

Research Reports

Predictors of Quality Of Life in a Sample of Lebanese Patients with Cancer

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Abstract

Quality of life (QoL) is a multi-dimensional phenomenon bordering on all aspects of one's life. The aim of this study was to determine the factors that are considered predictors of QoL in a Lebanese sample of cancer patients attending a tertiary healthcare center. A cross-sectional descriptive survey was used. A total of 200 adult oncology patients over 18 years of age were interviewed over a one-year period, 2009-2010. Two widely known instruments were used; the European Organization for Research and Treatment of Cancer-Quality of Life Questionnaire (EORTC QLQ-C30) and the Memorial Symptom Assessment Scale (MSAS) to evaluate the QoL and symptoms experienced in this population group. The reliability coefficients of both instruments were generally satisfactory. The results showed significant predictors of better QoL were being married ($p = 0.04$) and being single ($p = 0.04$), having breast ($p = 0.01$) and gastro-intestinal cancer ($p = 0.02$) as primary cancer sites and emotional functioning ($p = 0.00$); significant predictors of poorer QoL were the MSAS total symptoms ($p = 0.01$) and fatigue ($p = 0.00$). Our findings provide insight into the predictors of QoL of cancer patients and set the path for future research in order to improve the QoL of cancer patients in Lebanon.

Keywords: predictors, quality of life, cancer, Lebanon, MSAS, EORTC QLQ-C30

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Introduction

The aim of care is to provide the best quality of life (QoL) for patients and their families. However there is little evidence about the true meaning of QoL from the patient's perspective, and for the use of QoL as an outcome measure for the quality of care provided to patients with cancer (Jocham, Dassen, Widdershoven, & Halfens, 2006). Although QoL is considered a construct hard to define, many definitions are available in the literature; the most broadly used definition is the one provided by the World Health Organization as the "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (World Health Organization, 1996). This definition emphasizes the multi-dimensional and subjective nature of QoL, as well as the breadth of its scope, since it borders on all aspects of one's life.

Healthcare professionals play a key role in the decision making process concerning the care of patients with cancer and they frequently use QoL as a measure to judge the progress of the disease and success of treatment provided. Being a multi-dimensional construct, many psychosocial and medical factors have been reported in the

literature to predict the QoL of patients; interventions targeted towards modifying these predictors will eventually influence QoL either positively or negatively (Lehto, Ojanen, & Kellokumpu-Lehtinen, 2005).

In a study conducted on patients with colorectal cancer, predictors of better social, emotional, and physical well-being were better general health and better quality of care (Yost, Hahn, Zaslavsky, Ayanian, & West, 2008). In a sample of Brazilian patients with lung cancer, the predictors positively affecting QoL were better pulmonary function, the six-minute walking test, and less lung resection (Saad, Botega, & Toro, 2007). Psychosocial factors were reported to be strong predictors of better quality of life in patients newly diagnosed with melanoma and breast cancer in Finland (Lehto et al., 2005). In a German sample of women with breast cancer, fatigue was the strongest negative predictor of all functional scores and overall QoL (Arndt, Stegmaier, Ziegler, & Brenner, 2006). In a large sample of patients with different cancer sites (Parker, Baile, De Moore, & Cohen, 2003), older age and better social support were associated with less anxiety; older age, being married, and social support were associated with less depressive symptoms; males, individuals whose cancer had not recurred and those not undergoing active treatment had better physical health.

In summary, several studies looked at predictors of QoL in patients with different types of cancer from a multidimensional and holistic point of view. In Lebanon, interest in QoL research in the cancer patient population has been on the rise especially with the increased number of patients diagnosed with cancer and the availability of the advanced therapies that are prolonging patients' lives. Despite this interest, no studies have been conducted so far on the predictors of QoL in patients with cancer in Lebanon. A better understanding of these predictors will assist health care professionals in developing and implementing a proactive health care management plan for patients with cancer. The aim of this study was to determine the factors that are considered predictors of QoL in a Lebanese sample of cancer patients attending a tertiary healthcare center.

