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Quality of Life of Patients Undergoing Cancer Treatment in B.P. Koirala Memorial Cancer Hospital, Bharatpur, Chitwan, Nepal

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Abstract This research entitled **"Quality of Life of Patients Undergoing Cancer Treatment in B.P. Koirala Memorial Cancer Hospital, Bharatpur, Chitwan"** was conducted to assess the quality of life of cancer patients. It was carried out among patients attending B. P. Koirala Memorial Cancer Hospital, Bharatpur, Chitwan. **Background:** In patients with different type of cancers and the quality of life (QoL) improvement is the main goal, since survival can be prolonged marginally. A diagnosis is very stressful for people, affecting all aspects of their being and quality of life. Up to date, knowledge on QoL impairments throughout the entire treatment process, often including several treatment modalities is scarce. One objective of this study was to assess the quality of life of cancer patient undergoing cancer treatment. **Methods**: A quantitative, cross-sectional, descriptive, design was adapted. A total of 245 cancer patients above 20 years old, were enrolled in the studies during August-September, 2013. Inclusion criteria were patients who had already received at least one type of cancer treatment and had attended the hospital for receiving the same or next type of treatment again. Exclusion criteria were any other chronic co-morbidity condition that could be influenced their QoL. The most commonly listed medical co-morbidities were: diabetes mellitus, hypertension, coronary artery disease. Cancer patients who have Eastern Co-operative Oncology Group (ECOG) performance status of 4 (i.e. fully bed-ridden) were excluded from the study. The data was collected by interview, using modified, structured scale of European Organization for Research and Treatment of Cancer Quality of life Questionnaire (EORTC QLQ- C30), prepared by the EORTC group. Information about the patient's disease condition and treatment were obtained from the patient's medical records. The collected data was analyzed by using SPSS version 16. Descriptive and inferential statistics were used to describe the respondent's quality of life (QoL) scores and to identify the factors affecting it respectively. **Results:** The study findings revealed the quality of life of cancer patients to be influenced by many factors such as: site of cancer, stage of cancer, time elapsed since diagnosis and Eastern Co-operative Oncology Group (ECOG) performance status. The average QoL scores (out of 100) for different scales were 85.54 (global health/QoL), 77.03 (functional), and 16.14 (symptom). Loss of appetite was the most frequent complaint (mean = 20.27) and was present in almost all the patients. As the overall QoL of the patients was significantly correlated with different QoL scales as-, cognitive, emotional, physical, social, role functioning, pain, fatigue, dyspnoea, loss of appetite and nausea/vomiting and financial problem. **Conclusion**: Hence, in average, the quality of life of cancer patients was found to be relatively better, although there were higher ratings for some (as: cognitive, physical, role and emotional functioning) and lower for others (like social functioning). Additional research should be done in this area for improving the quality of life of specific type of cancer patients in Nepal, though the findings of this study are expected to provide the baseline knowledge regarding it.

Keywords: *quality of life, cancer patient, EORTC QLQ- C30*

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1. Introduction

Cancer is a leading cause of death worldwide, accounting for 7.6 million deaths (around 13% of all deaths) in 2008. About 70% of all cancer deaths occurred in low and middle-income countries. Deaths from cancer worldwide are projected to continue to rise to over 13.1 million in 2030 [1].

According to American Cancer Society, Americans are projected to die of cancer, almost 1,600 people a day.

Cancer remains the second most common cause of death after cardiovascular diseases in the US, accounting for nearly 1 of every 4 deaths. American Cancer Society estimates there will be 1,638,910 new cases of invasive cancer diagnosed in the United States in 2012 [2].

Cancer is among the third leading causes of death in developing countries and the highest increase with regard to incidence figures for cancer diseases are found in these countries. Once thought of as a 'rich world' disease, cancer is a looming public health catastrophe across developing countries. People lack access to information on how to identify early signs of different cancers. Those who seek treatment typically have few options. Medication is expensive. Facilities are few and overcrowded. Compounding the challenge are the many stigmas attached to the disease [3].

Cancer is a chronic fatal disease and is emerging as a public health problem in around the world as well as in Nepal. Cancer leaves no one. It can affect the rich and poor, young and old, men and women and children. According to annual report of B.P.Koirala Memorial Cancer Hospital (National level referral centre of Nepal), 2,419 cancer patients receive chemotherapy in medical oncology ward whereas 5,008 cases receive chemotherapy in day care basis. The common cancer cases by frequency and site were: Carcinoma Lung (14.64 %), Carcinoma Cervix (13.62%), Carcinoma Breast (7.25 %) and so on. As treatment of cancer is expensive for individuals as well as societies, it threatens developed countries, especially when it affects the economically active population [4].

Cancer is major health problem in Nepal. Nepal has just built up the capacity to provide basic treatment therapies. Majority of research works done have a view to providing positive outcome in terms of the quantity of life but very few of them have studied their effects of the QoL of cancer patients undergoing those therapies.

