Original Article

An Assessment of Quality of Life in Breast Cancer Patients Using EORTC QLQ C30/+Br23 Questionnaire

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Abstract

Background: Breast cancer is the most common type of cancer among women all over the world and breast cancer is a disease where quality of life (QOL) has become a part of evaluation criteria for cancer therapy. The objective of this study was to evaluate the quality of life (QOL) in breast cancer patients and its association with other factors. EORTC QLQ C30/+BR23 (European Organization for Research and Treatment of Cancer) Questionnaire was to quantify the quality of life of breast cancer patients.

Methods: Two hundreds consecutive patients of breast cancer from Department of Clinical Oncology Mayo Hospital KEMU Lahore during May 2009 to November 2009 were enrolled in this study. We analyzed the impact of certain factors on QOL.

Results: The mean age of patients was 46.3±9.52 years with Global Health Status (GHS) quality of life score 48.33±27.77, in younger women better quality of life was observed than older patients (46.62 versus 42.30, P<0.05). In univariare analysis, body image, emotional functioning showed positive relationship while breast symptoms, arm symptoms and up-set by hair loss showed a negative relationship with global health status QOL scale (P<0.05). In multivariate analysis fatigue, pain, body image, breast symptoms were found significant predictors of QOL in breast cancer patients (P<0.05).

Conclusions: This study showed poor QOL index in breast cancer patients and also investigated the strength of relationship between GHS QOL and other demographic factors (age, marital status, education) with EORTC-QLQ-C-30/+BR23 subscales which were found significant.

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Key Words: Breast cancer patients,Quality of life, EORTC QLQ-C30/+BR-23, Regression analysis

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Introduction

Breast cancer is the leading cause of cancer among women around the world and second leading cause of cancer deaths [1]. According to American Cancer Society, about 1.3 M women are diagnosed with breast cancer annually worldwide. Asia has experienced a higher rate of breast cancer than USA and Europe [2]. Pakistan faces a high disease burden of breast cancer with those who present their disease with very advanced stage. In Karachi, the breast cancer is 34.6% among all types of cancer according to Karachi Cancer registry [3]. Probability of developing breast cancer in every woman may be high or low, depending on several independent factors, including increasing age, family history, white race and some unidentified factors. Mastectomy, Radiotherapy and chemotherapy plus hormonal therapy are practical techniques for treatment of patients with breast cancer. The survival rate of breast cancer patients has increased due to better treatment methods and early detection of disease in women [4]. In spite of these effective treatment methods of breast cancer, the quality of life (QOL) of such patients is a debatable issue, because long-term radiotherapy or chemotherapy often results in loss of self confidence of breast cancer patients, women with breast cancer, especially younger patients, tend to suffer substantial disruption in their physical functioning [5], mental health and well-being [6, 7], thus impair the QOL. Loss of breast after mastectomy also results in psychological, emotional problems [8]. Depression and anxiety are common psychiatric disorders among oncology patients and can have a significant negative impact on functioning of these patients [9], which effects QOL of patients.

Young females of breast cancer also face sexual problems while receiving chemotherapy treatment after surgery [10, 11]. Due to various psychological and psychosocial concerns, it has become much more important to study the quality of life for breast cancer survivors. Because of wide variability in QOL, identification of factors that render breast cancer women vulnerable to negative outcomes and poor QOL is essential [12].

World Health Organization (WHO) defines QOL as the individual's conception of living condition in terms of culture and domain values in the society which are aimed at their goals, expectations, standard and interests, so quality of life has close relationship with physical, mental condition and personal belief, the extent of self reliance, mass communication and environment [13]. In a simple way, QOL is individual's thought from life style according to her expectations and performance [14]. Breast Cancer in women is significant disease and one where the health professional have the potential to improve the quality of life. Measuring of quality of life helps to consider patient's problem more seriously and to re-consider techniques of treatment [15].

A broad range of QOL assessment instruments are available (often heterogeneous results are found in different studies [16]),which are used in clinical studies among breast cancer patients in Oncology [17], including FLIC (functional Living Index-Cancer) [18], the RSCL (Rotterdam Symptoms Check List) [19], and the CARES-SF (Cancer Evaluation System- Short Form) [20], however, the EORTC QLQ-C30/+BR23 is especially designed to quantify the HR-QOL (Health-Related Quality of Life) of breast cancer patients, which is internationally validated [21].

