

Health Related Quality of Life of Cancer Survivors in selected Cancer Care Centers

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Abstract

Introduction: Health-related quality of life (QoL) has become an important issue and is now a key part of care for cancer survivors. This study aims to assess health-related quality of life and its predictors among cancer patients.

Methods: A cross-sectional analysis was done on 118 cancer survivors in two cancer care centers in Kathmandu Valley. A purposive sampling method was used to select participants. An interview schedule based on the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire version 3 was used. Statistical analysis included mean, standard deviation, Mann-Whitney U test, Kruskal Wallis test, and multiple linear regression.

Results: Over a quarter of the participants had poor quality of life, with a mean global health status score of 48.52 ± 28.82 . The most common symptoms were tiredness, pain, and loss of appetite. Quality of life was influenced by factors such as age, gender, marital status, ethnicity, education level, socio-economic status, type and stage of cancer, time since diagnosis, completion of first treatment cycle, and presence of other illnesses.

Conclusion: Health-related quality of life was most affected in physical functioning and least affected in cognitive functioning. Because socio-economic status and advanced cancer stage strongly influence quality of life, there should be better support for treatment costs for cancer patients.

Key words: Cancer; Survivors; Health Related Quality of Life (HRQoL); European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ-30)

Introduction

Health-related quality of life (HRQoL) is a subjective and multidimensional constructs that covers physical, social, functional, and mental well-being.¹ Factors like the number of chemotherapy cycles, radiotherapy, cancer spread, satisfaction with care, and a patient's financial

situation can affect cancer patients' quality of life.^{2,3,4,5}

From the time of diagnosis until after treatment and beyond, cancer survivors face various physical, social, mental, and emotional challenges.⁵ Side effects of treatment, especially from chemotherapy and radiotherapy, are also big issues. These include skin reactions, stomach problems, hair loss, joint pain, nerve damage, liver issues,

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and mouth sores. These problems greatly affect the quality of life of patients. As a result, health-related quality of life has become a major concern for cancer survivors, their families, and healthcare providers.^{6,7}

Cancer being one of the leading cause of morbidity and mortality in Nepal, quality of life is an important area to study particularly among cancer survivors. This shows the need for more studies in this area. So, this study looks at the health-related quality of life of cancer survivors using the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC-QLQ-30). The researchers are especially interested in how cancer stage, cancer type, socio-economic status, and other illnesses affect the quality of life of cancer survivors.

Methods

A cross sectional, descriptive study to assess health related Quality of Life (QOL) and its associated factors among the cancer survivors was conducted at Bhaktapur Cancer Hospital and Nepal Cancer Hospital and Research Center (NCHRC) of Kathmandu Valley, Nepal.

Cancer survivors diagnosed for at least 6 months; either have completed their treatment or not and those who are willing to participate were included in the study, while, the survivors who were not able to understand English or Nepali language and those who were diagnosed with mental disorders were excluded from the study.

Non-probability, purposive sampling technique was used. Sample size was calculated by using population mean and standard deviation. So, from the similar study done in Nepal⁶, we had mean and standard deviation for global health status/QOL of 52.8 and 26.4. Using the following formula; $n = (z\alpha/2)^2 SD^2/d^2$,

where, $z\alpha/2$ = Standard normal variate [at 5% level of significance ($p < 0.05$), it is 1.96]

SD = Standard deviation of the variable

d = Allowable error

$$n = 1.96^2 \times 26.42^2 / 52 = 3.84 \times 696.96 / 52 = 107.05$$

So, the required sample size including 10% non-response rate for this study was 118. The required sample size was distributed equally to collect the data, i.e. 59 from each cancer center.

The research instrument consisted of structured and semi-structured questionnaire consisting of two parts; Part A and B. Part A consisted information related to socio-demographic and economic characteristics and cancer related information. The questions in the Part A were constructed by the researchers themselves based on the literature search and discussing with experts. Part

B consisted validated standard tool, i.e. EORTC-QLQ-30 version 3 with structured questionnaire consisting of 30 items.⁷

The QLQ-C30 consists of both multi-item scales and single-item measures. It includes; 5 functional scales; 3 symptom scales; a global health status/QoL scale; and 6 individual items. Each multi-item scale is made up of a unique set of questions, with no overlap between scales. All scales and single-item measures are scored on a scale ranging from 0 to 100.⁷ A high score for a functional scale indicates a high level of functioning, a high score for the global health status / QoL represents a high QoL, but a high score for a symptom scale represents a high level of problems. The Nepali version of validated tool was used for data collection.⁶ The research questionnaire was pretested in 10% of the total sample and reliability was measured by calculating Cronbach's alpha correlation coefficient which was 0.75.