Quality of Life (QoL) is one of the most important patient-reported outcomes in cancer therapy. Measurement of QoL at diagnosis may provide useful information regarding patients' preferences and prognosis, while follow-up measurements may indicate acceptance, adaptation and adverse effects of disease and therapy. QoL has been widely explored in many diseases and its change is a primary endpoint of many clinical trials. An increasingly important issue in oncology is to evaluate Quality of Life in cancer patients. The cancer-specific QoL is related to all stages of this disease. In fact, for all types of cancer patients general QoL instruments can be used to assess the overall impact of patients' health status on their QoL [5].

The aim of this study was to assess the quality of life of cancer patient undergoing cancer treatment. We also wanted to see whether the different socio demographic factors may affect the quality of life of cancer patients and is there any relation between overall QoL and QoL scales?

2. Method

The study location was at the B.P.Koirala Memorial Cancer Hospital (BPKMCH), Bharatpur, Chitwan. BPKMCH was selected purposefully as it is the national cancer hospital of Nepal. It is a tertiary referral center for cancer treatment. A descriptive cross-sectional study design was applied from August to September, 2013. Eligibility criteria for patients to participate in the study were as follows: Patients who had already received at least one type of cancer treatment, age above 20 years; ability to communicate in Nepali, conscious and fit to be interviewed. Verbal as well as written informed consent was obtained before taking interview to the patient. The socio-demographic profile and clinical status was assessed from patient and medical records. A total of 245 respondents, who met eligible criteria were purposively sampled and interviewed face to face on first come first basis who were admitted in ward and attending day care unit and radiotherapy unit as out-patient departments.

The Nepal Health Research Council Ethical Review Board has been given the approval for this study and ethical approval was obtained from concerned authority of selected hospital as well as from EORTC department.

A questionnaire consisting of combination of structured and a semi-structured question was used to assess the quality of life of cancer patient. The collected data were reviewed daily for completeness and accuracy. The collected data were entered into the Statistical Package for Social Science Software (SPSS) version 16.0 for statistical analysis using descriptive and inferential statistics.

The validated European Organization for Research and Treatment of Cancer Quality of Life (EORTC QLQ-C30) questionnaire, which translated in Nepali language, was used in the study. The questionnaire measures the quality of life of cancer patients. The questionnaire comprised of a total of 30 questions with three different scales (functioning scales, symptoms scales and a global health status scale). It measures physical, role, cognitive, emotional and social function in the functioning scale. The symptoms scale includes fatigue, pain, nausea/vomiting, dyspnea, insomnia, appetite loss, constipation, diarrhea and financial difficulties. All scales are comprised of multi-item questions except the symptom scales of dyspnea, insomnia, appetite loss, constipation, diarrhea and financial difficulties, which are comprised of single-item questions 12. The questions appear in likert scale format with answers as follows: "Not at all", "A little", "Quite a bit" and "Very much". The scales range from 1 to 4 except for the global health status scale, which has 7 points ranging from 1 ("very poor") to 7 ("excellent"). All scores ranged from a minimum of 0 to a maximum of 100 and were computed using linear transformation referring to the EORTC scoring manual. For scales evaluating global health and function, a higher score represents higher level of functioning and health. For scales evaluating symptoms, a higher score indicates more problems and higher level of symptoms [6,7].

Validity of the instrument was established by consultation with oncology experts. Besides this, as EORTC QLQ C – 30, a standardized tool widely used for measuring QoL was adapted for the study. Validation of the instrument after translation into Nepali was established by first translating the instrument into Nepali and then translating it back into English by another expert who is fluent in both English and Nepali. Both the translators then compared the translation with original version and made changes as necessary.

Many studies done in other countries show high reliability coefficients of this tool, though the study were done among different groups of cancer patients. For appropriate use of this tool in our setting, pre-testing of

the translated instrument was done 10 % cancer patients of the actual sample attending for cancer treatment and meeting all the criteria. Modifications were made as necessary after the pre-testing. For example, it was quite difficult to make respondents understand the rating of overall health and quality of life (Q.29 and Q.30) initially. But it was made easier by using facial (visual analogue) scale modified from pain scale.

3. Results

In this study, patients above twenty years of age were included. The patient's age ranged from 20 to 80 years with a mean age of 52.7 years. With regard to the sex of the respondents, female patients were found to be in greater number than the male patients. Similarly, among the total respondents, 222 (90.6 %) of the study sample was married and living with their spouse. Concerning the area of residence, 79.2 % of them came from rural areas. Majority of respondents were Hindu i.e. 82.9%. Among the educational status of the respondents, almost more than half of them i.e. 59.6% were illiterate.

