed post-mastectomy are:

- Assisted movements initially.
- Slow & rhythmical.
- Sustained movements & stretches incorporated after 14-21 days.
- Limiting point is discomfort (not pain).
- Care with the vigour of exercises performed to minimise interference with the regeneration of lymphatic channels.
- Scar massage may be required to facilitate movement.
- Continued intervention 6-12 months post-op as soft tissues continue to remodel and contract during this period.
- Gradual progression of the type, duration and repetition of exercises with warm up and cool down.
- Breast reconstruction.
- Psychiatric counseling for psychological benefits.

REFERENCES:

1. Raina V, Bhutani M, Bedi R, Sharma A, Deo SV, Shukla NK, et al. Clinical features and prognostic factors of early breast cancer at a major centre in North India. *Indian J Cancer* 2005; 42: 36-41
2. Blichert-Toft M, Nielsen M, Düring M, Møller S, Rank F, Overgaard M, et al. Long-term results of breast conserving surgery vs. mastectomy for early stage invasive breast cancer: 20-year follow-up of the Danish randomized DBCG-82TM protocol. *Acta Oncologica* 2008; 47: 672-81.
3. Raina V, Bhutani M, Bedi R, Sharma A, Deo SV, Shukla NK, et al. Clinical features and prognostic factors of early breast cancer at a major centre in North India. *Indian J Cancer* 2005; 42: 36-41
4. Van Dongen JA, Voogd AC, Fentiman IS, Legrand C, Sylvester RJ, Tong D, et al. Long-term results of a randomized trial comparing breast-conserving therapy with mastectomy:

ORIGINAL ARTICLE

- European Organization for Research and Treatment of Cancer 10801 trial. *J Natl Cancer Inst* 2000; 92: 1143-50.
5. Burnet, K., & Robinson, L. (2000). Psychological impact of recurrent cancer. *European Journal of Oncology Nursing*, 4, 29–38.
 6. Fisher B, Anderson S, Bryant J, Margolese RG, Deutsch M, Fisher ER, et al. Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. *N Engl J Med* 2002; 347: 1233-41.
 7. O'Shaughnessy, J. (2003). Chemotherapy-related cognitive dysfunction in breast cancer. *Seminars in Oncology Nursing*, 19, 17-24.
 8. Silver, J. K. (2007). Rehabilitation in women with breast cancer. *Physical Medicine and Rehabilitation Clinics of North America*, 18, 521-537.
 9. Allen, A. (2002). The meaning of the breast cancer followup experience for the women who attend. *European Journal of Oncology Nursing*, 6, 155-161.
 10. Brennan MJ, De Pompolo RW, Garden FH. Focused review: postmastectomy lymphedema. *Arch Phys Med Rehabil* 1996; 77: S74-80.
 11. Foldi E, Foldi M, Clodius L. The lymphedema chaos: a lancet. *Ann Plast Surg* 1989; 22: 505-15.
 12. Kissin MW, QuercidellaRovere G, Easton D, Westbury G. Risk of lymphedema following the treatment of breast cancer. *Br J Surg* 1986; 73: 580-4.
 13. Suneson BL, Lindholm C, Hamrin E. Clinical incidence of lymphedema in breast cancer patients in Jonkoping County, Sweden. *Eur J Cancer Care* 1996; 5: 7-12.
 14. Karlsson P, Holmberg E, Samuelsson A, Johansson KA, Wallgren A. Soft tissue sarcoma after treatment for breast cancer. A Swedish population-based study. *Eur J Cancer* 1998; 34: 2068-75.
 15. Gan JL, Li SL, Cai RX, Chang TS. Microwave heating in the management of postmastectomy upper limb lymphedema. *Ann Plast Surg* 1996; 36: 576-81. 61. Guide to physical therapist practice. Impaired anthropometric dimensions secondary to lymphatic system disorders. *PhysTher* 1997; 77: 1611-9.
 16. Lash T, Sillman R. Patient characteristics and treatments associated with decline in upper-body function following breast cancer therapy. *J Clin Epidemiol* 2000; 53: 615–622.
 17. Kalso E. Chronic post-treatment symptoms in patients with breast cancer operated in different surgical units. *Eur J Surg Oncol* 1999; 25: 38–43.
 18. Haid A, Koerberle-Wuhrer R, Knauer M, Burtscher J, Fritzsche H, Peschina W, Jasarevic Z, Ammann M, Hergan K, Sturn H, Zimmermann G. Morbidity of breast cancer patients following complete axillary dissection or sentinel node biopsy only: a comparative evaluation. *Breast Cancer Res Treat* 2002; 73: 31–36.
 19. Woods M, Tobin M, Mortimer P. The psychosocial morbidity of breast cancer patients with lymphoedema. *Cancer Nurs* 1995; 18: 467–471.
 20. Ritter C and Weissman DE. Radiation for palliation, 2nd Edition. July 2006. Fast Facts and Concepts #66. End-of-life Palliative Education Resource Center.

ORIGINAL ARTICLE

21. Kissin MW, QuercidellaRovere G, Easton D, Westbury G. Risk of lymphedema following the treatment of breast cancer. *Br J Surg*1986; 73: 580-4.
22. Suneson BL, Lindholm C, Hamrin E. Clinical incidence of lymphedema in breast cancer patients in Jonkoping County, Sweden. *Eur J Cancer Care* 1996; 5: 7-12.
23. Lash T, Sillman R. Patient characteristics and treatments associated with decline in upper-body function following breast cancer therapy. *J Clin Epidemiol* 2000; 53: 615–622.
24. Schwartz, C. E., &Sendor, R. M. (1999). Helping others helps oneself: Response shift effects in peer support. *Social Science and Medicine*, 48, 1563–1575.
25. Meeting Psychosocial Needs of Women with Breast Cancer (2004)/ 5 The Effectiveness of Psychosocial Interventions for Women with Breast Cancerpg no. 96.
26. Agarwal G, Pradeep PV, Aggarwal V, Yip CH, Cheung PS (2007). Spectrum of breast cancer in Asian women. *World JSurg*, 31, 1031-40.
27. Werner RS, McCormick B, Petrek JA, Cox L, Cirrincione C, Gray JR, et al. Arm edema in conservatively managed breast cancer: obesity is a major predictive factor. *Int J Radiat Oncol Biol Phys* 1991; 21: 177-84.
28. Lin PP, Allison DC, Wainstock J, Miller KD, Dooley WC, Friedman N. Impact of axillary lymph node dissection on the therapy of breast cancer patients. *J Clin Oncol*1993; 11 (8): 1536-44.
29. Moyer A (1997). Psychosocial outcomes of breast-conserving surgery versus mastectomy: a meta-analytic review. *Health Psychol*, 16, 284-98.
30. Trends in Cancer Incidence in Singapore, 1968-2007.

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