Data was collected from cancer survivors using an interview schedule that included both structured and semi-structured questions. Ethical approval was obtained from the Ethical Review Committee of the Nepal Health Research Council (NHRC), and formal permission was secured from the respective cancer centers prior to data collection. Participants included both outpatients and inpatients from the selected hospitals. Verbal and written consent was obtained from individuals who met the inclusion criteria and agreed to take part in the study. The purpose of the research was explained to each participant before conducting a face-to-face interview. Each interview took approximately 25 to 30 minutes to complete.

The collected data was first entered into Microsoft Excel and assigned alphanumeric codes before being transferred to the Statistical Package for Social Sciences (SPSS) for analysis. Continuous variables were categorized based on their mean values. For bivariate analysis, non-parametric tests such as the Mann-Whitney U test and the Kruskal-Wallis test were applied. Additionally, variables with a p-value less than 0.2 were subsequently included in the stepwise multiple linear regression analysis model to identify the predictors of quality of life. The reason for using cut-off of p value < 0.2 is the small sample size to prevent the loss of important confounders in multiple regression model. Finally, those variables which had p value < 0.05 were considered statistically significant at 95% confidence interval.

The study received approval from the Ethical Review Committee of the Nepal Health Research Council (NHRC), under reference number 1619. Permission to conduct data collection was also granted by the respective cancer centers. Prior to collecting data, both verbal and written informed consent were obtained from participants. All personal information was handled with strict

confidentiality. The study title, objectives, participants' rights, potential risks and benefits, as well as privacy and confidentiality measures, were clearly explained. Voluntary consent was obtained only after participants fully understood the information, without any pressure or undue influence. A confidentiality pledge was used to reassure participants that their information would remain private.

Results

General characteristics of the participants

Among 118 participants, more than 2/3rd of them (68.6%) were from Bagmati Province. The mean age of the participants was 55.83 ± 14.81 years and 3/5th of them (60.2%) were females. Half of them (50.8%) belong to Newar and other Janajati ethnic groups followed by Brahmin and Chhetri (41.5%). Majority of them (81.4%) were following Hindu religion and eight out of nine participants (88.2%) were married. Modified Kuppuswamy's socio-economic status scale⁸ was used to classify socio-economic status of the participants. According to this, nearly 2/5th of the participants belong to lower middle level, while, nearly one-third belong to upper lower level and lower level. Gastrointestinal cancer was the commonest cancer among male (38.3%) followed by oral cancer (14.9%) and lung cancer (12.8%). While, reproductive tract cancer (cervical, ovarian and uterine cancer) was the commonest cancer in female (32.4%) along with breast cancer (32.4%) followed by lung cancer (12.1%). The mean duration of diagnosis in months was 27.08 ± 30.00 with minimum of six months and maximum of 15 years. Two out of five participants were diagnosed early at stage I. Nearly one-third of them received combined treatment including surgery, chemotherapy and radiotherapy. The most common type of co-morbidities among the cancer patients were heart disease (48.9%) followed by diabetes mellitus (36.2%) and thyroid disorder (25.5%).

Health related quality of life of the participants

More than one-third of the participants (36.4%) had favorable quality of life (>66.6) with the mean Global Health Status of 48.52 ± 28.82. The mean of functional scales range from 52.09 ± 32.43 to 76.69 ± 29.08. Majority of the participants (78.8%) had favorable cognitive functioning, while only two-fifth of them had favorable physical functioning. The mean score in symptom scales range from 11.86 ± 26.69 for diarrhea to 53.67 ± 34.08 for fatigue. [Table 1]