Methods

Study Design and Sample

The study was a cross sectional descriptive survey targeting adult oncology patients (age ≥ 18 years) at the American University of Beirut-Medical Center that provides care to a wide range of patients from different areas in Lebanon and with different socio-economic backgrounds. Participants were recruited from the Basile Cancer Center (outpatient and inpatient units) in a sequential manner over a period of one year (2009-2010); participants who fit the inclusion criteria (age ≥ 18 years, diagnosed with cancer for more than one month, and are aware of their cancer diagnosis) were approached by the interviewers and asked for their willingness to participate in the study. Based on eligibility criteria, the interviewers prior to initiating contact screened the patients through their medical records on a daily basis until sample size was secured. The sample size was calculated based on an estimate of 0.5 for prevalence of outcomes (such as symptom prevalence) and a precision of 7% for a 95% confidence interval; the required sample size was calculated to be 197. Sample size calculation was done using the PASS resource part of the NCSS software.

Questionnaires

Two widely known instruments were used to evaluate QoL and symptoms: the European Organization for Research and treatment of Cancer-Quality of Life Questionnaire (EORTC QLQ-C30) and the Memorial Symptom Assessment Scale (MSAS). Good validity and reliability measures of these two instruments have been established in several

studies (Aaronson et al., 1993; Aaronson, Bullinger, & Ahmedzai, 1988; Lundh Hagelin, Seiger, & Fürst, 2006; Montazeri et al., 1999; Portenoy et al., 1994; Sprangers et al., 1998).

The EORTC QLQ-C30 assesses five functional scales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea and vomiting), and a global health status and quality of life scale (GHS/QoL). The remaining five single items assess other symptoms commonly reported by cancer patients (dyspnea, insomnia, appetite loss, constipation, and diarrhea). According to the scoring manual of the EORTC QLQ-C30, all items are transformed to a scale from 0 to 100, where higher scores indicate better functioning. With regard to the symptom subscales, higher scores indicate the presence of more symptoms/ problems.

The MSAS measures 32 psychological and physical symptoms in terms of prevalence, frequency, severity, and distress. The mean scores (frequency, severity, and distress of the symptoms) are computed for 11 most prevalent physical symptoms (MSAS-PHYS), for five most prevalent psychological symptoms (MSAS-PSYCH), and for the total symptoms (TMSAS). A demographic section was added by the authors.

The instrument was translated to Lebanese Arabic using the back-translation method (Varricchio, 2004); it was validated for cultural appropriateness by four experts in the field. The experts suggested removing two items from the MSAS; feeling irritable and feeling drowsy because they are respectively very similar in meaning when translated to Lebanese Arabic to two other symptoms; feeling nervous and dizziness that are already being assessed in the MSAS. The instrument was then pilot tested on ten oncology patients and no further adjustments were needed.

Data Collection Procedure

Data collection was initiated after receiving Institutional Review Board approval from the American University of Beirut. Two trained interviewers and a research assistant were in charge of securing the informed consents and conducting face to face interviews. The personal interview method was adopted because it is viewed as the best method to ensure high quality data and low percentage missing items. All the interviews were carried out separately in a private setting/room available at the three oncology units of the center. Data were collected over a one-year period and sample size secured.

Statistical Analysis

Sample characteristics were analyzed using frequencies (N), percentages, means and Standard Deviations (SD). For the EORTC QLQ-C30 and MSAS, scores were computed according to the scoring guidelines provided by the authors of the instruments (Fayers et al., 2001; Portenoy et al., 1994).

Internal consistency of the EORTC QLQ-C30 and the MSAS Lebanese Arabic translated versions were assessed using Cronbach's alpha coefficients; where a value of ≥ 0.70 was sought (Nunnally & Bernstein, 1994).

Pearson correlations were computed between GHS/QoL and the EORTC QLQ-C30 functioning scales and between GHS/QoL and the MSAS symptoms scales.