Several studies discussed the impact of socio-demographic factors (age, marital status, education, economic conditions) on QOL of breast cancer patients using HR-QOL questionnaire. However, the impact of these factors is discussed controversially [11]. So there is a need to investigate the affect of demographic factors more rigorously on QOL of breast cancer patients.

The purpose of this study was to evaluate the quality of life (QOL) in breast cancer patients and its association with other demographic factors affecting QOL.

Materials and Methods

Two hundred consecutive patients of breast cancer from Department of Oncology Mayo Hospital Lahore during May 2009 to November 2009 were recruited in this study. The target population was the registered females who undergone mastectomy and receiving regular treatment. We used European Organization for Research and Treatment of Cancer Core questionnaire + breast Module (EORTC QLQ-C30/+BR23; Psychosomatics 2001; 42:117-123) [22] to assess the QOL and demographic data included age, education, locality and marital status was taken on additional questionnaire. Written and verbal consent was taken from eligible patients who were willing to participate and to understand the purpose of study.

Quality of life (QOL) Assessment

EORTC QLQ C-30 is consisted of 30 items including five functional scales (physical, role, emotional, cognitive and social) and nine symptoms scale (fatigue, nausea and vomiting, pain, dyspnoea, insomnia, appetite loss, constipation, diarrhea, financial difficulties) with one global health scale(GHS). The module BR-23 comprises of 23 questions designed for quantifying QOL of breast cancer, including five functional scales (body image, sexual functioning, sexual enjoyment, future perspective), and four symptom scales (systematic therapy side effect, breast symptom , arm symptom, upset by hair loss) [23].

After gathering the information from subjects the raw scores for each subscale was calculated which then transferred to 0-100 scales according to the guidelines of EORTC scoring manual. Higher score of any subscale reflects the better QOL or high level of functioning. On the other hand, in the case of symptom scales, the higher scores imply the higher level of symptoms which indicates a worst quality of life [24-26].

Statistical Method

Statistical analysis was carried out using SPSS v-16 (Statistical Package for Social Sciences, V.16, SPSS Inc., Chicago Ill USA), categorical variables were expressed in frequency and percentage, and Chi-square test was used to determine the association among categorical variables. Pearson Correlation Coefficient was used to measure the strength of relationship between different sub-scales of quality of life (QOL) and global health status (GHS). Multiple regression model was also used to determine the effect of different factors on global health status, where GHS was taken as dependent variables and demographic factors & sub-scales of QOL index were taken explanatory variables in regression model [27]. T-test was used to determine the difference between any two variables or factors. A $P \leq 0.05$ was taken as statistical significant value.

Table 1. Demographic factors in patients under study

Variables	Description	Frequency (%)	Mean ± SD	P Value
Age	<50 years	136(68)	46.62±27.53	P<0.05
	≥50 years	64 (32)	42.30± 31.83	
Marital status	Unmarried	38(19)	53.69±32.89	P>0.05
	Married	162(81)	49.79±27.32	
Area of residence	Rural	90(45)	39.58±32.89	P>0.05
	Urban	110(55)	52.45±24.49	
Occupation	Housewife	188 (94)	47.69±28.53	P<0.05
	Worker	12(6)	58.33±17.47	
Education	Illiterate	144(72)	47.49±22.44	P>0.05
	Literate	56(22)	52.73±25.33	
Family monthly	Rs.<15,000	154(77)	43.56±28.63	P>0.05
Income	Rs. ≥15,000	46(23)	46.79±29.67	

Results

A total of 200 breast cancer patients completed the data sheet and QOL inventories. The mean age of participating patients was 46.3±9.52 years.

Table 1 show an over view of demographic characteristics of breast cancer Patients. One hundred eighty eight (188,94%) were housekeepers while 12(6%) were formally employed. Employed showed a better quality of life ($p<0.05$) than house keepers. One hundred thirty six (136,68%) subjects were aged <50years; 64(32%) were aged ≥ 50 years, subjects aged < 50 years showed a better quality of life ($p<0.05$), 162(81%) were married 144(72%) were illiterate, 110(55%) were form urban areas, most of subjects were from poor families.