Table 1: Health Related Quality of Life according to EORTC-QLQ-C30

n=118

SN	Quality of Life scales	Mean±SD	Unfavourable (<33.3)	Favourable (>66.6)
1	Global Health Status	48.52 ± 28.82	28.0	36.4
2	Functional scale			
	Physical Functioning	52.09 ± 32.43	33.1	43.2
	Role Functioning	54.38 ± 34.62	18.6	54.2
	Emotional Functioning	57.49 ± 35.28	28.0	51.7
	Cognitive Functioning	76.69 ± 29.08	9.3	78.8
	Social Functioning	59.61 ± 37.71	21.2	61.0
SN	Quality of Life scales	Mean±SD	Unfavourable (>66.6)	Favourable (<33.3)
3	Symptom scale			
	Fatigue	53.67 ± 34.08	49.2	28.8
	Nausea and vomiting	20.34 ± 30.60	13.6	66.9
	Pain	41.24 ± 34.78	33.9	41.5
	Dyspnea	20.34 ± 31.74	14.4	62.7
	Insomnia	36.16 ± 40.55	33.9	47.5
	Appetite loss	40.39 ± 42.22	43.2	46.6
	Constipation	22.32 ± 34.61	18.6	63.6
	Diarrhea	11.86 ± 26.69	10.2	79.7
	Financial Difficulties	62.43 ± 40.07	63.6	21.2

Bivariate analysis of the factors associated with quality of life

Mann-Whitney U test and Kruskal Wallis test were applied for bivariate analysis of the factors associated with quality of life. The overall quality of life, Global Health Status (GHS) differ by socio-economic status (p= 0.011), stage of cancer (p= 0.010) and presence of thyroid disease (p= 0.038) of the participants. Physical, role, emotional, cognitive and social functioning were significantly different according to the age(p= 0.033; p= 0.019 for physical and social functioning respectively), marital status (p= 0.040; p= 0.010 for physical and cognitive functioning respectively), educational status (p= 0.013 for physical functioning), socio-economic status (p= 0.026; p= 0.001; p= 0.029; p= <0.001 for role, emotional, cognitive and social functioning respectively), type of cancer (p= 0.038; p= 0.001 for role and emotional functioning) and stage of cancer (p= 0.044 for role functioning). The experience of symptoms varied

by the age (p= 0.030 for diarrhea), gender (p= 0.034 for nausea and vomiting), ethnicity (p= 0.020; p= 0.045 for pain and insomnia), educational status (p= 0.018; p= 0.014 for fatigue and dyspnoea), type of cancer (p= 0.034; p= 0.034 for fatigue and appetite loss), duration of diagnosis (p= 0.045; p= 0.045 for appetite loss and dyspnea), stage of cancer (p= 0.019 for pain), and completion of first cycle of treatment (p= 0.029; p= 0.015 for pain and nausea/vomiting). While, financial difficulty differ by socio-economic status (p= <0.001). Variables with a p-value less than 0.2 were subsequently included in the stepwise multiple linear regression analysis model.

Multivariate analysis of the factors associated with quality of life

A multivariate analysis using multiple linear regression was conducted to identify factors associated with quality of life. The results indicated that socio-economic status and cancer stage were strong predictors of overall quality of life (Global Health Status). Additionally, marital status, socio-economic status, employment status, and the presence of lung disease were found to be significant predictors of physical, role, emotional, cognitive, and social functioning. [Table 2] [Table 3]

Table 2: Multivariate analysis of the factors associated with Global health status, Physical functioning and role functioning

n=118

Dependent Variable	Covariates	B-Coefficients	t	Sig.	95.0% Confidence Interval for B	
					Lower Bound	Upper Bound
Global Health Status	Completetion of first cycle of treatment	-3.034	-0.388	0.699	-18.521	12.453
	Ethnicity	-2.808	-0.672	0.503	-11.085	5.469
	Socio_economic status	9.546	2.781	0.006*	2.743	16.349
	Stage of cancer at diagnosis	-12.741	-2.321	0.022*	-23.618	-1.864
	Lung disease	-17.203	-1.943	0.055	-34.746	0.340
	Thyroid disorder	10.268	1.227	0.222	-6.316	26.853
Physical Functioning	Gender	-4.061	-0.591	0.555	-17.673	9.551
	Type of cancer	2.496	1.417	0.159	-0.996	5.988
	Completion of first cycle of treatment	-7.865	-0.893	0.374	-25.329	9.599
	Marital status	-17.053	-1.318	0.190	-42.697	8.591
	Educational status	3.126	0.436	0.664	-11.087	17.339
	Occupational status	13.943	2.100	0.038*	0.782	27.105
	Socio_economic status	5.967	1.745	0.084	-0.811	12.745
	Stage of cancer at diagnosis	-5.015	-2.058	0.042*	-9.847	-0.184
	Thyroid disorder	14.908	1.607	0.111	-3.479	33.296
	Lung disease	-31.493	-3.163	0.002*	-51.234	-11.752
	Age	-7.026	-1.088	0.279	-19.829	5.777
Role Functioning	Thyroid disorder	26.059	2.397	0.018*	4.509	47.610
	Stage of cancer at diagnosis	-13.052	-1.970	0.051	-26.186	0.081
	Socio_economic status	8.524	2.217	0.029*	0.905	16.142
	Marital status	-27.356	-1.996	0.048*	-54.514	-0.199
	Types of treatment received	1.162	0.301	0.764	-6.477	8.801
	Any other illness or comorbidities	-2.978	-0.441	0.660	-16.357	10.402
	Type of cancer	1.906	1.013	0.313	-1.822	5.633