The ability of the factors to predict GHS/QoL was investigated using linear regression analyses. A separate model was created to investigate predictors of the five different functioning scales: physical, role, emotional, cognitive, and social functioning. A second model was created to investigate predictors of the EORTC QLQ-C30 symptoms scales; a third model was created to investigate predictors of the MSAS symptoms scales: psychological, physical, and total; and a fourth model was created to investigate predictors of the demographic and clinical

characteristics of the participants namely gender, age, social status, educational level, primary cancer site, time since diagnosis, treatment received, and presence of metastasis. Dummy variables were computed for the categorical variables (social status and educational level). The final model was created combining all the significant predictors of the first four models. A probability level of 0.05 was used for statistical significance. The statistical package used was SPSS, version 19.

Results

Participants' Characteristics

The majority of the interviews (95%) were conducted with patients in the outpatient units (patients coming for same day treatment). Only 49 patients refused to take part in the study due to lack of time, feeling sleepy or tired. Table 1 summarizes the clinical and demographic characteristics of the 200 participants who took part in the study. The majority of the sample was female (63%), married (78%), unemployed (60%), and with up to university education (46%). The most prevalent cancer site was breast cancer (44.5%), the mean time since diagnosis was 30.61 (SD = 40.84) months; metastasis to other cancer sites was reported by 34.5%, and the most common treatment received was chemotherapy (60%). Significant differences between males and females were seen for age, employment status, marital status, primary cancer site, and treatment received (chemotherapy and hormone therapy) (Table 1).

Table 1

Characteristics of Participants (N = 200)

Characteristic	Total N (%)	Males 74 (37%)	Females 126 (63%)
Age			
Mean (SD)	54 (13.60)	57.77 (15.26)	51.89 (11.99)
18-34	17 (8.50%)	7 (9.50%)	10 (7.90%)
35-54	87 (43.50%)	19 (25.70%)	68 (54.00%)
≥55	96 (48.00%)	48 (64.90%)	48 (38.10%)
Employment			
Employed	80 (40.00%)	42 (56.80%)	38 (30.20%)
Unemployed	120 (60.00%)	32 (43.20%)	88 (69.80%)
Educational level			
Up to elementary	37 (18.50%)	11 (14.90%)	26 (20.60%)
Up to secondary/technical	71 (35.50%)	25 (33.80%)	46 (36.50%)
Up to university	92 (46.00%)	38 (51.40%)	54 (42.90%)
Marital status			
Married	156 (78.00%)	61 (82.40%)	95 (75.40%)
Single	25 (12.50%)	11 (14.90%)	14 (11.10%)
Divorced/separated/widowed	19 (9.50%)	2 (2.70%)	17 (13.50%)
Primary cancer site			
Breast	89 (44.50%)	1 (1.40%)	88 (69.80%)
Gastro-Intestinal system	36 (18.00%)	25 (33.80%)	11 (8.70%)
Blood	20 (10.00%)	14 (18.90%)	6 (4.80%)
Lymphomas	13 (6.50%)	6 (8.10%)	7 (5.60%)
Lung	11 (5.50%)	8 (10.80%)	3 (2.40%)

Characteristic	Total N (%)	Males 74 (37%)	Females 126 (63%)
Reproductive Tract	11 (5.50%)	7 (9.50%)	4 (3.20%)
Head and Neck	10 (5.00%)	6 (8.10%)	4 (3.20%)
Urinary Tract	5 (2.50%)	4 (5.40%)	1 (0.80%)
Bone	4 (2.00%)	2 (2.70%)	2 (1.60%)
I don't know	1 (0.50%)	1 (1.40%)	0 (0.00%)
Metastasis	69 (34.50%)	26 (35.10%)	43 (34.10%)
Time since diagnosis (months)			
Mean (SD)	30.61 (40.84)	32.51 (46.48)	29.49 (37.29)
Treatment received			
Chemotherapy	120 (60.00%)	51 (68.90%)	69 (54.80%)
Surgery	108 (54.00%)	35 (47.30%)	73 (57.90%)
Radiation	49 (24.50%)	17 (23.00%)	32 (25.40%)
Hormone therapy	15 (7.50%)	2 (2.70%)	13 (10.30%)

Note. N = Number of participants in the study.

