ORIGINAL ARTICLE

QUALITY OF LIFE AND RELATIONSHIP BETWEEN FUNCTIONING AND SYMPTOMS OF FEMALE PATIENTS WITH BREAST CANCER BEFORE CHEMOTHERAPY IN A CANCER CLINIC AT YANGON, MYANMAR

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Background: Better quality of life (QOL) is associated with longer survival in cancer patients. This study evaluated the QOL and relationship between functioning and symptoms among female breast cancer patients before chemotherapy. **Methods**: Cross-sectional study was conducted by including 74 participants attending a cancer clinic. European Organization for Research and Treatment of Cancer Quality of Life Questionnaire(s)-Core30 was applied for assessing QOL. It was composed of three domains namely global health status/QOL, functioning (includes five categories) and symptoms (includes nine categories). Pearson correlation and multiple linear regression were performed to find the relationship between functioning and symptoms in participants. The study was approved by Institutional Review Board of Defence Services Medical Research Centre, Myanmar with approval number IRB/2018/34. **Results**: Global health status/QOL score was fair (61.8±20.1). Among the five categories of functioning, cognitive functioning score (83.6±19.8) was the highest and role functioning score (66.4±29.3) was the lowest. Among symptoms, insomnia score (29.3±30.7) was the highest and diarrhoea score (0.9±5.4) was the lowest. When Pearson correlation was performed, functioning and symptoms were negatively correlated. Fatigue had significant (p<0.001) moderate negative correlation with physical functioning, role functioning and emotional functioning, whereas pain with role functioning (p<0.001). When linear regression was performed, nausea & vomiting was the strongest predictor for impaired global health status/QOL (p<0.05), while fatigue was the strongest predictor for impairment in all five categories of functioning (p<0.05). **Conclusion**: Functioning and symptoms were negatively correlated in breast cancer patients. Nausea & vomiting and fatigue were the strongest predictors for impaired QOL.

Keywords: Breast Cancer; Chemotherapy; Functioning; Symptoms; Quality of Life; QOL

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INTRODUCTION

Breast cancer is the most frequently occurring cancer among the female population worldwide.[1] Around 2 million new cases and half million deaths by breast cancer were reported during 2018, globally.[2] In South-Eastern Asia, approximately 137,514 new cases of breast cancer and 50,935 deaths due to this problem have been reported.[3] In Myanmar, there were 6,277 new cases and 2,995 breast cancer deaths in 2018.[4] Breast cancer is responsible for the highest amount of cancer-related deaths among the female population and the occurrence is rising in every region of the world.[1]

Quality of life (QOL) is an essential aspect of cancer patients.[5] Assessment of QOL is more and more being discussed as an important outcome assessment for the quality of oncology care. It mirrors the perception of patients on the impact of diagnosis and treatment of cancer on their daily lives.[6] Moreover, better QOL is related to a decreased risk of mortality, decreased risk of recurrence[7] and longer survival[8] of cancer patients.

During different types of treatment, patients face treatment associated side effects including pain, nausea and fatigue, which have negative impact on their QOL.[9,10] Sleeping problems, dyspnoea, appetite loss[11] and financial burden also contribute to poor QOL[12].

QOL scales have demonstrated their complementary role to standard clinical assessment as they report well-being, mental state and functional aspects of the patient.[8] Evaluating QOL of breast cancer patients provides beneficial information to clinicians and patients about the possible effects of treatments on health and functional abilities[9], and using it as a problem-solving tool in follow-up care[13]. Predictors of QOL may help in detecting breast cancer patients at risk of poor QOL[14] and developing intervention programs to promote QOL in breast cancer patients[11].

After searching online literature including medical websites in Myanmar, we could not identify the previous study which assessed the QOL and the relationship between functioning and symptoms of female breast cancer patients before chemotherapy in Myanmar. Therefore, the aim of this study was to examine the QOL and the relationship between functioning and symptoms in QOL among female breast cancer patients before chemotherapy in a cancer clinic in Yangon, Myanmar.

