

Quality of life of Patient with Breast Cancer Related Lymphedema in Regional Cancer Centre, South India

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Abstract

Introduction: To assess the quality of life among breast cancer related lymphedema patients. **Methods:** Cross-sectional study used to assess the quality of life among breast cancer related lymphedema patients among 92 patients by convenience sampling technique. The female patient more than 18 years with breast cancer related lymphedema who has attended outpatient department in Regional Cancer Centre, South India. The investigator assesses the upper limb lymphedema by taking their arm circumference measurement with tape measurement and respectively grading, for all patients with a difference of ≥ 2 cm from unaffected arm measurement. The data was collected by interview method with standardized questionnaire- Lymphedema Quality of Life (LYMQOL). There were 22 total questionnaires, divided into four domains- function, appearance, symptoms, and emotions. **Results:** Among 92 breast cancer related lymphedema patients, majority of them that is 46 (50%) of the patients had average quality of life, 43 (46.7%) had poor quality of life and few of them had 3 (3.3%) excellent quality of life, respectively. The study helps to conclude that quality of life of breast cancer related lymphedema patients is significant with lymphedema stage. **Conclusion:** The nurses in their practice can keep in track of patients arm circumference when performing an assessment on breast cancer.

Keywords: breast cancer, lymphedema, breast cancer-related lymphedema (BCRL)

Author Contributions' Statement:

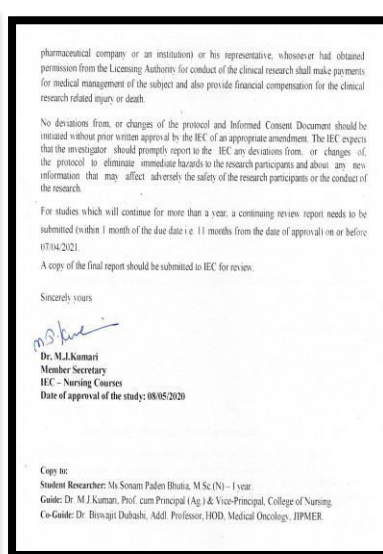
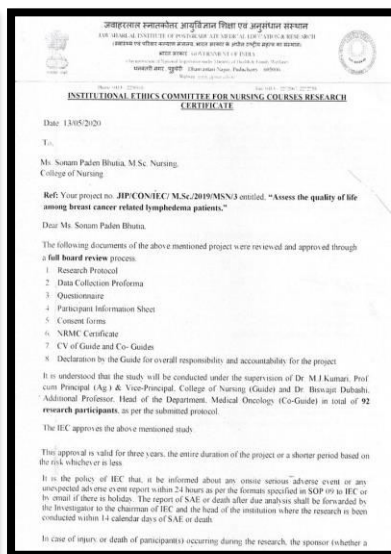
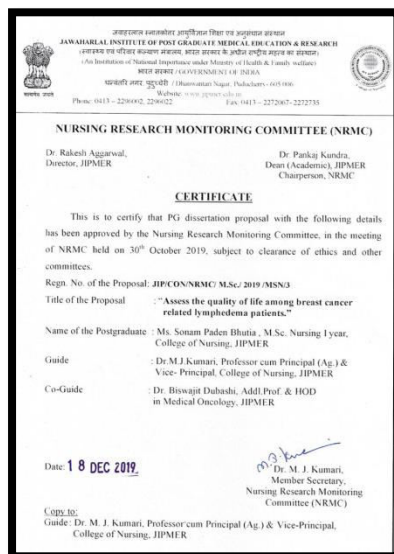
| Area of Contribution | Contributors | | |
|------------------------------------|--------------|---|---|
| | 1 | 2 | 3 |
| Study conception and design | ✓ | ✓ | ✓ |
| Definition of intellectual content | ✓ | ✓ | - |
| Literature search | ✓ | ✓ | ✓ |
| Data acquisition | ✓ | - | - |
| Data analysis & interpretation | ✓ | ✓ | ✓ |

| | | | |
|------------------------------|---|---|---|
| Manuscript preparation | ✓ | ✓ | ✓ |
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Ethical Approval and/or Institutional Review Board (IRB) Approval:

The study was registered under Clinical Trial Registry of India (CTRI) with the Reg. No: CTRI/2019/11/022112. The researcher was obtained prior permission from the Nursing Research Monitoring Committee (NRMC) No.JIP/CON/NRMC/M.Sc./2019/MSN/3 dated 18.12.2019 and Institute Ethics Committee (IEC) for Nursing courses (Human studies) Reg. No. JIP/IEC/M.Sc./2019/MSN/3 dated 13.05.2020 to protect the human subjects from risk.



