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ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE IN CANCER PATIENTS UNDERGOING TREATMENT AT A TERTIARY CARE HOSPITAL IN DELHI

Community Medicine

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ABSTRACT

Context: Health related quality of life (HRQOL) is the most important health outcome in cancer patients after survival and an effective way of capturing whether adding years is actually adding life in the treated patients.

Aims: To measure the HRQOL in cancer patients at a tertiary care hospital in Delhi and to study the effects of type of cancer and treatment received on their overall quality of life (QOL).

Settings and Design: Hospital based Cross sectional study

Methods and Material: HRQOL was assessed in patients receiving treatment for different types of cancer using European Organization for Research and Treatment of Cancer (EORTC) HRQOL questionnaire VER.3.0

Statistical analysis: Coding and scoring of responses was done and scale scores were computed. Statistical significance for qualitative data was assessed with Chi-square test and Fisher Exact Test, while that for quantitative data with Student t–test/ ANOVA, as applicable. Pearson's correlation test was done to assess the factors affecting QOL.

Results: A total of 33 cancer patients (20 males; 13 females) were included in the study. Seven types of cancer were identified. Pain was one of the most common physical symptoms followed by loss of appetite.

None of the socio-demographic factors were found to be affecting the overall Symptom, Functional or Global health scores significantly. Mean cognitive functional scores were highest in cancer patients undergoing treatment, followed by mean social functioning, whereas mean role functioning scores were lowest. HRQOL Functional scores were significantly lower in patient with metastatic disease whereas average Symptom scores were significantly higher.

KEYWORDS:

Cancer patients, HRQOL, Socio-demographic, Clinical variables

Introduction

According to WHO world cancer statistics 2012, cancers figure among the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer related deaths in 2012. In India nearly two people are diagnosed every minute with cancer and as per the National Cancer Registry Program of the Indian Council of Medical Research (ICMR) a total of 4,91,598 people died in 2014 out of 28,20,179 cases.[1] The impact of cancer in India is far greater than mere number of cancer cases and deaths. Its diagnosis causes immense emotional trauma and many patients perceive the initial diagnosis of cancer with a lot of fear & despair. Though advances in treatment over last few decades have markedly increased the prospects of surviving in various types of cancers, making patient's cancer - free does not make them healthy and is often associated with poor quality of life even after survival.[1] Quality of Life (QOL) is a descriptive term that refers to people's emotional, social, and physical well-being as well as their ability to function in ordinary tasks of living.[2,3] Later, the term 'health-related quality of life' (HRQOL) was developed to distinguish it from the quality of life of the general population since the latter depends, in part, on factors that are unrelated to health. HRQOL refers to multidimensional assessments that include at least the physical, emotional (or psychological) and social domains, and may also include other domains such as cognitive functioning, sexuality and spirituality. While single domains, such as performance status or symptoms, may be components of HRQOL, they are, by themselves, insufficient to constitute a complete HRQOL assessment. HRQOL, on individual level, includes physical & mental health perceptions & their correlates. At community level, HRQOL includes resources, conditions, policies & practices that influence population's health perceptions & functional status. Intensive treatment regimens in cancer patients associated with various complications put these patients at increased risk of poor health related quality of life (HRQOL).The frequently considered efficacy criteria of cancer therapy are usually insufficient; as it doesn't give a holistic approach

toward the disease process, treatment and positive health, and it needs to be blended with individual's perspective (measured as HRQOL). [4] Its high time that the objective of cancer treatment should be changed from only successful treatment to overall improvement in the health related quality of life of the patients.

Limited studies from India particularly northern India have been reported where various domains of HRQOL in cancer patients have been assessed. Better understanding of HRQOL in cancer patients might help to add more quality life to the added years of the cancer survivors. Against this backdrop this study was planned with following objectives.

Objective

Our objectives were to measure the HRQOL of cancer patients under treatment at a tertiary care hospital in Delhi and to understand the determinants of the various domains of HRQOL in them.

Material & Methods

Setting: It was a hospital based cross sectional study carried out at tertiary care teaching hospital located in Delhi, from January 2016 to March 2016.

Inclusion Criteria was Cancer patients undergoing treatment in the hospital for >1 m. Sampling unit was an individual.

Sample Size & Sampling Technique: Sample size was calculated based on a study by Batra *et al* [5] which showed the overall quality of life score among cancer patients as 68 ± 18 (mean $\pm$ sd). Taking the standard deviation of 18, at 95% level of confidence and a relative precision of 10%, the sample size required for the study was 26. A total of 33 Cancer patients admitted in the various department of the hospital irrespective of their age, sex, stage, type of cancer & treatment received were included in the study by convenience sampling.