Reliability

In the EORTC QLQ-C30, the Cronbach's alpha coefficients of the subscales were greater than 0.70 with the exception of cognitive functioning, social functioning, and nausea and vomiting.

In the MSAS, reliability coefficients for the MSAS-PSYCH, MSAS-PHYS, and TMSAS were 0.72, 0.73 and 0.82 respectively.

Correlation Analyses

The GHS/QoL scale correlated substantially and positively with all functioning scales ($r = 0.25-0.50$; $p = 0.00$) (Table 2).

Table 2

Pearson Correlation Between Global Health Status/Quality of Life and Functioning Scales, MSAS Scales

	GHS/QoL Correlation
EORTC QLQ-C30 Functional Scales	
Physical Functioning	0.39*
Role Functioning	0.45*
Emotional Functioning	0.50*
Cognitive Functioning	0.25*
Social Functioning	0.29*
MSAS	
MSAS-PSYCH	-0.31*
MSAS-PHYS	-0.48*
TMSAS	-0.51*

* $p < 0.01$, two-tailed.

The strongest correlation was for the emotional functioning ($r = 0.50$) and the role functioning ($r = 0.45$). On the other hand, all symptoms scales (physical, psychological, and total) were negatively correlated and the strongest correlation was for the total symptoms ($r = -0.51$).

Factors Predicting QoL

According to the first model, the physical ($p = 0.07$), role ($p = 0.01$), and emotional ($p = 0.00$) functioning were the significant predictors of better QoL. The included factors accounted for 35.4% of the variance of the general QoL scores. In the second model, the various symptoms of the EORTC QLQ-C30 were included and they explained 38.8% of the variance; the significant predictors were fatigue ($p = 0.00$) and appetite loss ($p = 0.03$) predicting poorer QoL (Table 3). The third model (Table 4) included the MSAS scales (physical symptoms, psychological symptoms, and total symptoms). These factors accounted for 25.9% of the variance with the total symptoms scale (TMSAS) being the strongest negative predictor among the three scales ($p = 0.03$).

Table 3

EORTC QLQ-C30 Functioning and Symptoms Scales as Predictors of Quality of Life

Outcome	B (SE)	β	t	p	R ²
Functional Scale					
Constant	5.032 (7.120)		0.707	0.480	
Physical Functioning	0.150 (0.080)	0.143	1.790	0.070	
Role Functioning	0.160 (0.060)	0.209	2.620*	0.010	
Emotional Functioning	0.310 (0.060)	0.355	5.230*	0.000	
Cognitive Functioning	0.100 (0.070)	0.090	1.410	0.160	
Social Functioning	0.000 (0.050)	-0.000	-0.010	0.990	
					0.354
Symptoms Scale					
Constant	77.290 (2.250)		34.290	0.000	
Fatigue scale	-0.330 (0.060)	-0.420	-5.560*	0.000	
Nausea/Vomiting scale	-0.140 (0.080)	-0.100	-1.690	0.090	
Pain scale	-0.030 (0.050)	-0.050	-0.700	0.480	
Dyspnea scale	-0.030 (0.070)	-0.020	-0.410	0.680	
Insomnia	-0.020 (0.040)	-0.030	-0.560	0.570	
Appetite loss	-0.090 (0.040)	-0.140	-2.210*	0.030	
Constipation	-0.050 (0.040)	-0.070	-1.140	0.250	
Diarrhea	-0.090 (0.050)	-0.090	-1.560	0.120	
					0.388

* $p < 0.05$.