Data Accessibility: The datasets are available from the corresponding author on reasonable request.

Background:

Breast cancer is a disease that arises in the epithelium of the glandular tissue in the breast, initially confined in situ (duct, 85% or lobule,15%) which are generally asymptomatic with minimal metastasis.¹In 2020, out of 19 292 789 cases new cancer cases breast cancer accounted for 2 261 419 (11.7 % of incidence rate) and 9 958 133 deaths cancer-related deaths out of 684 996 (6.9%) (6.9%).² In India, among 1 female in every 29 -cancer patient breast cancer is being accounted for during their lifetime.³ In 2020, 178 361 new cases of breast cancer were diagnosed, representing 13.5% of all new cancers among Indian women and 10.6 % of all cancer deaths.⁴ The breast cancer-related lymphedema (BCRL) prevalence range is from 8 - 44%⁵ and 31.6% is the cumulative frequency of BCRL in JIPMER, Puducherry.⁶ BCRL are frequently seen in who have undergone treatment for

breast cancer especially following lymphadenectomy. It is a progressive chronic condition characterized by accumulation of protein rich fluid in the interstitial space of upper limbs resulting in swelling, discomfort, altered physical functions, impaired quality of life, economic burden, and emotional well-being.⁷⁻⁸

Psychologically women with distorted body images after BCRL often decreased self-confidence, decreases individual efficacy to work and rest affecting the quality of life. Lin et al in their study have deduced that BRCL patients' symptoms were statistically reduced wearing compression garments than those in compressive decongestive therapy and patients with a higher education level, short symptoms duration and knowledge regarding lymphedema showed better adherence.^{9, 10} Statistically, 1 in every 8 women develop breast cancer in United States and in India in 29 women, which is comparatively less.¹¹ But the problem lies in the stages at the time of diagnosis, in stage I-60-70 % of breast cancer women are diagnosed in United States and 1-8 % in India, in stage IV- 10% women of breast cancer women are diagnosed in United States and 29% to 52%, 6% to 24%, of Indian women are diagnosed at the stage III and IV respectively.¹² Quality of life of patients in health is a growing topic of debate. So, the authors are interest to assess the quality of life among breast cancer related lymphedema patients in Regional Cancer Centre at tertiary care hospital. The study objectives were to assess the quality of life among breast cancer related lymphedema patients, to assess the factor influencing quality of life among breast cancer related lymphedema patients, and to compare quality of life of breast cancer related lymphedema patients with and without decongestive therapy.

Procedure:

Study design:

The cross-sectional descriptive study was used in this study to assess the quality of life among breast cancer related lymphedema patients in regional cancer centre, tertiary care hospital. The current study aims at estimating the quality of life of breast cancer related lymphedema with LYMQOL questionnaire. Independent variables of the study were age, marital status, education, occupation, involvedside, bodymass index, duration of lymphedema, grade of lymphedema, clinical stage, treatmentschemotherapy, surgical, radiotherapy, hormonal therapy, duration since surgery, and disease status. Dependent variable of the study was Quality of life (QoL).

Sample and setting

The study sample were patients who visited out patient department in Regional Cancer Centre (RCC), diagnosed with breast cancer related lymphedema of upper limb, female patient above 18 years were included in the study. Anticipating a 60% prevalence of poor-quality life among the patients with breast cancer related lymphedema, with type

I error 5% and absolute precision as 10%, the sample size is estimated using single proportion formula as, $n \geq 92$. The sampling technique used for the present study was convenience sampling technique. The 92 female patient above 18 years with breast cancer related lymphedema were included in the study. The study exclusion criteria were patient with deep vein thrombosis, any chronic/acute skin infections, and wound / ulcer involved lymphedema.