Data collection tool: The questionnaire used in the study had two parts. First part had questions related to socio-demographic details and information related to cancer and its treatment like type of cancer, type of treatment, duration of the disease and complications related to treatment at the time of assessment. Second part was the latest version of European Organization for Research and Treatment of Cancer Quality of life questionnaire (EORTC QLQ-C30 Version 3.0) for cancer patients, which has 30 items designed to assess cancer patients' physical, psychological and social functioning. [6,7]

It is a copyrighted instrument, which has been translated and validated into 81 languages and is used in more than 3,000 studies worldwide. It is composed of nine multi-item scales: 5 functional scales, a global QOL scale (GQOL), and three symptom scales (fatigue, pain, nausea & vomiting). In addition, there are five single item symptom scales (dyspnoea, sleep disturbance, appetite loss, constipation, & diarrhea); and a final item evaluates the perceived financial impact of the disease. In the version used for this study (version 3), question 1-28 had Likert-type four-point rating scale rated on a response scale of "not at all (1), to "very much" (4). The time frame for assessment of the items in the questionnaire is the present moment. For items 29 (on overall health) and 30 (on overall QOL), the response options had Likert-type seven -point rating scale ranging from "very poor" (1) to "excellent" (7) and the time frame is "during the past week".

Scoring procedures: The QLQ-C30 includes five functional scales, three symptom scales, a global health status / QoL scale, and six single item scales. Each of the multi-items scales includes a different set of items - no item occurs in more than one scale. It estimates the raw score by averaging the items score that contribute to the scale; then use a linear transformation to standardise the raw score, so that scores range from 0 to 100; a higher score represents a higher ("better") level of functioning, or a higher ("worse") level of symptoms.

Statistical analysis: Coding and scoring for the responses was done and were entered prospectively in MS Excel spread sheet and was analysed with the help of Statistical Package for Social Sciences (SPSS) version 20 for windows (SPSS Inc., Chicago, Illinois). The scale scores of the QLQ–C30 were computed as recommended. Statistical significance for qualitative data was assessed with Chi-square test and Fisher Exact Test, while that for quantitative data with Student t–test / ANOVA, as applicable. Correlation statistics was applied as and when needed. Pearson's correlation test was done to assess the factors that had mostly affected the QOL. Where there was multiple testing, we used a Bonferroni correction of $P < 0.01$. Otherwise, the level of significance was set at $P < 0.05$, and all tests were two-tailed. Missing data were handled by deleting cases, analysis- by- analysis.

Results
Table 1: Socio-demographic and cancer profile of the study subjects

Variables	Categories	Grand Total
Age (In years)	<20	7(21.3%)
	20-40	5(15.2%)
	40-60	13(39.3%)
	60-80	8(24.2%)
Marital Status	Married	22 (66.7%)
	Single	11(33.3%)
Socio-Economic Status	Upper	5(17.2%)
	Middle	17(58.6%)
	Lower	7(24.2%)
Educational status	Illiterate	5(15.2%)
	Primary	7(21.2%)
	Up to High School	9(27.2%)
	Intermediate and above	12(36.4%)
Occupational status	Unemployed	19(57.6%)
	Employed	14(42.4%)
Type of Family	Nuclear	18(54.5%)
	Joint	15(45.5%)
Religion	Hinduism	26(78.8%)
	Others	7(21.2%)
Type of Cancer	Localized	31(93.9%)
	Metastasis	2(6.1%)
Type of Treatment	Surgical	7(21.9%)
	Chemotherapy	5(15.6%)

	Radiotherapy	1(3.1%)
	Palliative	1(3.1%)
	Combined	19(56.3%)

Socio-demographic profile: A total of 33 cancer patients were included in the study of which 20 were males and 13 were females. Mean age of the cancer patients was 41.4 years (Range: 4-74 yrs) and 39.4% belonged to the age group of 40-60 yrs. (Table 1)

Table 2: Distribution of subjects as per Type of Cancer

Type of Cancer	No. (%)
Oral Cancer	11(33.3%)
Blood Cancer	4(12.1%)
Breast Cancer	3(9.1%)
Bone Cancer	2(6.1%)
Gastrointestinal Cancer	4(12.1%)
Genitourinary Cancer	5(15.2%)
Head & Neck Cancer	4(12.1%)
Total	33(100%)

Type of Cancer and Treatment: The study population had different types of cancer and were divided in seven major groups (Table 2). 93.9% subjects had localized cancers while 6.1% had cancers with known metastasis. Also most patients were on combined therapy (surgery, radiotherapy, chemotherapy). Oral cancer was the most prevalent in the study group and hence it was represented separately from other head and neck cancers. Genitourinary cancer was the second most prevalent and mainly comprised of cancer cervix patients.