Table 1. Demographic Characteristics of Respondents (n=245)

Variables	Frequency	Percent
Age		
20-30	17	6.9
31-40	25	10.2
41-50	62	25.3
51-60	80	32.7
61-70	38	15.5
>=71 **Mean age ± SD = 52.72**	23	9.4
Sex		
Female	132	53.9
Male	113	46.1
Marital status		
Married (living with spouse)	222	90.6
Unmarried/Widow/ er/ Separation	23	9.4
Residence		
Rural	194	79.2
Urban)	51	20.8
Religion		
Hindu	203	82.9
Buddhist	29	11.8
Christian/ Muslim/kirat/ Others	13	5.3
Ethnicity		
Dalit	19	7.8
Advantage Janajati	41	16.7
Disadvantage Janajati	75	30.6
Ungroup cast (Khas Arya)	110	44.9
Education		
Illiterate	146	59.6
Literate	99	40.4
Occupation		
Agriculture	143	58.4
Household activities (No specific wage earning job)	78	31.8
Service	12	4.9
Business	6	2.4
Labour/driver	6	2.4
Type of family		
Nuclear	139	56.7
Joint	95	38.8
Extended	11	4.5
Economic Status		
Enough to eat for one year	105	42.9
Not enough to eat for 1 year	83	33.9
Extra Saving	57	23.3

When the patients were classified by their occupation, a majority of them were found to be involved in agriculture. Regarding the type of the family, most patients have belonged to nuclear families. And finally, with respect to the economic condition, 42.9% of the respondents said that they had enough resources to eat for a year but no surplus, while 33.9% of the patients said that they did not produce enough resources to eat for a year, even before the illness while 23.3 % of them said that they could have some savings as well, before their illness (Table 1).

The patients with carcinoma (ca) breast were in highest proportion followed by ca cervix. If the diseases were categorized system wise, gynecological cancer ranked the highest followed by gastrointestinal. Similarly, when data was further analyzed on the basis of the time elapsed since diagnosis, a majority of them were undergoing treatment since last six months (54.3%) and rest were undergoing treatment since more than six months. A few had even undergone treatment longer than one year (Table 2).

Table 2. Information on Respondent's Disease Condition (n=245)

Variables	Frequency	Percent
Site of Cancer		
Breast	43	17.6
Cervix	35	14.3
Overy, endometrium, vulva	31	12.7
Lung	27	11.0
Oral cavity	22	9.0
Stomach	17	6.9
Colorectal	15	6.1
Pharynx, Larynx, Trachea	14	5.7
Leukemia	10	4.1
Gall bladder Ca	10	4.1
Others (osteosarcoma, lymphoma, ca prostate, ca testis, melanoma, liver, and urinary bladder)	21	8.5
Time since diagnosis		
< 6 month	133	54.3
6 month – 1 year	70	28.6
>1 year	42	17.1

Out of the total 245 study sample, 87 were mentioned their stages, among the 87 respondents, 43.6% of them had cancer in stage IV followed by stage III. Distant metastasis was present in 16.7% of the patients, while the common sites for metastasis were lungs followed by liver.

Regarding the past treatment, most of them had received chemotherapy and the present treatment, most of them had come for chemotherapy (66.9%) either as adjuvant, curative or palliative treatment. Similarly, concerning the Eastern Co-operative Oncology Group (ECOG) performance status, more than half of them i.e. 52.2% had score of 0 (indicating active as a normal person) followed by score 1 (indicating that they were restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature (Table 3).

When calculating the mean scores for all major scales and subscales of the Quality of life (QoL) instrument, the transform mean scores for a total of two hundred and forty five cancer patients The transform mean and SD score of Global Health/QoL was 85.54 (SD=16.49). Similarly the functional scale was 77.04 (SD=15.62). Among the functional scale the highest score is in cognitive functioning, which shows the quality of life of cancer patients is better. Regarding symptoms scale the transform mean and SD score is low that is 16.14 (SD=13.19) which

is also indicate better quality of life of cancer patient or low symptomatic. Among the symptoms scale loss of appetite is the most frequent symptoms, which indicates that high level of problems with loss of appetite. The single item rated the far most problematic is financial difficulties that is transform mean 64.62(SD=29.72) (Table 4).

Table 3. Information on Respondent's Disease Condition and Treatment Modality (n=245)

Variables	Frequency	Percent
Stage of disease		
Stage I	11	4.5
Stage II	16	6.5
Stage III	22	9.0
Stage IV	38	15.5
Not mentioned	158	64.5
Distant metastasis		
Present	41	16.7
Absent	204	83.3
Past Treatment		
Chemotherapy	95	38.8
Surgery	70	28.6
Radiotherapy	45	18.4
Surgery and chemotherapy	16	6.5
Radiotherapy & chemotherapy	12	4.9
Surgery and radiotherapy	4	1.6
Surgery, radiotherapy and chemotherapy	3	1.2
Present Treatment		
Chemotherapy	164	66.9
Radiotherapy	47	19.2
Surgery	30	12.2
Palliative care	2	0.8
Concurrent Chemo -RT	2	0.8
ECOG status		
0 (active as normal person)	128	52.2
1 (can carry out light work.)	84	34.3
2 (> 50%) (time spent up and about during daytime	30	12.2
3 (50% - 75%) (bed/chair more than 50% of waking hours)	3	1.2

Table 4. Scores of the Respondents on Various Quality of Life Scales (n=245)