*p-value significant at 95%

Table 3: Multivariate analysis of the factors associated with emotional, cognitive and social functioning
n=118

Dependent Variable	Covariates	B-Coefficients	t	Sig.	95.0% Confidence Interval for B	
					Lower Bound	Upper Bound
Emotional Functioning	(Constant)	13.685	0.528	0.599	-37.686	65.057
	Thyroid disorder	18.938	1.688	0.094	-3.298	41.174
	Socio_economic status	14.414	3.376	0.001*	5.952	22.877
	Any other illness or comorbidities	4.003	0.463	0.644	-13.131	21.137
	Completion of first cycle of treatment	-1.386	-0.143	0.886	-20.559	17.788
	Ethnicity	-6.243	-1.228	0.222	-16.320	3.833
	Educational status	8.893	1.262	0.210	-5.079	22.865
	Heart disease	6.962	0.702	0.484	-12.707	26.631
	category of duration of diagnosis	1.008	0.154	0.878	-11.975	13.991
Cognitive Functioning	(Constant)	114.242	4.340	0.000	62.089	166.394
	Socio_economic status	7.888	2.383	0.019*	1.328	14.448
	Type of cancer	-2.370	-1.435	0.154	-5.642	0.903
	Marital status	-25.927	-2.189	0.031*	-49.390	-2.463
	Types of treatment received	2.872	0.849	0.398	-3.830	9.574
Social Functioning	(Constant)	37.173	1.498	0.137	-12.013	86.358
	Socio_economic status	17.731	4.017	<0.001*	8.982	26.479
	Type of cancer	-1.194	-0.583	0.561	-5.253	2.865
	Completion of first cycle of treatment	2.710	0.265	0.791	-17.536	22.956
	Caste	-4.926	-0.914	0.363	-15.604	5.752
	Occupational status	-11.416	-1.726	0.087	-24.528	1.697
	Lung disease	23.217	2.008	0.047*	0.294	46.140
	Thyroid disorder	8.451	0.792	0.430	-12.708	29.609
	Age	3.304	0.916	0.362	-3.848	10.455

*p-value significant at 95%

Discussion

A cross-sectional, descriptive study carried out in two cancer care centers in Kathmandu Valley with the aim to assess health-related quality of life and it's predictors among cancer patients. Twenty-eight percent of the cancer survivors had unfavourable global health status with the mean 48.52 ± 28.82. The finding is lower to the study carried in Nepal^{9,10} and India^{11,12} while higher than the study from Banke, Nepal¹³. The score from the QOL was further categorized as favourable, fairly favourable and unfavourable. In this study, more than one-third of the participants had favourable quality of life which is less in comparison with the result obtained from Nepal.⁶ The difference in finding might be due to the variation in treatment approaches and quality of the care provided.