Table 3: Mean EORTC scores of the study subjects

EORTC Q 30	Mean Scales (Standard error)	95% C.I.
Global health status	65.8 (3.85)	58.01-73.69
Functional scales		
Physical functioning PF	77.66 (4.479)	68.52-86.79
Role functioning RF	75.53(5.741)	63.82-87.24
Emotional functioning EF	76.09(4.396)	67.13-85.06
Cognitive functioning CF	89.53(3.647)	82.09-96.97
Social functioning SF	79.19(4.734)	69.53-88.84
Symptom scales / items		
Fatigue FA	26.22 (4.454)	17.14-35.30
Nausea and vomiting NV	20.31(4.780)	10.56-30.06
Pain PA	28.13(4.989)	17.95-38.30
Dyspnoea DY	8.31(3.349)	1.48-15.14
Insomnia SL	19.78(5.965)	7.61-31.95
Appetite loss AP	28.03(5.214)	17.40-38.67
Constipation CO	15.63 (4.970)	5.49-25.76
Diarrhoea DI	3.09(1.728)	-0.43-6.62
Financial difficulties	37.53 (6.496)	24.28-50.78

Scoring
The Global health status mean score of our study population was 65.8 (Table 3) which correlates well with the Functional scale mean score of 76.4 (29.2-100) and Symptom scale mean score of 22.22 (17-100). These scores show better functioning and lesser symptoms; hence overall good health related quality of life in our study objects.

Analysis of the EORTC QLQ C-30 showed that in functional scores almost all individual mean functional scores were over and above 75 (Range 63.8 - 96.9) suggesting good functional status in our patients. The mean cognitive functional scores were highest, followed by mean social functioning, whereas mean role functioning scores were lowest. In overall symptom scales the mean score for financial difficulties were highest in the cancer patients suggesting financial constraints.

Pain was one of the most common physical symptoms in cancer patients followed by loss of appetite, which can be due to the disease per se as well as the treatment.

Factors associated with HRQOL scale scores
We analysed the association of various Functional and Symptoms scale scores with socio-demographic and clinical variables by Correlations, t-tests and one-way ANOVA. The global health scores were also analysed for association with symptom and functional scores.

Socio-demographic status, Clinical variables and HRQOL

Tests comparing mean Symptom, Functional or Global health scores for different socio-demographic factors like sex, marital status, were not found significant. In one-way ANOVA, age, religion, marital, educational and occupational status was also not significantly associated with scale scores ($P > 0.05$). In other words, any of the socio-demographic factors was not found to be affecting the overall Symptom Functional or Global health scores significantly.

Extent of disease, Treatment modalities, duration of treatment and HRQOL

Average Functional scores were significantly lower in patient with metastatic disease (t = 2.5, df = 12, P = 0.02) whereas average Symptom scores were significantly higher in them (t = 2.1, df = 13, P = 0.05). In other words subjects with advanced metastatic disease tended to have worse functioning and more symptoms as compared to the localized one. Though global health scores were higher for localized cancer it was not statistically significant. In one-way ANOVA, treatment modality was significantly associated with Functional scale scores ($P < 0.05$). The patients who were treated with surgery alone were compared with patients treated with chemotherapy, radiotherapy, palliative therapy and combination therapy. Patients treated with surgery alone fared better on most scales than patients receiving other modalities of treatment on the global scale as well as functional and symptom scales. Subjects with surgical treatment had significantly better physical functioning as well as social life (F = 3.9, P <0.01 & F = 2.7, P < 0.04). Functional scores were significantly higher when treatment duration was more than 2 years (P< 0.05). In Symptom Scale it was seen that insomnia was significantly high in people undergoing radiotherapy followed by chemotherapy and was least in those undergoing surgical treatment (F = 2.8, P < 0.04). Financial difficulties as a symptom was seen maximum in those undergoing radiotherapy and palliative therapy and least in surgical treatment but the differences were not statistically significant.

Effect of different Symptom and Functional scales on Global health scores

On correlation analysis for the symptom scales of the QLQ – C30, the correlation with Global health score was negative for fatigue (r = 0.4, P < 0.02), and pain (r = 0.58, P < 0.01). The correlation of Global health score was positive for physical functioning (r = 0.45, P < 0.01), role functioning (r = 0.5, P < 0.003), emotional functioning (r = 0.44, P < 0.01). The correlation of Global health score was also positive with average functional scores (r = 0.46, P < 0.003) whereas it was negative with the average symptom score (r = 0.43, P < 0.01) as could be expected.

Discussion

Assessment of HRQOL in cancer patients and the effect of type of cancer and type of therapy should be the first step in way of the medical team to decide the kind of care the patients and their families need.