Instruments

The instruments, part I consists of sociodemographic variables include age, marital status, occupation, & education qualification and clinical variables included the involved side, body mass index (kg/m²), duration of lymphedema (months), lymphedema stage, clinical stage, treatments- medical, surgical radiotherapy, hormonal therapy, disease status., time since surgery (month), and if under decongestive therapy. Part 2 standardized scale developed by Dr.V L Keeley consists of the standardized tool to assess the Lymphoedema Quality of Life (LYMQOL) tool for arm. LYMQOL domain score are scaled in a negative direction: the higher the score, the higher the impact and the poorer the quality of life. The scoring of each item in the domain is considered as follows: score of 1-not at all, score of 2- a little, score of 3- quite a bit, and score of 4- a lot. The domain consists of arm function (1(a-h),2,3), appearance (4, 5, 6, 7, 8), symptoms (9, 10, 11, 12, 13, 14), and emotions (15, 16, 17, 18, 19, 20) questionnaire, respectively. Overall quality of life (Q21) is scored between 0-10, where score 0 was labelled as poor and 10 as the excellent quality of life. Breast cancer related lymphedema grad I represents maximum difference in arm circumference of 2 to 5 cm, grade II represents maximum difference in arm circumference of 5.1 cm to 8 cm, grade III represents maximum difference in arm circumference of 8.1 to 11 cm, and grade IV represents maximum difference in arm circumference of more than 11 cm. LYMQOL ARM questionnaire is divided into four domains plus the overall self-rating of quality of life by patients. The score in four domains varies from 0-4. A total score for each domain was calculated by adding all scores together and dividing by the total number of questions answered. If fewer than 50% of the items were answered, the whole domain was scored as 0. The 'overall QoL' item was scored 0-10, where 0-4 signify poor QoL, 5-8 average QOL, and 9-10 as excellent QoL. The study was approved by Research Monitoring Committee, JIPMER & the Institutional Ethics Committee (Human Studies), JIPMER.

Patients were assessed for lymphedema manually with standardized flexible tape measure for all. Measurements were taken for both arms-the affected and unaffected, at 4 points 10 cm above (proximal), 10 cm below (distal) to the elbow, elbow, and the wrist. Patients with a difference of ≥ 2 cm were taken into the study and graded into 4 grades - difference in arm circumference of 2cm - 5cm, 5.1cm -8cm , 8.1cm - 11cm, and >11 cm, respectively. LYMQOL questionnaire was used to assess the quality of life (QoL) among

the participants consisting of 21 questions overall. The data collection procedure took about 20-25 minutes for each participant. Information about the patient was done by face-to-face interview method.

Analysis

The study was carried out in SPSS version 20.0. The categorial data like education, occupation, involved side, grade, BMI, treatments received are represented as frequency and percentage. The continuous data like age, duration of lymphedema, and duration since surgery and quality of life are represented as mean and standard deviation or median and interquartile range formula. The continuous data like age, duration of lymphedema, and duration since surgery and quality of life are represented as mean and standard deviation or median and interquartile range formula. The account between demographic and clinical variable and comorbidities are assessed using Chi-square test.

Results:

Socio-demographic variables among breast cancer related lymphedema patients. The mean age of the participants is 49.9 ± 9.77 . Most of the participants (42.4%) of them were homemaker, among 92 patients more than fifty percentage of the patient belongs to grade I and majority of the patients had received radiotherapy (66.3%) followed by chemotherapy, under NACT (51.1%). Most of the patients involved side were left arm (52.2%). The BMI of majority patient were in between 25-29.9 kg/m² (40.2%), obese I, according to WHO South-Asian classification. Most of the patients under grade I and II, 58.7%, 40.2% respectively. The mean duration of lymphedema in terms of month was 5.033 ± 2.522 . On treatment basis, 60.8% had received surgical treatment and of which modified radical mastectomy comprised of 53.3%. The mean and standard deviation shows domain wise quality of life among patients with breast cancer related lymphedema. In emotions (2.267 ± 0.581) is highest score and functions (2.093 ± 0.550) is lowest score, respectively. The decongestive therapy has not been shown statistically significant in association with the quality of life among breast cancer related lymphedema patients with chi-square value of ($\chi^2=1.29$, d.f=2).

The table 1 shows level of the quality of life among patient with breast cancer related lymphedema. The table 2 depicts that the demographic and clinical variable Education, chemotherapy, chemotherapy protocol, lymphedema stage and hormonal status Herzneu had shown statistically significant association the level of the quality of life among breast cancer related lymphedema with chi-square value of ($\chi^2=24.2$, d.f=8), ($\chi^2=21$, d.f=6), ($\chi^2=23.2$, d.f=12), ($\chi^2=19.7$, d.f=4) and ($\chi^2=9.09$, d.f=2) at $p < 0.001$ level and $p < 0.05$ level. The other demographic and clinical variables had not shown statistically significant the level of the quality of life among breast cancer related lymphedema, respectively.