Quality of Life was higher based on the cognitive functioning, followed by social functioning, while, the participants obtained lowest score on physical functioning. Cognition included concentration and ability to remember

things, while social functioning included interference of the illness with family and social life. Physical functioning include ability to perform daily activities, and was the most affected function among the survivors. This finding is contrast to the findings from study carried among cancer patients in Nepal^{9,13} and Eastern India¹¹, which showed highest in physical functioning and lowest in role and social functioning. The finding of this study is partially supported by the study done in Chitwan, Nepal.¹⁰

Participants were most affected by fatigue followed by pain and appetite loss, while least affected by diarrhoea. Fatigue is the most common symptom among cancer patient according to the study carried in Nepal and India.^{9, 11,13} Moreover, advanced disease state can increase the severity of fatigue.¹⁴ Pain is the second most disabling symptoms among the survivors in this study. Pain is related to type and advanced stage of cancer as well as types of treatment therapy used.^{15,16} Study in Chitwan, Nepal found diarrhea to be the most frequently occurring

symptoms followed by appetite loss, while nausea/vomiting was the least occurring symptom.¹⁰

Quality of life vary with the age, gender, marital status, ethnicity, educational status, socio-economic status, types of cancer, stage of cancer, duration of diagnosis, completion of first cycle treatment, presence of co-morbidities like, lung disease, heart disease and thyroid disorder. Several studies support our study findings including systematic reviews conducted in India and Ethiopia.^{9,10,11,12,13,17,18,19}

The overall quality of life (GHS) was affected by socio-economic status, stage of cancer and presence of thyroid disorders. Global Health Status was optimum among upper level class and participants who were diagnosed at early stage of cancer. The findings is similar to the studies done in Nepal.^{9,10,13} The findings from the studies done in India found overall QOL (GHS) was affected as per gender, ethnicity, socio-economic status, marital status, stage of cancer, loss of job after diagnosis and history of smoking.^{11,12}

There was significant difference in physical functioning according to the age which is supported by the findings from study done in UK.¹⁹ Middle and late adults were found to have compromised physical functioning in comparison to other age group. Breast cancer survivors were found to have good quality of life in terms of physical functioning than other cancers. Similarly, cancer survivors who were literate had good physical functioning than illiterates. Study from UK found physical functioning was affected by gender.¹⁹

There was a significant difference in role functioning as per socio-economic status, type and stage of cancer of the cancer survivors. Contrast to the finding of this study, a study from UK found difference in role functioning as per employment status, age and duration since completion of first treatment.¹⁸ Unmarried survivors were found to have good QOL in terms of cognitive functioning in this study. But, the study from UK found difference in cognitive functioning as per the employment status of the cancer survivors.¹⁹

In this study, except physical functioning all other functional scales were affected by socio-economic status of the survivors including cognitive, emotional, and social functioning. Studies also found difference in quality of life as per family or household income.^{9,10,11,12,13}

Social functioning was affected with the age and presence of lung disease. While, social functioning differ by occupation as per the study done in UK.¹⁹ Financial difficulty of the cancer survivors got increased with the decrease in level of socio-economic class. As per the study carried in UK, financial difficulty also differ by age

of the survivors.¹⁹

Occurrence of the symptoms get affected by the age, gender, ethnicity, educational status, socio-economic status, type of cancer, duration of diagnosis, stage of cancer, completion of first cycle treatment, and presence of lung and thyroid diseases. Study from Nepal, India and UK found, age, occupational status, educational status, residency, BMI, types of cancer, stage of cancer, and types of treatment affect quality of life in terms of occurrence of various symptoms.^{10,12,13,19}

Studying the factors and predictors of quality of life helps in further treatment process and decision making to enhance the physical, mental and social well-being of cancer survivors. In this study, socio-economic status was the major predictor of quality of life in terms of GHS, role functioning, emotional functioning, cognitive functioning, social functioning and financial difficulties. Other predictors were, age, marital status, educational status, type of cancer, stage of cancer, presence of thyroid disorder and lung diseases.

Limitations of the study

Non-probability sampling technique was used with a small sample size from two cancer care centers, which limits the generalizability of the findings. There might be a possibility of selection bias in terms of gender and ease of communication by the investigator. The findings might not be applied to the specific type of cancer as there were disproportionate number of survivors among different cancer patients. The duration for the survivorship range from 6 months to 15 years, therefore, there is a possibility of recall bias among the chronic survivors.

Conclusion

The overall Health Related Quality of Life of the cancer survivors was found to be low. Cognitive functioning remains the most intact function among the survivors in comparison to other functioning. Socio-economic status (SES) was the major predictor of quality of life, and financial difficulties was also associated with SES, therefore provision of subsidization in the treatment expenses for the cancer patients should be re-evaluated and implemented. Different cancer management approaches should be applied while providing care to the male and female; married and unmarried patients to optimize the quality of life.

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