MATERIAL AND METHODS

A cross-sectional study was done among female breast cancer patients at Shwe-Yaung-Hnin-Si-Cancer-Foundation clinic, where patients received free-of-charge chemotherapy, in Yangon from January to August 2019. Newly registered patients of 18 years and older with ECOG performance status of 0–2 were included in this study. Patients receiving a second or later cycles of chemotherapy, or recurrent cases were excluded. In consideration with α level of 0.05, the precision of 7%, expected prevalence of good QOL at 10%[13], and allowing for a 5% refusal rate, the required sample size was 74. Recruitment of participants was done by convenient sampling method.

Data collection was performed by using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire(s)-Core30 (EORTC QLQ-C30 version 3.0).[15] There are 30 questions composing of three domains; global health status/QOL, functioning (including five categories namely physical, role, emotional, cognitive and social functioning) and symptoms (including nine categories namely fatigue, nausea & vomiting, pain, dyspnoea, insomnia, appetite loss, constipation, diarrhoea and financial difficulties). The two questions for global health status/QOL are scored in seven points Likert scale: very poor (1p) to excellent (7p). The 28 questions for functioning and symptoms are scored in four points Likert scale: not at all (1p) to very much (4p). The questionnaire scoring is done in two steps, first to calculate the raw scores (the mean of the scores for each item in a given scale) and second to calculate standardized scores (raw scores are transformed into scores of 0–100 by linear transformation).

In this study, the EORTC QLQ-C30 questionnaire was reviewed by three Myanmar experts for content validity by means of item-objective congruence index and each item scoring ≥0.5 was retained. Two experts underwent translation and back-translation process independently. Twelve female breast cancer patients, not participating in the study were involved in the pilot testing. The Cronbach's alpha score for internal consistency reliability of the questionnaire was 0.78. The study was reviewed by the Institutional Review Board of the Defence Services Medical Research Centre, Myanmar and approved (No: IRB/2018/34). Written informed consent was obtained from each participant before data collection.

For data analysis, SPSS version 22 was used. QOL scores were described as mean and standard deviation. Pearson correlation was performed to measure the strength of a linear relationship between functioning and symptoms. Multiple linear regression analysis was done for modelling the relationship between functioning and symptoms. Statistical significance was set at $p<0.05$.

RESULTS

In this study, participants were 74 breast cancer patients. Table-1 describes mean scores of outcome domains in QOL. For global health status/QOL and functioning, greater score represents higher QOL and functioning. Global health status/QOL score was fair with a mean score of 61.8±20.1. Among five categories of functioning, cognitive functioning score (83.6±19.8) was the highest and role functioning score (66.4±29.3) was the lowest. On the contrary, greater score of symptoms represents the worsening of symptoms or problems. Among the symptoms, insomnia score (29.3±30.7) was the highest and diarrhoea score (0.9±5.4) was the lowest.

Correlation between functioning and symptoms in QOL are shown in table-2. Most of the symptoms had a significant ($p<0.05$) negative correlation with global health status/QOL and functioning. Additionally, significant ($p<0.001$) moderate negative correlations were found between fatigue and physical functioning, fatigue and role functioning, fatigue and emotional functioning, and pain and role functioning. The results demonstrated that when the symptoms became worse, the functioning of the participants deteriorated.

Multiple linear regression analysis was conducted for modelling the association between functioning and symptoms in QOL and results are shown in table-3. Fatigue, nausea & vomiting and financial difficulties were significant predictors for impaired global health status/QOL in the final model where nausea & vomiting was the strongest predictor. Fatigue was the only significant predictor for impaired physical functioning, cognitive functioning and social functioning. Fatigue and pain were the significant predictors for impaired role functioning, while fatigue, pain and financial difficulties were the significant predictors for impaired emotional functioning in the final models. Among the symptoms, fatigue was the strongest predictor for all five categories of functioning.