Scale/Symptom	Raw Score Mean (SD)	Transformed Score Mean (SD)	Minimum Score	Maximum Score
Global Health/QOL	**6.13 (0.98)**	**85.54 (16.49)**	**0.00**	**100.00**
Functional Scales	**1.68 (0.46)**	**77.03 (15.62)**	**17.78**	**100.00**
Social functioning	2.81(0.91)	39.65(30.36)	0.00	100.00
Role functioning	1.63(0.62)	78.84 (20.75)	0.00	100.00
Emotional functioning	1.51(0.56)	82.95 (18.91)	8.33	100.00
Physical functioning	1.50(0.58)	83.15 (19.55)	6.67	100.00
Cognitive functioning	1.43 (0.60)	85.44 (20.21)	16.67	100.00
Symptom Scale	**1.51(0.56)**	**16.14 (13.19)**	**0.00**	**66.67**
Loss of appetite	1.60(0.80)	20.27(26.68)	0.00	100.00
Insomnia	1.54(0.76)	18.23 (25.49)	0.00	100.00
Pain	1.51(0.66)	17.00 (22.04)	0.00	83.33
Fatigue	1.42(0.57)	14.05 (19.32)	0.00	88.89
Nausea and votiming	1.25(0.48)	8.63 (16.15)	0.00	100.00
Constipation	1.19(0.57)	6.39 (19.32)	0.00	100.00
Dyspnea	1.13(0.40)	4.35 (13.46)	0.00	100.00
Diarrhoea	1.07(0.34)	2.58 (11.59)	0.00	100.00
Finiancial difficulties	2.93(0.89)	64.62(29.72)	0.00	100.00

Regarding site of cancer the scores on quality of life were almost statistically significant in case of function and symptom scores but not in case of global health scales.

Among the patients (n=87) whose stages could be recorded, the scores on different scales followed a fixed pattern with patients with II stages having higher global health/QoL and function scores, lower symptom score. But the result had been shown to be statistically significant by the p-values (p = <0.0001, <0.0001, <0.0001) for function, symptom and global health scales respectively). The global health /QoL scores were higher in those with no distant metastasis followed by function scores and symptom scales were lower in the same group. The presence of distant metastasis also seems to statistically significantly or affects the quality of life of cancer patients.

Regarding time elapsed since diagnosis the global health/QoL was higher in the all three categories followed by functional scales. Unlike all other variables, a very strong relationship existed between time elapsed since diagnosis and overall quality of life of the patients, which is evident from the p-value of <0.0001 in function and symptom scale and 0.015 in global health /QoL scale.

The function scores and the global health/QoL were higher in the early Eastern Co-operative Oncology Group (ECOG) performance status and symptoms were lesser in the same group. The distinction between patients with low or high ECOG performance status showed significant relationship between Eastern Co-operative Oncology Group Performance Status scores and overall quality of life of the patients. Patients with a better ECOG performance status reported significantly higher scores in all the scales of the instrument (Table 5).

Table 5. Quality of Life Scores according to Site of Cancer (n=245)

Variables	Function Scales†	Symptom Scales†	Global Health/QOL†
Cancer Sites			
Cervix	76.00(15.73)	19.92(14.29)	85.00(15.62)
Ovary, endometrim/vulva	78.11(15.73)	15.46(14.53)	88.63(12.11)
Pharynx, Larynx,Trachea,	77.30(11.37)	17.39(12.48)	83.92(22.28)
Lung	64.60(17.86)	22.69(16.07)	78.08(17.00)
Oral cavity	83.13(11.26)	12.35(8.28)	88.25(15.14)
Colorectum	71.85(19.47)	15.38(15.41)	85.55(15.57)
Breast	81.49(10.49	12.16(9.80)	87.59(19.53)
Stomach	68.23(20.89)	21.26(14.63)	79.41(18.19)
Others (osteosarcoma, lymphoma, ca prostate, ca testes, melanoma and ca urinary bladder	81.16(10.22)	14.17(10.92)	85.52(14.12)
Leukemia	87.55(12.04)	8.46(7.93)	92.50(8.28)
Ca gall bladder	82.00(10.80)	15.12(11.74)	88.33(15.81)
P-value	<0.001*	0.013**	0.250
Stage of Cancer			
I	66.66(20.32)	33.33(11.12)	83.33 (13.12)
II	80.55(10.99)	14.58 (11.41)	87.50(16.38)
III	70.80(14.60)	26.22 (17.04)	84.09 (12.30)
IV	65.43(19.52)	23.14(15.51)	73.68 (25.07)
***p*-value**	**<0.0001***	**<0.0001***	**<0.0001***
Distant Metastasis			
Present	69.59 (19.57)	21.45 (17.32)	79.06 (22.29)
Absent	78.52 (14.29)	15.08 (11.96)	86.84 (14.79)
***p*-value**	**0.001***	**0.005****	**0.006****
Time since Diagnosis			
Less than 6 months	78.96(14.80)	15.19(12.67)	85.71(18.10)
6 months to 1 year	79.52(12.58)	13.66(11.92)	88.80(12.75)
Above 1 year	66.77(18.70)	23.32(14.61)	79.56(15.31)
P-value	**<0.0001***	**<0.0001***	**0.015****
Present ECOG status			
0 (active as normal person	84.84(9.87)	10.71(8.46)	91.99(11.61)
1 (can carry out light work.)	72.24(13.76)	19.59(12.51)	82.63(15.04)
2 (more than 50%)	60.29(18.66)	26.58(17.99)	68.33(21.03)
3 (50%- 75%)* (* up and about during daytime.)	45.18(8.98)	47.00(6.45)	63.88(25.45)
***p*-value**	**<0.0001***	**<0.0001***	**<0.0001***

*at 1% level of significance
** at 5% level of significance
† Mean (SD) of Transformed Score.