The mean global health status (GHS) score was 48.33±27.77. Results of both questionnaires (QLQ-C-30/+BR23) were summarized (Table2). For the functioning scales and Global Health Status (GHS) scale, a higher score corresponds to better quality of life, for the symptoms scales, higher score indicates a poor quality of life [28]. The best functional outcomes were found for social functioning (77.33±31.36) and role functioning (61.00±41.87) subscale, where as emotional functioning (46.16±37.01) was found lowest. Subjects were suffered from dyspnea (62.67±44.49), pain (51.00±34.41) and fatigue (73.55±25.48), other factors Insomnia (34.67±36.24), appetite loss (42.67±42.61), constipation (35.00±33.67) and diarrhea (45.33±40.55) were found less severe. In BR-23 questionnaire, sexual functioning (92.33±20.26) and sexual enjoyment (93.33± 20.20) showed a better score while higher score of Breast symptom (73±31.13), arm symptom (63.33±31.39) and up-set by hair loss (83.33±35.15)showed lower quality of life in breast cancer patients. Overall, a considerable amount of poor quality of life in breast cancer patients in our study was observed.

With six exceptions, correlation of all QLQ-C30/+BR23 subscales with GHS were found lower; the Spearman correlation $r<0.30$. The subscales Emotional functioning ($r=0.37$, $p=0.008$), Dyspnea ($r=0.426$, $p=0.002$), Body Image ($r=0.355$, $p=0.011$) showed significant positive relationship with Global QOL. Whereas Breast Symptoms ($r=-0.511$, $p=0.000$), Arm symptoms ($r=-0.304$, $p=0.032$)and up -set by hair loss ($r=-0.354$, $p=0.012$) were showed reverse relationship with global health status QOL scale.

In multivariate regression analysis, Fatigue, Nausea and Vomiting, Pain, Dyspnea, Constipation, Body Image, Breast Symptoms, and education of patients are significant ($p<0.05$) predictors of QOL of breast cancer patients (Table 3), other demographic factors were not found significant ($p>0.05$)predictors of QOL in this study.

Discussion

We analyzed the impact of demographic factors on HR-QOL in breast cancer patients. The QLQ-C30 and BR23 questionnaires had developed as a quantitative measure of HR-QOL of patients, and its validity had been well established [21]. The mean score (48.33±27.77) of GHS-QOL (QLQ C-30) in breast cancer patients indicated that our patients had clinically poorer GHS-QOL in comparison with other data [4, 12, 29]. According to results showed by QLQ C-30, women aged < 50 years had a better quality of life than women aged ≥ 50 years. Some studies but not all indicated that younger women have better quality of life [30, 31] in breast

Table 2. EORTC QLQ-C30/+BR-23 subscales and their correlation with GHS in patients

Variables	Mean ± SD	Correlation Value	P Value
Physical Functioning	56.40±27.41	0.203	.156
Role Functioning	61.00±41.87	0.201	.161
Emotional Functioning	46.16±37.01	0.370	.008 *
Cognitive Functional	60.66±28.12	0.248	0.082
Social Functioning	77.33±31.36	0.131	0.363
Fatigue	73.55±25.48	-0.202	0.159
Nausea and vomiting	28.00±25.27	0.213	0.137
Pain	51.00±34.41	-.164	0.254
Dyspnea	62.67±44.49	0.426	0.002 *
Insomnia	34.67±36.24	0.030	0.834
Appetite Loss	42.67±42.61	0.047	0.746
Constipation	35.00±33.67	-0.121	0.402
Diarrhea	45.33±15.59	0.244	0.088
Financial Difficulties	50.00±40.55	0.166	0.249
Body Image	70.50±31.42	0.355	0.011 *
Sexual Functioning	92.33±20.26	.012	0.394
Sexual Enjoyment	93.33±20.20	0.020	0.889
Future Perspective	22.00±28.26	0.033	0.819
Systematic Therapy Side Effect	55.90±17.47	-0.155	0.284
Breast Symptoms	73.00±31.13	-0.511	0.000 *
Arm Symptoms	65.33±31.39	-0.304	0.032
Upset by Hair Loss	83.33±35.15	0.354	0.012 *
Global Health Status (QOL)	48.33±27.77		

cancer diagnosis. Most of the subjects were housekeepers or unemployed, the results are different from other studies, where most of the patients were employed [28, 32, 33].

In our study employed women showed better quality life. The reason of better quality of life in employed women is that employed women has better social relationship, financially independent and well conscious about her health status than housekeeper which is supported by other study [34]. Concerning QOL of married women versus unmarried, which was not significantly different, this is also supported by other study [35]. In this study no significant difference could be detected in global QOL with respect to education, monthly income of family and residential status of patients [4]. Global Health status QOL had found significant relationship ($p<0.05$) with emotional functioning, Dyspnea, body image and inverse relationship ($p<0.05$) with breast symptoms. Arm symptoms and upset by hair loss the results are consistent with other studies [28]. This may be concluded that symptoms scales both in EORTC C-30 and BR-23 reporting the health problems of breast cancer patients.