Table-1: Quality of life scores of the participants

Variables	Scores (Mean±SD)	The range of achievable score (Min-Max)	The range of achieved score (Min-Max)
Global Health Status/QOL			
Global Health Status/QOL	61.8±20.1	0–100	8.3–100
Functioning			
Physical Functioning	80.4±15.2	0–100	40–100
Role Functioning	66.4±29.3	0–100	0 –100
Emotional Functioning	73.3±21.0	0–100	8.3–100
Cognitive Functioning	83.6±19.8	0–100	33.3–100
Social Functioning	80.4±21.8	0–100	0–100
Symptoms			
Fatigue	22.8±18.0	0–100	0–77.7
Nausea & Vomiting	4.7±11.2	0–100	0–50
Pain	18.5±25.4	0–100	0–100
Dyspnoea	11.3±21.6	0–100	0–100
Insomnia	29.3±30.7	0–100	0 –100
Appetite Loss	15.3±24.2	0–100	0–100
Constipation	18.5±24.1	0–100	0-100
Diarrhoea	0.9±5.4	0–100	0–33.3
Financial Difficulties	57.7±32.8	0–100	0–100

SD=Standard Deviation, Min=Minimum Score, Max=Maximum Score

Table-2: Correlation between functioning and symptoms of the participants

		QL2	Functioning				
			PF2	RF2	EF	CF	SF
Fatigue	r	- .331	- .608	- .500	- .521	- .335	- .358
	p-value	.004	< .001	< .001	< .001	.004	.002
Nausea and Vomiting	r	- .310	- .218	- .020	- .184	- .159	- .161
	p-value	.007	.062	.866	.116	.176	.172
Pain	r	- .277	- .325	- .543	- .406	- .243	- .162
	p-value	.017	.005	< .001	< .001	.037	.167
Dyspnoea	r	- .276	- .368	- .153	- .353	- .149	- .237
	p-value	.017	.001	.194	.002	.206	.042
Insomnia	r	- .322	- .400	- .391	- .372	- .199	- .268
	p-value	.005	< .001	.001	.001	.089	.021
Appetite Loss	r	- .244	- .325	- .264	- .309	- .325	- .246
	p-value	.036	.005	.023	.007	.005	.035
Constipation	r	- .103	- .296	- .220	- .058	- .120	- .229
	p-value	.382	.010	.059	.625	.307	.050
Diarrhoea	r	.006	- .262	.001	- .120	- .143	- .106
	p-value	.962	.024	.991	.309	.223	.369
Financial Difficulties	r	- .407	.002	- .066	- .416	- .149	- .229
	p-value	< .001	.986	.579	< .001	.204	.049

QL2=Global Health Status/QOL. PF2=Physical Functioning. RF2=Role Functioning. EF=Emotional Functioning. CF=Cognitive Functioning. SF=Social Functioning. r=Pearson Correlation Coefficient

Table-3: Multiple linear regression models predicting global health status/QOL and functioning

	QL2	Functioning				
		PF2	RF2	EF	CF	SF
	Coefficients (B)	Coefficients (B)	Coefficients (B)	Coefficients (B)	Coefficients (B)	Coefficients (B)
Constant	82.0	92.1	88.0	98.0	91.9	90.2
Fatigue	- 0.251*	- 0.514**	- 0.561*	- 0.408*	- 0.368*	- 0.433*
Nausea and Vomiting	- 0.501*					
Pain			- 0.477**	- 0.210*		
Financial Difficulties	- 0.211*			- 0.201*		
R Square	0.30**	0.37**	0.39**	0.41**	0.11*	0.12*

*p< .01, ** p< .001. QL2=Global Health Status/QOL. PF2=Physical Functioning. RF2=Role Functioning. EF=Emotional Functioning. CF=Cognitive Functioning. SF=Social Functioning

DISCUSSION

Assessment of QOL mirrors the experience of patients about the effects of cancer diagnosis and treatment.[5,6] Furthermore, enhanced QOL status is also linked to longer survival in cancer patients.[8] Hence, it is essential to assess the QOL and address its related factors in cancer patients. In this study, QOL and the relationship between functioning and symptoms in QOL were examined for breast cancer patients in Myanmar.

We found that global health status/QOL of participants was fair with a mean score of 61.8±20.1. It was comparable to the reference value of 61.8±24.6 which was reported by the EORTC group[16] but lower than the scores in previous Myanmar[17] and Morocco[18] studies (66.1±21.2 and 68.5±18.5 respectively), and higher than in Egypt[19] and Iran[14] studies (51.9±25.7 and 59.1±17.4 respectively). These differences could be clarified by different treatment protocols in those studies: only combination therapies in Myanmar study[17], surgery only or chemotherapy only or combination therapies in Moroccan study[18], surgery only or radiation only or combination therapies in Egyptian study [19], chemotherapy only or combination therapies in the Iranian one[14], while in our study, patients had surgery only before adjuvant chemotherapy. Indeed, the study of El-Sharkawi reported that combination treatment was associated with the poorest QOL, whereas radiotherapy with better QOL than chemotherapy[20].