Table 6. Quality of Life Scores according to Previous and Present Cancer Treatment (n=245)

Variables	Function Scales†	Symptom Scales†	Global Health/QoL†
Past Treatment			
Surgery	80.06(13.92)	15.01(12.95)	88.09(15.89)
Radiotherapy	75.20(13.73)	17.32(12.41)	82.77(18.24)
Chemotherapy	77.84(15.55)	14.57(12.40)	86.22(14.87)
Radiotherapy & chemo.	66.48(21.13)	27.13(17.26)	77.77(25.45)
Surgery & chemo.	76.94(18.44)	17.62(15.26)	88.02(11.77)
Surgery & radio.	61.66(18.53)	19.87(14.71)	75.00(20.41)
Surgery, radiotherapy & chemotherapy	71.11(20.36)	17.94(11.75)	77.77(19.24)
P-value	**0.037****	**0.083**	**0.208**
Present Treatment			
Surgery	78.37(14.11)	14.18(13.13)	88.33(13.05)
Radiotherapy	74.89(18.27)	20.78(15.96)	85.10(18.21)
Chemotherapy	77.80(14.79)	14.93(11.95)	85.56(16.14)
Palliative care	44.44(12.57)	34.61(16.31)	45.83(5.89)
Concurrent Chemo-RT	71.11(13.46)	10.25(11.10)	83.33(5.29)
***p*-value**	**0.061**	**0.027****	**0.020****

** at 5% level of significance
† Mean (SD) of Transformed Score.

Table 6 shows that the patients undergoing surgery had the highest global health scores followed by function scales and least symptom scores in both time. The scores for patients undergoing either radiotherapy or chemotherapy did not have much variation in present treatment. But the result had been shown to be statistically significant in symptoms and global health scale.

Among the three main components the global health status/QoL showed the highest correlation of 0.962 followed by functional scale, both absolutely significant with p-value of <0.0001. The total symptom scale was also significant at 0.01 levels and had a negative correlation of -0.413.

Among the sub scales, the cognitive functioning had the highest correlation of 0.455 (p = <0.0001) followed by the emotional scale 0.440 (p = <0.0001, significant at 0.01 level). The third highest correlation was of physical function which had correlation of 0.423 (p = <0.0001).

Among the symptoms, pain was negatively correlated highly (r=-.0.383) followed by symptom of fatigue (r=-0.371), both significant at 0.01 level of two-tailed tests (p = <0.0001 and <0.0001 respectively). The third highest negative correlation was financial difficulties -0.325 (p=<0.0001). Finally, there was no positive correlation of any other symptoms items and overall quality of life (Table 7).

Table 7. Pearson's Correlation between Different Quality of Life Scales and Overall Quality of Life in Cancer Patients

Scale/Symptom	Correlation(r) (Overall_Quality of Life)	p p value)
Functional scales	**0.542****	**<0.0001**
Cognitive functioning	0.455**	<0.0001
Emotional functioning	0.440**	<0.0001
Physical functioning	0.423**	<0.0001
Social functioning	0.336**	<0.0001
Role functioning	0.326**	<0.0001
Symptom scales	**-0.413****	**<0.0001**
Pain	-.0.383**	<0.0001
Fatigue	-0.371**	<0.0001
Dyspnoea	-.0.278**	<0.0001
Insomnia	-0.263**	<0.0001
Loss of appetite	-0.198**	0.002
Nausea and vomiting	-0.133*	0.038
Constipation	-0.107	0.096
Diarrhea	-0.058	0.368
Financial difficulties	-0.325**	<0.0001
GlobalHealth status/QOL	**0.962****	**<0.0001**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The quality of life of patient is relatively better, which shows, the transform mean score of Global Health/QoL was 85.54 (SD=16.49). The quality of life of cancer patients to be influenced by many factors such as: site of cancer, stage of cancer, time elapsed since diagnosis and Eastern Co-operative Oncology Group (ECOG) performance status. The symptoms scores showed loss of appetite is the most common symptoms. Majority of the patients reported of financial problem. As the overall QoL of the patients was significantly correlated with different QoL scales as-, cognitive, emotional, physical, social, role functioning, pain, fatigue, dyspnoea, loss of appetite and nausea/vomiting and financial problem.

4. Disscussion

An important issue in cancer care and research is Quality of Life (QoL). The QoL refers to "global well-being," including physical, emotional, mental, social, and behavioral components. In the last few years, a number of informative and valid QoL tools have become available to measure health-related QoL. The most widely applicable instrument to measure the QoL in cancer patients is the EORTC QLQ-C30. Using this method, the current study assessed the QoL in cancer patients undergoing cancer treatment. Several studies support our findings on the influence of treatment on good or adequate QoL among the cancer patients undergoing cancer treatment. The diagnosis and treatment of cancer often has an impact on health-related quality of life (HRQoL) and cause multiple concerns and needs of care and support. HRQoL is typically measured with standardized instruments such as the EORTC QLQ-C30 [8].