Table 4

MSAS Symptoms Domains as Predictors of Quality of Life

Outcome	B (SE)	β	t	p	R ²
Constant	121.690 (9.040)		13.464	0.000	
MSAS-PSYCH	6.680 (6.390)	.192	1.050	0.290	
MSAS-PHYS	5.080 (12.110)	.103	0.419	0.670	
TMSAS	-39.710 (18.420)	-.731	-2.150*	0.030	
					0.259

* $p < 0.05$.

The fourth model was composed of demographic and clinical characteristics of the participants (Table 5). The model explained 13.4% of the variance; being married ($p = 0.00$), being single ($p = 0.00$), having breast cancer ($p = 0.03$), gastro-intestinal cancer (0.02), or lymphoma ($p = 0.05$) as primary cancer site predicted better QoL whereas receiving hormone therapy as a treatment ($p = 0.03$) predicted poorer QoL.

Table 5

Patients' Characteristics as Predictors of Quality of Life

Outcome	B (SE)	β	t	p	R ²
Constant	35.320 (25.560)		1.380	0.170	
Age	0.210 (0.150)	0.120	1.430	0.150	
Gender	-5.390 (4.810)	-0.110	-1.120	0.260	
Educational level					
Secondary	-1.590 (4.980)	-0.030	-0.320	0.750	
University	0.180 (5.020)	0.000	0.040	0.970	
Social status					
Being Married	17.730 (6.050)	0.310	2.930*	0.000	
Being Single	23.810 (7.850)	0.330	3.030*	0.000	
Metastasis	3.260 (3.860)	0.060	0.850	0.400	
Treatment received					
Chemotherapy	2.340 (5.060)	0.050	0.460	0.640	
Radiotherapy	2.820 (6.220)	0.050	0.450	0.650	
Surgery	1.440 (5.320)	0.030	0.270	0.790	
Hormone	-14.100 (6.610)	-0.160	-2.130*	0.030	
Time since diagnosis	-0.0130 (0.050)				
Primary cancer site					
Lung	11.800 (10.390)	0.110	1.140	0.260	
Head & neck	4.750 (10.680)	0.040	0.440	0.660	
Breast	19.900 (8.890)	0.420	2.240*	0.030	
Gastro-intestinal	19.880 (8.590)	0.320	2.310*	0.020	
Reproductive tract	5.230 (10.360)	0.050	0.500	0.610	
Lymphoma	21.060 (10.720)	0.220	1.960*	0.050	
Blood	9.000 (9.580)	0.110	0.940	0.350	
					0.134

* $p < 0.05$.

The final model (Table 6) was composed of: hormone therapy as treatment received, being married, being single, having breast, gastro-intestinal, or lymphoma as primary cancer site, physical, role, and emotional functioning scales, fatigue, nausea and vomiting, appetite loss, and MSAS total symptoms (TMSAS). With these factors, the model accounted for 49.7% of the variance. Significant predictors of better QoL were being married ($p = 0.04$) and being single ($p = 0.04$), having breast ($p = 0.01$) or gastro-intestinal (0.02) as primary cancer site, and emotional functioning ($p = 0.00$); significant predictors of poorer QoL were the MSAS total symptoms ($p = 0.01$) and fatigue ($p = 0.00$).

Table 6

Final Model for Predictors of Quality of Life

Outcome	B (SE)	β	t	p	R ²
Constant			3.990	0.000	
Treatment received					
Hormone	-3.090 (4.930)	-0.030	-0.620	0.530	
Social status					
Being Married	8.990 (4.410)	0.160	2.040*	0.040	
Being Single	11.530 (5.580)	0.160	2.070*	0.040	
Primary cancer site					
Breast	8.270 (3.010)	0.170	2.750*	0.010	
Gastro-intestinal	8.760 (3.780)	0.140	2.320*	0.020	
Lymphoma	9.390 (5.500)	0.090	1.700	0.090	
Functioning domains					
Physical Functioning	0.010 (0.080)	0.010	0.080	0.940	
Role Functioning	-0.030 (0.060)	-0.040	-0.500	0.620	
Emotional Functioning	.0210 (0.060)	0.240	3.690*	0.000	
TMSAS	-8.630 (3.150)	-0.180	-2.740*	0.010	
Fatigue	-0.270 (0.070)	-0.340	-3.650*	0.000	
Nausea/vomiting	-0.060 (0.080)	-0.050	-0.790	0.430	
Appetite loss	-0.070 (0.040)	-0.100	-1.670	0.090	
					0.497

* $p < 0.05$.