In our study, the cognitive functioning score was highest among five functional scales which was similar to the findings of the two studies done in Iran.[14,21] In a study conducted in Canada, chemotherapy was related to impairment in cognitive functioning.[22] Our finding of no-association could be clarified that our survey was conducted before the start of chemotherapy and therefore, too early to detect this association. The role functioning score was the lowest among five functional scales possibly due to feeling great work pressure as well as commitments to their roles as mothers and housewives.[23] A study conducted among breast cancer patients in Thailand found that they had relatively high QOL (>80%) in physical and emotional domains at least 6 months after completion of definitive treatment.[23] Another study conducted in Thailand found that all QOL domains (physical well-being, social well-being, emotional well-being, functional well-being, and breast cancer subscale) were high at least one year after completion of breast conserving surgery.[25] The different findings between our study and these studies could be explained by the time of assessment. The QOL scores of the patients in these two studies were assessed at least 6 months after the treatment while we assessed just before chemotherapy.

Fatigue and insomnia were the most problematic symptoms that show the highest scores in our study. A study conducted among five different types of cancer survivors in Thailand found that the most frequently reported symptom was insomnia after the completion of primary treatment.[26] Our findings are confirmed by the quoted similar study done in Egypt[19], two studies in Saudi Arabia[27,28] and one study in USA[29]. Moreover, patients with fatigue and insomnia before chemotherapy suffered more fatigue and poor QOL during chemotherapy than women with fewer symptoms before chemotherapy in another USA study.[30] Diarrhoea was the least problematic symptom and similar findings were found in the study done in Egypt[19] and two studies in Saudi Arabia[27,28].

When Pearson correlation was used, we found that global health status/QOL had weak negative correlations with fatigue, nausea & vomiting, pain, dyspnoea, insomnia, appetite loss and financial difficulties. Constipation and diarrhoea status of the participants were not correlated with global health status/QOL. The study of Safaee. A. in Iran found that fatigue, nausea & vomiting, pain, dyspnoea, insomnia, and constipation had weak negative correlations with global health status/QOL of the participants[21], the study of Arndt. V. in Germany revealed moderate negative correlations with fatigue and pain, and weak negative correlations with nausea & vomiting, dyspnoea, insomnia, appetite loss, constipation, diarrhoea and financial difficulties[11], whereas the study of Saleha. B. in Pakistan reported a weak positive correlation between global health status/QOL and dyspnoea[31]. However, the previous study in Myanmar in 2016 didn't find any association between global health status/QOL and symptoms.[17]

Our study found that physical functioning had moderate negative correlation with fatigue, role functioning with fatigue and pain, emotional functioning with fatigue, while cognitive functioning and social functioning had weak negative correlations with some symptoms, whereas the quoted study in Germany[11] found that physical functioning had moderate negative correlations with fatigue and pain, role functioning with fatigue only, and emotional functioning with fatigue, pain, and insomnia. Cognitive and social functioning had moderate negative correlations with fatigue and pain. Generally, cancer patients presenting with high symptom scores are likely to have poorer functional scores and overall QOL.[11]

When multiple linear regression analysis was performed, we found that fatigue, nausea & vomiting, pain, and financial difficulties were identified predictors for global health status/QOL and functioning. Similar findings were reported in the study in Germany.[11] In a study in Croatia, appetite loss also was a significant predictor for global health status/QOL.[32]

CONCLUSION

This study found that functioning and symptoms were negatively correlated in breast cancer patients, and it demonstrated that when the symptoms became worse, the functioning of the participants deteriorated. Nausea & vomiting and fatigue were the strongest predictors for poor QOL. Therefore, the negative effect of symptoms on QOL should be acknowledged. Identifying the causes and treating the symptoms will lead to improving QOL of breast cancer patients.

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