In multivariate regression analysis, physical, role, social functioning had no significant effect on GHS QOL ($P>0.05$), our results are not supported by other studies [36], whereas body image, future perspective and breast symptoms had significant impact on GHS QOL ($P<0.05$). Concerning demographic factors (age, education, marital status) only education was detected a significant predictor of GHS QOL as supported by other study [35].

Table 3. Predictors of quality of life (QOL) by using linear regression model

	Full Model			Final Model		
	B	Std. Error	P-value	B	Std. Error	P-value
(Constant)	13.488	49.681	0.789	-31.056	26.966	0.257
Physical Functioning	0.337	0.254	0.198	0.380	0.188	0.054
Role Functioning	0.227	0.130	0.095	0.200	0.104	0.063
Emotional Functioning	0.050	0.110	0.651	----	------	----
Cognitive Functional	0.099	0.172	0.572	-----	------	----
Social Functioning	-0.159	0.164	0.343	----	------	-----
Fatigue	-0.235	0.192	0.234	-0.325	0.142	0.028
Nausea and vomiting	0.403	0.169	0.026	0.482	0.131	0.001
Pain	0.467	0.269	0.096	0.492	0.187	0.012
Dyspnoea	0.154	0.087	0.091	0.248	0.062	0.000
Insomnia	0.163	0.112	0.159	-----	-----	------
Appetite Loss	0.183	0.091	0.056	-----	-----	----
Constipation	-0.297	0.125	0.027	-0.289	0.086	0.002
Diarrhea	0.167	0.262	0.530	----	-----	----
Financial Difficulties	0.030	0.099	0.764	-----	------	-----
Body Image	0.255	0.187	0.188	0.283	0.110	0.014
Sexual Functioning	0.127	0.621	0.840	-----	------	-----
Sexual Enjoyment	-0.259	0.655	0.696	-----	-----	----
Future Perspective	-0.176	0.125	0.172	-0.287	0.105	0.010
Systematic Therapy Side effect	-0.222	0.233	0.350	-----	----	----
Breast Symptoms	-0.203	0.157	0.208	-0.288	0.099	0.006
Arm Symptoms	-0.247	0.175	0.172	-----	-----	----
Upset by Hair Loss	0.130	0.120	0.290	-----	----	-----
area of residence	-1.864	7.309	0.801	------	----	----
occupation of the patient	7.898	18.794	0.678	-----	----	-------
education of the patient	11.274	7.504	0.147	12.684	4.732	0.011
marital status	-4.798	6.028	0.435	------	-----	----

Our results faced certain limitations like small sample size, cross sectional study design, absence of comparable control (women without breast cancer), absence of certain aspects of QOL [37] and several aspects of morbidity including pain, range of motion and sensory complaints of affected arm [38, 39], grade of tumor, duration of disease, pre-post surgery comparison was not considered which were very necessary to evaluate the better QOL. Separate studies should be conducted in younger breast cancer patients and older women to determine the effect of age on breast cancer survivors. Prospective studies are needed to investigate the influence of demographic and clinical factors on QOL. The QOL C-30 not covered the psychological characteristics of patients, so variables regarding psychological aspects may be studied separately. The effect of radiotherapy and chemotherapy on QOL was not investigated in this study; future research should be addressed the effect of radiotherapy and chemotherapy on QOL. Furthermore; Researchers should identify the need of Psych-Oncological concepts, which affect the QOL of breast cancer patients [40]. No grant or financial and support was received to conduct the study. Our results are preliminary and not conclusive.

In conclusion, the impact of demographic factors on QOL in breast cancer patients was discussed and also our study had identified the strength of relationship between certain demographic factors and QOL of breast cancer patients. In short, the participating patients showed a poor quality of life

as compared to other results. It is recommended that better counseling and financial support with high quality medical services may improve the QOL of breast cancer patients.

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Conflict of Interest

The authors have no conflict of interest in this article, and also declare that no fund was received for this article.

Authors' Contribution

SSB designed and sketched the study, SA designed and collected data, SR compiled the data, SE reviewed the literature and wrote the introduction, IM analyzed the data, wrote the results, discussion where RR edited and monitored the overall study.

References

1. Ferlay J, Bray F, Pisani Pand, Parkin D M. GLOBOCAN (2002). Cancer incidence, Mortality and prevalence Worldwide. IARC Cancer base No. 5, Version 2.0.IARC Press .Lyon .2004 .