Discussion

The first objective was to assess the Quality of life among breast cancer related lymphedema patients. Among the 92 study participants, majority had good quality of life 46 (50%), followed by 43 with poor quality of life (46.7%) and few had excellent quality of life (3.3%) (Table 1). Hence it can be interpreted that most of the breast cancer related lymphedema patients having good quality of life. In a mean and standard deviation of the quality of life (domain wise), the study found the reading of function, appearance, symptoms, and emotions as 2.093 ± 0.550 , 2.157 ± 0.567 , 2.212 ± 0.634 , and 2.267 ± 0.581 respectively. In emotions (2.267 ± 0.581) is highest score and functions (2.093 ± 0.550) is lowest score. The present study finding supported by Zhang et al study, it was across-sectional design to study the Predictors of Quality of Life in Patients with Breast Cancer-Related Lymphedema: Effect of Age, Lymphedema Severity, and Anxiety. The study results deduced that age, lymphedema severity, and anxiety account for 85.9% as a predictor for quality of life (QoL). The patients with BCRL showed 36.6% with moderate to severe anxiety and older women had comparatively better QoL.¹³ The second objective was to assess the factor influencing quality of life among breast cancer related lymphedema patients. The study showed that there is statistically significant association between quality of life and education qualification with chi-square value of ($\chi^2=24.2$, d.f=8) $p=0.002$, chemotherapy with chi-square value of ($\chi^2=21$, d.f=6) $p=0.002$, chemotherapy protocol with chi-square value of ($\chi^2=23.2$, d.f=12) $p=0.026$, lymphedema stage with chi-square value of ($\chi^2=19.7$, d.f=4) $p=0.001$, and hormonal status (Herzneu) with chi-square value of ($\chi^2=9.09$, d.f=2) $p=0.011$ (Table 5). Hence the study showed that demographic (education) and clinical variables (chemotherapy, chemotherapy protocol, lymphedema stage and hormonal status) dose influence the quality of life among breast cancer related lymphedema patients with value of $p < 0.05$ level. The study finding was supported on the level of Lymphedema awareness among women with breast cancer in the kingdom of Saudi Arabia among 135 participants with online questionnaire. The study found 19.5% participants with awareness of lymphedema showed greater adherence with treatment strategies, hence better quality of life.¹⁴

Nursing Implications:

Nurses in their practice can keep in track of patients arm circumference when performing an assessment on breast cancer. The importance of basic care of the affected side upper limbs needs to be highlighted by nurse educators. In-service education for the staff nurses should be provided with special emphasize on regular assessment of lymphedema of arm among breast cancer patients for early diagnosis.

Conclusion

The study findings revealed that the quality of life of breast cancer related lymphedema patients were not poor. The study helps to conclude that quality of life of breast cancer related lymphedema patients is significant with lymphedema stage.

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Table 1: Quality of life among patients with breast cancer related lymphedema

N = 92

| Quality of Life | Frequency (N) | Percentage (%) |
|---------------------------|---------------|----------------|
| Poor (0-4) | 43 | 46.7 |
| Average (5-8) | 46 | 50 |
| Excellent (9-10) | 3 | 3.3 |
| Mean ± standard deviation | 5.109±1.969 | |

Table 2: Assessment of the demographic variables influencing quality of life among breast cancer related lymphedema patients

N=92

| Sociodemographic & Clinical Variables | | Quality Of Life | | | | | | X ² | df | P-value |
|---------------------------------------|-------|-----------------|------|---------|------|-----------|------|----------------|----|-------------|
| | | Poor | | Average | | Excellent | | | | |
| | | n | % | n | % | n | % | | | |
| Age (in years) | 18-29 | 0 | 0 | 1 | 2.2 | 0 | 0 | 4.45 | 6 | 0.616 NS |
| | 30-44 | 12 | 27.9 | 12 | 26.1 | 1 | 33.3 | | | |
| | 45-59 | 22 | 51.2 | 29 | 63 | 2 | 66.7 | | | |