Female patients exceeded male patients by 8 %. This corresponds to the incidence and prevalence of cancer in Nepal, as cancer is quite common among adult female population, particularly cancer of breast and cervix. This finding is consistent with a study done by Maryam et.al as breast cancer was found to be common primary cancer among the Malay female in Malaysia [9]. But this finding is inconsistent with the findings of annual report of B. P. Koirala Memorial Cancer Hospital, as cancer of cervix was found to be the most common cancer among all (505), followed by cancer of breast (333) in 2010 A.D [4].

As only adult population was included in the study, most patients were married. The respondents were almost proportionate to Nepal's urban and rural population; 79.2 % of them came from rural areas while only 20.8 % were from the urban areas. Similarly, Nepal being a country inhabited by mainly Hindu people, the study population also comprised up of large number of Hindu patients.

Regarding occupation of the respondents, very few of them were economically active. However, most patients were found to be engaged in agriculture and household activities before their illness.

Similarly, most respondents belonged to nuclear family with average family size of 5.8. Concerning economic status, less than half of the study sample had just enough resources to eat for one year, but majority of them had no savings. So most of them were reported that financial difficulty is major problem of this population.

The data was collected in a national cancer referral hospital; the patients in the study had all major type of cancers. Patients suffering from carcinoma breast were highest in number, followed by patients with cancer of cervix, ovary, lung and others. This study finding is similar to a study by Carlos et. al, breast cancer was highest in number followed by colorectal cancer [10].

The patients in this study represented the status of developing country, as many of them were in advanced stage of cancer. Among the 245 patients i.e.16.7% of patients in this study already had distant metastasis from

the primary site of the cancer. Similar findings were also reported by WHO, which wrote, majority of patients in less developed countries are diagnosed in advanced stage of cancer [11].

Chemotherapy can be considered as the commonest cancer treatment modality, especially for patients in more advanced stage of cancer which is supported by many others literatures. With respect to the Eastern Co-operative Oncology Group (ECOG) performance, more than half of the patients had a score of zero (meaning active as normal person). That may be due to majority of patients from day care basis or radiation therapy. This study is supported by a study done by Carlos et al., majority of respondent (79%) had a score of zero [10].

1. Various Quality of Life Scales Scores

There are three main scales used for assessing the quality of life of cancer patients. There were global health/QoL scale, functional scale and symptoms scale. The average score of the global health scale was 85.54. Similarly it was 77.03 for functional scale and 16.14 for symptom scale. In a study done by Zhen Gou et al. concerning QoL of patients undergoing radiotherapy at People's Republic of China, global health status/QoL score was 61.31, function (55.56) and symptom score (29.42) [12]. The global and function score of this study were comparatively higher, which may be because all of the patients included in this study were not in pre terminal stage and so that may have better quality of life. Though pre terminal patients were involved in the above study, their symptom scores were comparatively higher than this study that may be due to advanced stage of cancer type more symptoms are present.

The transform mean and SD score of Global Health/QoL was 85.54±16.49, which was quite similar to a study on Quality of life in hematologic oncology patients undergoing chemotherapy by Andrade, Sawada & Barichello on 32 patients, eight of whom were diagnosed with Hodgkin's lymphoma; nine, with non-Hodgkin's lymphoma; and 15 with leukemia at the Center for Chemotherapy of the Clinical Hospital of the Federal University of Triangulo Mineiro from December 2009 to December 2010 which also found that GHS score was 82.38±16.28 [13].

A study done by Bahar and Leila in Iran, finding revealed that, the mean scores for the functional subscales were, as follows: Physical Function, 80.9; Role Function, 76.6; Emotional Function, 80.5; Cognitive Function, 88.7; and Social Function, 42. 2. This is exactly corresponds to the score obtained by this study [14].

Among the subscales for functioning, cognitive and physical functioning had higher scores while social functioning had the least. This picture exactly corresponds to the scores obtained in the study done by Maryam et al. [9]. Similarly, among the symptom scales, loss of appetite was the most frequent complaint, both in this study as well as in the study done by Lim [15]. Hence, this proves that cancer patients, independent of their place and nationality have similar problems.

A similar study done by Golden, Lena, Wettergren, Thecla, Kohi & Louise Von Essen in Tanzanians, social, role, and physical function are the scales given the lowest mean value whereas cognitive function is given the highest mean value by the total sample [16]. This is exactly corresponds to the score obtained by this study. This study also support a study done by Donald, Gupta and Staren, the highest mean score was recorded for cognitive functioning. Among the symptoms scales, diarrhea had the lowest mean score which is exactly similar finding in this study [17].

Among the subscales of functional component, the highest mean scores was for cognitive functioning and second lowest was for role functioning which was similar to the study done on Cross sectional Assessment of Health Related Quality of Life among Patients with Cancer in Malaysia among 393 cancer patients from August 2011-November 2011 which had found highest score in cognitive functioning (84.9±23.6) and for role functioning (72.4±31.9) [9].

In this study, among the symptom scales and other single items, financial problem was the highest with mean score of 64.62 which was not similar to the study done by Maryam et al.among patients with cancer which was found financial problems to be lowest (27.8±28.6) [9].