2. Sasco AJ. Epidemiology of Breast Cancer: an Environmental disease? Apmis 2001, 109: 321-32.

3. Bhurgri Y: Karachi cancer registry data-implication for the national cancer control program of Pakistan. Asian Pac J Cancer prev .2004; 5 (I):77-82.

4. Safaee A, Moghimi-Dehkordi B, Zeighami B, Tabatabaee HR, Pourhoseingholi MA. Predictors of quality of life in breast cancer patients under chemotherapy. Indian Journal of Cancer, July-September 2008; 45( ): 107-11.

5. Bhatty I, Shaharyar, Ibrahim M, Chaudhry ML. Complications after modified radical Mastectomy in early Breast Cancer.Pak J Med Sci .April-June 2004; 20(2): 125-30.

6. Vinokur AD, Threatt BA, Vinokur-Kaplan D, Satariano WA. The process of recovery from breast cancer for younger and older patients: changes during the first year. Cancer. 1990; 65:1242–54.

7. Levy SM, Haynes LT, Herberman RB, Lee J, McFeeley S, Kirkwood J. Mastectomy versus breast conservation surgery: mental health effects at long-term follow-up. Health Psychol. 1992; 11:349–54.

8. Hiraoka M, Masaki K, Chikako Y, Michihide M. Current status and perspective of radiation therapy. JMAJ 2002; 45(10): 434-9.

9. Dogar IA, Azeem MW, Kiran M, Hussain I, Mehmood K, Hina I. Depression and anxiety in cancer patients in outpatient department of a tertiary care hospital in Pakistan.Pak J Med Sci .2009; 25(5):734-7.

10. Stephanie R. Burwell, E. Avis, Sexual Problems in Young Women after Breast Cancer Surgery. Journal of Clinical Oncology.2006 ;24(18): 2815-21.

11. Hartl K, Janni W, Kastner R, Sommer H, Strobl B, Rack B and Stauber M. Impact of medical and demographic factors on long-term quality of life and body image of breast cancer patients. Annals of Oncology .2003; 14:1064 -71.

12. Stanton AL, Krishnan L, Collins CA. Form or function? Part 1. Subjective cosmetic and functional correlates of quality of life in women treated with breast-conserving surgical procedures and radiotherapy. Cancer 2001; 91:2273–81.

13. Sayyari AA, Gray A, Lari MA. The Evaluation of Quality of Life through Global Experiences and its necessity in Iran.Med Edification .2001; 41:30.3 .

14. Pourhoseingholi MA,Safaee A,Moghimi-Dehkordi B, Zeighami B, Faghihzadeh S, Tabatabaee HR, Pourhoseingholi A.Quality of life in Breast Cancer Patients-A Quantile Regression Analysis. Asian Pacific Journal of Cancer Prevention.2008 ; 487-90.

15. Barry P. Psychosial Nursing Care of physical ill patient's (3rd Ed.) Philadelphia. Lippincott Company: 183-5.

16. Grumann M, Schlag PM. An assessment of quality of life in cancer patients: complexity, criticism, challenges. Onkologie .2001; 24:10 -5.

17. Sprangers MA, Groenvold M, Arraras JI, Franklin J, te Velde A, Muller M, *et al*. The European Organization for Research and Treatment of Cancer Breast Cancer-specific quality of life questionnaire module: first results from a three-country field study. J Clin Oncol .1996; 14:2756–68.

18. Schipper H, Clinch J, McMurray A. Measuring the quality of life of cancer patients: The Functional Living-Index-Cancer: development and validation. J Clin Oncol.1984; 2:472–83.

19. De Haes JCJM, van Knippenberg FCE, Neijt JP. Measuring psychological and physical distress in cancer patients: structure and application of the Rotterdam Symptom Checklist.Br J Cancer .1990 ; 62:1034–8.

20. Schag CAC, Ganz PA, Heinrich RL. Cancer Rehabilitation Evaluation System-Short Form (CARES-SF): A cancer specific rehabilitation and quality of life instrument. Cancer .1991; 68:1406–13.

21. Brady MJ, Cella DF, Mo F. Reliability and validity of the Functional Assessment of Cancer Therapy-Breast quality-of-life instrument.J Clin Oncol .1997; 15:974–86.