| | | | | | | | | | | |
|---------------------------|---------------------|----|------|----|------|---|------|------|---|--------------|
| | >60 | 9 | 20.9 | 4 | 8.7 | 0 | 0 | | | |
| Marital status | Married | 31 | 72.1 | 39 | 84.8 | 3 | 100 | 7.06 | 6 | 0.315 NS |
| | Unmarried | 0 | 0 | 2 | 4.3 | 0 | 0 | | | |
| | Widow | 11 | 25.6 | 5 | 10.9 | 0 | 0 | | | |
| | Separated/divorced | 1 | 2.3 | 0 | 0 | 0 | 0 | | | |
| Occupation | Homemaker | 22 | 51.2 | 15 | 32.6 | 2 | 66.7 | 6.92 | 6 | 0.328 NS |
| | Private employee | 9 | 20.9 | 8 | 17.4 | 1 | 33.3 | | | |
| | Govt employee | 1 | 2.3 | 1 | 2.2 | 0 | 0 | | | |
| | Daily wages | 11 | 25.6 | 22 | 47.8 | 0 | 0 | | | |
| Education | Illiterate | 17 | 39.5 | 17 | 37 | 1 | 33.3 | 24.2 | 8 | 0.002* S |
| | Primary education | 3 | 7 | 20 | 43.5 | 0 | 0 | | | |
| | Secondary education | 16 | 37.2 | 3 | 6.5 | 1 | 33.3 | | | |
| | Higher secondary | 5 | 11.6 | 4 | 8.7 | 1 | 33.3 | | | |
| | Graduate & higher | 2 | 4.7 | 2 | 4.3 | 0 | 0 | | | |
| Lymphedema stage | Grade 1 | 15 | 34.9 | 36 | 78.3 | 3 | 100 | 19.7 | 4 | 0.001* HS |
| | Grade 2 | 27 | 62.8 | 10 | 21.7 | 0 | 0 | | | |
| | Grade 3 | 1 | 1 | 0 | 0 | 0 | 0 | | | |
| | Grade 4 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Hormonal status ER | Positive | 19 | 44.2 | 29 | 63 | 1 | 33.3 | 3.66 | 2 | 0.160 NS |
| | Negative | 24 | 55.8 | 17 | 37 | 2 | 66.7 | | | |
| Hormonal status PR | Positive | 15 | 34.9 | 25 | 54.3 | 1 | 33.3 | 3.56 | 2 | 0.168 NS |
| | Negative | 28 | 65.1 | 21 | 45.7 | 2 | 66.7 | | | |
| Hormonal status Herzneu | Positive | 19 | 44.2 | 7 | 15.2 | 1 | 33.3 | 9.09 | 2 | 0.011* S |
| | Negative | 24 | 55.8 | 39 | 84.8 | 2 | 66.7 | | | |
| Time since surgery months | Nil | 4 | 9.3 | 8 | 17.4 | 1 | 33.3 | 3.94 | 4 | 0.414 NS |
| | < 12 months | 8 | 18.6 | 4 | 8.7 | 0 | 0 | | | |
| | >12 months | 31 | 72.1 | 34 | 73.9 | 2 | 66.7 | | | |
| Chemotherapy | NACT | 20 | 46.5 | 26 | 56.5 | 1 | 33.3 | 21.0 | 6 | 0.002* S |
| | Adjuvant | 18 | 41.9 | 15 | 32.6 | 0 | 0 | | | |
| | Palliative | 2 | 4.7 | 4 | 8.7 | 0 | 0 | | | |
| | No chemotherapy | 3 | 7 | 1 | 2.2 | 2 | 66.7 | | | |

| | | | | | | | | | | |
|-----------------------|---------------------|----|------|----|------|---|------|------|----|-------------|
| Chemotherapy protocol | FEC+DOCE | 28 | 65.1 | 33 | 71.7 | 0 | 0 | 23.2 | 12 | 0.026* S |
| | AC | 4 | 9.3 | 2 | 4.3 | 0 | 0 | | | |
| | Docetaxel | 1 | 2.3 | 2 | 4.3 | 1 | 33.3 | | | |
| | Trazate | 0 | 0 | 2 | 4.3 | 1 | 33.3 | | | |
| | FAC | 3 | 7 | 3 | 6.5 | 0 | 0 | | | |
| | No chemotherapy | 4 | 9.3 | 3 | 6.5 | 1 | 33.3 | | | |
| | Paclitaxel | 3 | 7 | 1 | 2.2 | 0 | 0 | | | |
| Surgery | MRM | 37 | 86 | 36 | 78.3 | 2 | 66.7 | 2.22 | 4 | 0.694 NS |
| | BCS | 2 | 4.7 | 2 | 4.3 | 0 | 0 | | | |
| | Palliative | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | No surgery | 4 | 9.3 | 8 | 17.4 | 1 | 33.3 | | | |
| Radiotherapy | Yes | 26 | 60.5 | 32 | 69.6 | 3 | 100 | 3.27 | 4 | 0.513 NS |
| | No | 16 | 39.5 | 14 | 30.4 | 0 | 0 | | | |
| Hormonal therapy | Letrozole | 11 | 25.6 | 18 | 39.1 | 1 | 33.3 | 2.73 | 4 | 0.603 NS |
| | Tamoxifen | 6 | 14 | 7 | 15.2 | 0 | 0 | | | |
| | No-hormonal therapy | 26 | 60.5 | 21 | 45.7 | 2 | 66.7 | | | |