Similarly, current study result complied with Zhen Guo et al.'s findings; the patients had scored 67.04 on financial difficulty. In the present study has had an average score of 64.62 on financial difficulty [12]. These data show how weak financial condition these patients have. Hence, it is essential to seek for financial resources to help the cancer patients.

This study also correspondents with study done by Bottomley & Therasse, the global health score and functional scales score is high and in symptoms scale loss of appetite was the most frequent symptom in both study [18]. This study finding supported by a study done by Johnson, loss of appetite may have been caused by the active treatment regimens [19]. The present findings seem to be consistent with other research by Priscilla, poor appetite and fatigue reflecting the high level of problems, the single item rated as the far most problematic is financial difficulties which is similar finding in this study [20].

On contrary another study done by Donald, Braun, Gupta and Staren, the most frequently reported symptom is fatigue in cancer patients. In contrast among the symptom scale rated highest by the total sample is the pain scale, reflecting a high level of problems with pain [17]. In our study loss of appetite reflecting the high level of problems, the single item rated as the far most problematic is a financial difficulty which is similar finding in this study [16].

While a study on Longitudinal health-related quality of life assessment: implications for prognosis in ovarian cancer by Gupta, Braun and Markman, among 137 ovarian cancer patients treated at Cancer Treatment Centers of America between Jan 2001 and Dec 2009, which found the fatigue was most common symptoms which was similar to the study done among patients with cancer in Malaysia among 393 cancer patients from August 2011-November 2011 which also was found fatigue to be the most common symptoms (32.1±28.3) [21,9].

2. Quality of Life Scores According to Socio-demographic Characteristics

According to this study finding, scores obtained in three major components of quality of life were compared between different socio-demographic characteristics of the patients. Among all variables regarding socio-demographic characteristics, gender, type of family, and

economic status of the patient was found to be statistically significant for influencing the quality of life scores. A specific pattern can be appreciated in this data with patients able to make extra savings having highest function scores, least symptom scores and highest global health /QoL, whereas, patients with medium economic status and those with poor economic status have lesser function scores, global health/QoL score and higher symptom score in order. Besides this, the scores in all other components were better for patients with, Hindu religion and for patients from urban areas, though the results were statistically not significant. This might be due to unequal sample size of different groups being compared. Similarly a study done by Heydarnejad et al., age, education, marital status and income are not significant with quality of life. This is consistent with this study [22].

However, in a study by Meyer et al., age at the time of diagnosis, and education had no impact on quality of life scores [23]. The study finding was also consistent with present study. Likewise, in next study by Maryam et al., the sex of the patients was significantly affecting the functional scale scores [9]. In this study sex is also significant with quality of life score.

Quality of life of female was better than those of male. The results on the relation between socio-demographic variables and quality of life of cancer patients, has been reported in various studies. Güner et al., had done a study to determine whether a relationship existed between QoL and socio-demographic characteristics of gender, marital status, educational level, occupation and level of income in patients with cancer in Turkey [24]. The findings of the study concluded that men, older adults, widowed spouses, patients with lower level of education, housewives and those with lower income had lower QoL scores.

In a study on factors affecting the quality of life to cancer patients at the community level in Shanghai, China, some socio-demographic factors were certified to have significant relationship with QoL of cancer patients, such as family income, education and occupation. Some factors like age and marital status however, affected only certain aspects of the QoL. In conclusion, patients who had divorced or lost spouse, and those with lower educational level, poor income and old age would tend to have a poor QoL outcome [25].

Similarly, in another study done in China, involving lung cancer patients, the young, male and married patient groups were found to have better QoL. Patients with lower education or income had worse QoL [26]. As, the other study done among newly diagnosed cancer patients in Norway concluded that those cohabitating had significantly higher QoL compared to those living alone.

In contrast, the younger group (20-39 years) living alone had significantly lower quality of life than the older groups living alone. Although age was only significantly associated with quality of life in one subscale, the elderly people reported their quality of life to be better in almost all subscales. Gender and educational level were only associated with one or two domains in quality of life, respectively [27].

In contrast to the above findings, in relation to the marital status, the American scientists found that when battling esophageal cancer, married patients did not fare as well as their single counterparts in certain aspects of their QoL [2].In same way, when quality of life was studied among the patients with gynecological cancer in US, the results showed that QoL scores were reported to be poorest by the youngest women with cervical cancer and was opposite in case of women with ovarian and endometrial cancer, where age was negatively correlated with QoL.

Hence, there are contradictory results concerning the effect of various socio-demographic characteristics on quality of life of cancer patients. The lesser significance level also might be due to the fact that not all the groups had equal number of sample size and the respondents varied according to tumour types. Perhaps a large scale study involving specific group of cancer patients would be needed to find out the actual results for the association of socio-demographic characteristics and quality of life.

3. Quality of Life Scores according to Patient's Disease Condition and Treatment Modality

When comparing the QoL scores between variables, the site of cancer, time elapsed since diagnosis, stage of cancer, presence of distant metastasis and ECOG performance status were found to be associated with quality of life at statistically significant levels but not others. The study finding was also consistent with the study done by Toyama et al. (2013) in Japan, ECOG level and stage of cancer were significant (< 0.05) with quality of life of cancer patients [28].