22. Holzner B, G. Kemmler, M. Kopp, R. Moschen, H. Schweigkofler, M. Dunser, R. Margreiter, W. W. Fleischhacker, and B. Sperner-Unterweger. Quality of life in breast cancer patients—not enough attention for long-term survivors? Psychosomatics 2001 March 42:117-23.

23. Quality of life unit, EORTC data centre, Avenue E Mounier 83-B11, 1200 Brussels, Belgium. Website; http://www.eortc.be.

24. Fayers PM, Aaronson NK, Bjordal K, Groenvold M, Curran D, Bottomley A. On behalf of the EORTC Quality of Life Group. EORTC QLQ-C30 Scoring Manual, 3rd ed. Brussels:EORTC ; 2001.

25. Toth G, Sakaguchi T, Mikami Y, Hirose H, Tsukuda M. A pilot study of the translation, cultural adaptation and validation of the EORTC head and neck cancer quality of life questionnaire module (QLQHandN35) for use in Japan Auris Nasus Larynx.2005 ; 32:175-83.

26. Hopwood P, Haviland J, Mill J, Sumo G, M Bliss J; START Trial Management Group. The impact of age and clinical factors on quality of life in early breast cancer: An analysis of 2208 women recruited to the UK START Trial (Standardization of Breast Radiotherapy Trial). Breast 2007; 16:241-51.

27. Sathvik BS, Parthasarathi G, Narahari MG, Gurudev KC. An assessment of the quality of life in hemodialysis patients using the WHOQOL-BREF questionnaire.Indian J Nephrol .2008; 18:141-9.

28. King MT. The interpretation of scores from the EORTC, quality of life questionnaire QLQ c-30 Qual life Res.1996 ; 5:555 -67.

29. Peintinger F, Reitsamer R, Stranzl H and Ralph G. Comparison of Quality of Life and arm complaints after axillary lymph node dissection vs sentinel lymph node biopsy in breast cancer patients. British Journal of Cancer.2003; 89:648-52.

30. Arndt V, Merx H, Stegmaier C, Zeigler H, Brenner H. Persistence of restriction in quality of life from the first to third year after diagnosis in women with breast cancer. J Clin Oncol. 2005; 23:4945 -53.

31. Klee M, Thranov I, Machin D. Life after Radiotherapy: The psychological and social effects experienced by women treated for advanced stage of cervical cancer.Gynecol oncol .2000; 7:5- 13.

32. Yong C, Xrao-Ou S. Yutanv. G, Cai H, Wen W, Ruan ZX, Jin F, *et al*. The Long-term impact of medical and socio-demographic factor on quality of breast cancer survivors among Chinese women. Breast cancer Res Treat. 2004; 87:135 -47.

33. Janz NK. Mujahid M. Lantz PM.Population—based study of the relationship of treatment and socio-demographic on quality of life for early stage breast cancer.Qual Life Res .2005 ; 14:1467-79.

34. Pandey M, Thomas BC, Seri Rekha P, Ramdas K, Ratheesan K. quality of life determinants in women with breast cancer undergoing treatment with curative intent. World J Surg Oncol.2005 ; 3:63-72.

35. Giedre Bulotiene, Valerijus Ostapenko, Jonas Veselinusas. Influence of social factors on quality of life after breast cancer surgical treatment. Acta Medica Lituanica.2005 .12 (2):79-83.

36. Greimel E, Theil I, Peintinger F, Cegner I, Pongratz E. Prospective assessment of quality of lifeof female cancer patients.Gyneacol Oncol .2002 ; 85:140-7.

37. Janni W, Rjosk D, Dimfli T, Heartl K, Stroble B, Hepp F, *et al*. Quality of life influenced by primary surgical treatment for stage I-III breast cancer-long term follow-up of a matched pair analysis. Ann Surg Oncol .2001; 8:542-8.

38. Haid A, Koberle_Wuhrer R, Knauer M, Burtscher J, Fritzsche H, Peschina W, *et al*. Morbidity of breast cancer patients following complete axillary dissection or sentinel node biopsy only: a comparative evaluation. Breast Cancer Res Treat.2002; 73:31 -6.

39. Temple Lk, Baron R, Cody HS, Fey JV, Thaler HAT, Borgen PI, *et al*. Sensory morbidity after sentinel lymph node biopsy and axillary dissection: a prospective study of 233 women.Ann Surg Oncol .2002; 9:654 -62.

40. Alter CL, Fleishman SB, Kornblith AB. Supportive telephone interventions for patients receiving chemotherapy. A pilot study. Psychosomatics .1996; 37:425-31.