An interesting observation in the demographic profile of our patients was male preponderance. National Cancer Registry from Indian Council of Medical Research also shows a higher male : female ratio in cancer prevalence. A plausible explanation to this is the gender differentials observed in health seeking behaviour in developing countries, and hence, female patients are less likely to visit the health facilities. [8,9,10,11]

In our study Oral cancer was the most common cancer followed by Genito-urinary cancer. Overall, Oral cancer is third most common cancer in India. [11] The use of smokeless tobacco (gutka, khaini etc) is on rise in north India and especially in states like Uttar Pradesh (UP) and adjoining areas which leads to high incidence of oral cancer in this region. Proximity of East Delhi to the state of Uttar Pradesh and the hospital catering to the people from UP very commonly may explain the deviation. [12] In another study by Devender et al in a tertiary care hospital the most common cancer was oral cancer. [13]

In our study most of the cancer patients belonged to the age group of 40 - 60 yrs. However, in India as per ICMR it is reported that cancer is most common in the age group of 70 onwards. [14] This can be explained by the fact that our study was done on a small subset of the population and hence the findings may not be comparable with national data. Most of the patients were suffering from oral cancer and studies have reported most common age group for oral cancers is the fifth decade of life. [15,16]

In our study, the overall global health status, Symptom scale and Functional scale was found to be comparable with each other. May be because most of the patients in our study were suffering from localized illness, there were fewer symptoms and their functionality was on higher side.

In our study the mean score for financial difficulties were highest among the symptom scores of patients suggesting financial constraints. Another Indian study by Chauker et al also reported that majority of their patients suffered considerable financial limitations. [17]

While administrating the HRQOL questionnaire we realised that due to large patient volumes and limited availability of time, physicians often have to focus their efforts on ensuring relief from the main disease. Constitutional symptoms such as pain, loss of appetite, fatigue etc. is often overlooked and under-investigated by them and probably underreported by patients because it seems to be a logical consequence of cancer and its treatment. But these constitutional symptoms may have great consequences in overall HRQOL. Pain, loss of appetite and fatigue were one of the most common physical symptoms in cancer patients in our study.

While studying factors associated with HRQOL we found that there was no association of socioeconomic status of the patients on HRQOL in our study. However, some studies quoted that low income and educational level were associated with lower QOL scores as well as lower capacity to deal with cancer and its consequences. [14,18]

Functional scores were significantly higher when treatment duration was more than 2 years (P< 0.05). Several other longitudinal studies which assessed HRQOL 3 to 5 years after treatment also reported that global HRQOL does show significant improvement after 3 to 5 years of treatment. [19,20] This may be due to actual betterment due to treatment or better adjustment of the patients to disease and treatment with time.

We observed an expected trend wherein localized tumors and patient receiving surgery alone had better HRQOL scores as compared to patients with metastasis or the patients receiving chemotherapy, radiotherapy or palliative therapy alone or in combination with surgery. Chauker and Hammerlid et al [14, 19] had similar results, where, patients with smaller tumors scored better on functional as well as symptom scores.

Strengths & Limitations
Limitations

Our findings cannot be generalized to the population as the study was a hospital based cross-sectional study with relatively small sample size and there was no population based reference data for the EORTC QLQ – C30 in India. Also, all the different types of cancers were not represented evenly and the duration of disease as well as treatment for each of the cancer patient was different and varied widely. In addition, there was no follow up done after treatment completion. Being heterogeneous groups (including all type of cancers, stages, etc.) without considering the stages and grading, we encountered majority of patients at their variable stages of disease progression, so intra-group (within cancer) variations may be present.

Strength

Despite the limitations, the present study represents an attempt to understand the complicated interaction between cancer patients' treatment and their response to HRQOL domains. Our study is the first of its type which in depth assessed the various types of cancer and the response to different treatment modalities in terms of HRQOL. We used an internationally accepted HRQOL questionnaire and also the sample size taken was adequate for the study.

Conclusions

The present study is one of the few studies on assessment of HRQOL in cancer patients with various types of malignancies from North India. This study demonstrated that HRQOL instruments can be used to detect problems that may be difficult for the patient to communicate to their treating physician and help us to understand better the physical, psychological and social problems of our patients, and this information, in turn, can help direct further interventions.

Recommendations

The results of the study can be applied in clinical practice to develop need based interventions so as to provide comprehensive care for the

patients and their caregivers. We felt that literature was scanty and this domain of HRQOL should also be studied in greater detail. Further multi-centric prospective studies should be planned to see the effect of interventions. As financial constraints are major problem for the patients, it should be taken into consideration before recommending expensive therapy to poor patients in palliative settings.

Also, we did not administer a questionnaire directed to identify the psychological status of our patients. Psychological assessment and appropriate pre-treatment counseling especially for the patients who demonstrate adjustment problems may help patients to cope better with these diseases of long-term sequel of treatment and consequently may improve HRQOL outcomes.

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