In the study by Zhou et al., as discussed before, among the factors related to patient's disease condition and treatment, some factors affecting certain aspects of QoL were - type of tumour and stage of cancer [26]. Performance status of the patients (as measured by the Karnofsy Performance Status), had a strong linear correlation with every aspects of QoL. It is also support this study, a strong relationship existed between ECOG status and overall quality of life (p=<0.0001).

A study done by Nemati, Alhani & Zandshahdi reported that the level of quality of life in the patients with leukemia was mean score 87.48, which is consistent with this present study [29].

This study is consistent with other study done by Rustøen and Hope found that quality of life of cancer patients significant (0.015) with time elapsed since diagnosis of disease [30].

Likewise, according to the study by Roustoen et.al., time since diagnosis was associated with QoL in the patient which is consistent in this study [27].

The diagnosis of lung cancer was found to be associated with low level of quality of life, which was supported by Esbensen et al., [31]. Similarly, in another study done by Lee et. al, among the disease characteristics of breast cancer patients receiving chemotherapy, the stage of disease, the commencements of chemotherapy and number of chemotherapy were found to be significantly associated with QoL [32]. This is also consistent with this study, regarding stage of cancer and treatment modality (chemotherapy).

Gurm, Stephen & Mackenzie have found that health related quality of life (HRQoL) in disease free survivors of breast cancer was found to be less affected by the type of treatment than it was by demographic characteristics, time since surgery, co-morbidity, fatigue and depression [33].

In the same way, a study conducted by Zhou et al., reported that when the outcomes of treatment were

compared among patients with lung cancer, the surgery group displayed the best QoL and combined treatment group the worse QoL. Hence the results from the above studies contradict among themselves. There are supporting literatures for most findings in this study but not for all [26].

4. Correlation between different QoL scales and overall QoL in cancer patients

When further analysis was done to find out the correlation between overall QoL and the three main components of the quality of life, global health status/QoL showed the highest positive correlation of 0.962 followed by functional scale (0.542).The global health status/QoL showed the highest relation because one of its items was the overall quality of life itself. The positive correlation of function scale shows that better the functioning of patients in all aspects better is their quality of life. The symptom scale was negatively correlated (– 0.413), since the presence of symptoms would worsen the patient's quality of life.

Among the subscales, cognitive functioning had the highest correlation (0.455), followed by emotional (r = 0.440), physical (r = 0.423), social (r=0.336) and role functioning (0.326). Among the symptoms scale pain is the highest negative correlation (r = - 0.383), fatigue (r = - 0.371) and dyspnoea (r = - 0.278), insomnia (-0.263), loss of appetite (-0.198,) in decreasing order.

All the subscales were statistically significant except symptoms scale like nausea and vomiting, constipation and diarrhea.

When comparing these results to the study done in terminal stage of cancer patients by Van den Beuken the results are slightly different [34]. In his study fatigue showed the strongest correlation with overall QoL (r = - 0.63, $p < 0.001$), followed in decreasing order by role functioning (r = 0.53), physical functioning (r = 0.47), social functioning (r = 0.44), nausea (r = - 0.37), cognitive functioning (r = 0.33), appetite loss (r = - 0.31), dyspnoea (r = - 0.26) and emotional functioning (r = 0.24). Hence, the pattern of correlation does not correspond well in these two studies. Some components are similar like physical function (r=0.423) and dyspnea (r=-0.278) in present study.

5. Limitations

The first possible limitation of this study is the heterogeneity of the study sample with regards to tumor type and mode of treatment. So the results may not be relevant to the patients with specific tumor type and specific treatment. The second limitation is that the study sample was taken using purposive sampling technique so this is not representative of all types of patients. Hence, this might possibly affect the results.

The Third limitation was the EORTC QLQ C-30 scale which is used for this study has highest validity and reliability when self administered. But since majority of our study sample were illiterate, they could not administer it by themselves, and so all the patients were interviewed.

The Fourth limitation was that the patients who were very weak to respond (with ECOG performance status 4) and all others who could not communicate well with the researcher were excluded from the study. So the findings may not represent all the cancer patients well.

6. Implications

The study finding imply that loss of appetite is the most pre-dominant symptom affecting QOL and was found to be affecting all the cancer patients. Hence this finding emphasizes the need for better management of cancer-related appetite loss during the active treatment regimens (chemotherapy, radiationtherapy).

The study findings can be used by all the health care providers for providing care to the people with cancer, as the findings will help to improve the knowledge about areas needing more focus for improving the quality of life of cancer patients.

7. Conclusion

In conclusion the present study identified many demographic and disease related factors which may contribute the affecting the quality of life of cancer patients. A better health-related QoL in cancer patients with incurable disease is an important outcome of cancer therapy, especially when survival is prolonged. The symptoms scores showed effect on patients with cancer it is therefore, recommended that the need for better management of cancer-related symptoms such as appetite loss during the active treatment regimens. Majority of the patients reported of financial problem. Hence economic support to the patients, especially subsidization in treatment is essential for improving their quality of life.

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