Discussion

Regarding the translation of the instruments, the reliability coefficients of the EORTC QLQ C-30 and the MSAS were generally satisfactory. In the Lebanese EORTC QLQ C-30 only three subscales were below 0.70 with nausea and vomiting being the lowest (0.43). Cronbach's alpha values for the Lebanese MSAS subscales were greater than 0.70. It is worth mentioning that both instruments were translated to the Lebanese Arabic dialect for the first time.

The study results showed a strong relationship between emotional and role functioning in relation to global health/QoL; patients experiencing less negative emotions (tense, worry, irritable, and depressed) and adequately performing their daily routine activities and hobbies are expected to have better overall health and quality of life. A strong negative relationship was found between total MSAS symptoms, physical and psychological, and QoL; patients suffering from a number of symptoms are expected to have poorer global health and QoL. This finding is similar to the results reported by Yan and Sellick (2004) who found that patients with gastro-intestinal cancer with less symptom distress reporting better global QoL (Yan & Sellick, 2004).

With regard to predictors of QoL among cancer patients in Lebanon, our findings showed that physical, role, and emotional functioning to be predictors for better QoL. As for symptoms, the study showed that the total symptoms

scale as well as fatigue to be negative predictors that impact the QoL of cancer patients in our sample. These results are consistent with other research findings; fatigue was the strongest QoL predictor in breast cancer patients (Janz et al., 2007); and fatigue and lack of appetite were the most prevalent symptoms reported by Yan and Sellick (2004) in Chinese patients diagnosed newly with gastro-intestinal cancer. In the same study symptom distress was found to be one of the main predictors of QoL (Yan & Sellick, 2004).

Concerning demographic characteristics, social status and primary cancer sites; breast & gastro-intestinal were predictors of better quality of life. In relation to social status, being married or single had equal impact on better quality of life. This finding supports the work of Shapiro and Keyes (2008) and DePaulo and Morris (2005) who found that married persons do not have a definitive social well-being advantage over unmarried persons (DePaulo & Morris, 2005; Shapiro & Keyes, 2008). In view of the Lebanese culture, patients whether single or married share the support of their immediate or extended family in the community which may improve their feelings of well-being and explain the impact on their QoL. In addition, the study showed a better quality of life when the disease is related to the breast and gastro-intestinal system and poor QoL when patients are on hormonal therapy. These results have not been reported by other studies. Parker et al. (2003) found medical variables such as time since diagnosis, recurrence status, treatment variables, stage of disease not to be associated with QoL. The disease-related findings may be explained by the fact that the majority of the sample were suffering from breast and gastro-intestinal cancer.

Our final model explained 49.7% of the variance and identified significant positive predictors namely being married and being single, primary cancer sites (breast, gastro-intestinal), and emotional functioning. Significant negative predictors of QoL of cancer patient were found to be MSAS total symptoms and fatigue.

In conclusion, a possible limitation of this study is selection bias since the majority of the patients (95%) included in this study were recruited from outpatient departments and very few were hospitalized. The small number of in-patients and their refusal to participate due to severe illness and high prevalence of symptoms can be another potential source for selection bias. Finally, the sample was over-represented by females with breast cancer, which might have influenced the results. Despite these limitations, to our knowledge, this is the first study in Lebanon exploring the predictors of QoL in cancer patients. These preliminary findings will help health care professionals to develop better assessment and management strategies that address the psychological and physical symptoms of patients with cancer with the ultimate aim of improving the quality of their lives. More research is however warranted to further explore the predictors of QoL in hospitalized cancer patients in Lebanon.

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Competing Interests

The authors have no conflict of interest to declare.

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