

Quality of Life Among Cancer Patients Treated With Chemotherapy or Radiotherapy in Erbil City

An Evaluation Study

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Abstract

Objectives: This study was conducted to assess the quality of life in its different domains among cancer patients in relation to their treatment modality.

Methods: A convenience sample of 200 patients with cancer was selected, 100 patients were on chemotherapy and the other 100 were on radiotherapy. Data was obtained through direct interview, using FACT-G questionnaire, version 4, and was managed through a statistical program, using appropriate statistical tests.

Results: The emotional domain was the least affected one in both study groups ($P = 0.800$), while the physical domain reflected a significant statistical differences ($P < 0.001$); it was mildly affected in 92% of those with radiotherapy and moderately affected in 47% of those on chemotherapy. The social and functional domains were the most badly affected with a significant difference in the functional domain only ($P < 0.001$) where 93% of those on radiotherapy being badly affected. The functional well-being of breast cancer was more affected among those with radiotherapy ($P = 0.039$), while the physical domains of quality of life of patients with gastrointestinal tract cancer was more badly affected by chemotherapy ($P = 0.001$).

Conclusion: Patients on chemotherapy are more badly affected in some domains of quality of life, compared to those on radiotherapy. The emotional domain of QoL was the least affected, while the social and functional domains were the most badly affected ones among cancer patients, whether they were treated with radiotherapy or chemotherapy.

Keywords: cancer, chemotherapy, quality of life, radiotherapy, FACT-G version 4

List of Abbreviations

FACT-G: Functional assessment of cancer illness therapy- General;

GIT: Gastrointestinal tract;

QoL: Quality of life.

1. Introduction

Quality of life (QoL) is a complex concept being multidimensional and subjective. Health-related quality of life refers to the extent to which one's usual or expected physical, emotional, functional and social well-being are affected by a medical condition or treatment (Lau et al., 2002; Snoek, 2000).

QoL assessments can be used in diagnosis, predicting prognosis, assessment, patient monitoring, clinical decision-making, communication, and treatment. Other uses include designing system intervention, allocating resources and research efforts, training health care personnel, and reducing costs (Perry, Kowalsk, & Chang, 2007). In evaluating different outcomes of cancer treatment in clinical practice, quality of life is one of the important issues concerned by the physicians that may be measured using one of several non- equivalent metric measuring tools; of those the most commonly used being the functional assessment of cancer therapy- General (FACT-G, 1987), which is a collection of 27 items as social, functional, physical and emotional well-being,

targeted at managing chronic illnesses including cancer.

The FACT-G has been increasingly used in cancer patients since it meets all necessities to be used in oncology clinical practices, including ease of administration, consistency, validity, and its reaction to clinical change. It helps to evaluate the relative scale of different domains of QoL from the patient's perspective. The physical domain refers to disease, symptoms and treatment adverse effects. The functional domain primarily reflects one's capabilities, self-care and role limitations. The emotional domain includes positive emotional experiences and emotional distress. The social domain relates to familiarity, family relationships and sexuality, as well as the comprehensive friendship network and the amount of care and help that patients gain from their social networks (Lau et al., 2002).

The combinations of various cancer modality treatments that include surgery, chemotherapy and radiotherapy have enhanced better prognosis in many cancer sites. However, there is more worry about the intensity of the treatment and the adverse reactions because of drug toxicity, in addition to the patients' QoL (Perry et al., 2007; Dapuelto et al., 2001; Cella, Tulsky, & Gray, 1993). Many aspects of QoL related to chemotherapy or radiotherapy have been studied. Chemotherapy is a concentrated and repeated treatment drug regimen, unlike surgery has many adverse reactions including hair loss, nausea, vomiting, and diarrhea; besides it requires extended periods of treatment and repeated admissions to the hospital, which can eventually affect the QoL of cancer patients (Casso, Buist & Taplin, 2004). Quality of life assessment should be part in all newly introduced cytotoxic drug assessment and clinical trials of various agents to enable physicians properly document the individual impact of such treatment modalities (Kornblith, Herndon, Weiss, Zhang, & Zuckerman, 2003).

An optimum level and high quality of care for patients with different types of cancer treated for cancer in Erbil city could be achieved by frequent and regular measurement of the quality of their life. This study, therefore, was conducted to evaluate the QoL in its several domains, physical, social, emotional and functional well-being among certain prevalent types of cancer in Erbil city.

2. Patients and Methods

This cross-sectional study was carried out at Nanakaly Hospital (A Charity hospital, specialized in blood diseases and cancer) and the radiotherapy unit of Rizgary Teaching Hospital in Erbil city from 15th of December 2013 to 15th of February 2014.

Due to lack of exact data on cancer prevalence, and lack of specialized public cancer hospitals in the city, it would be rather difficult to define exactly the patient's population in the governorate. At the same time most of the hospital attendances are from middle or low- income families; those from high- income families are used to go to neighboring countries especially Jordan, Iran and Turkey and even some European countries. A convenience sample of 200 patients with cancer irrespective of its site or stage was selected. Two study groups were identified; the first group included one hundred patients selected from those assigned to be treated by chemotherapy alone at the time of data collection and the second study group comprised another 100 patients assigned to be on radiotherapy treatment alone at the time of data collection. Patients on chemotherapy or radiotherapy treatment for at least one-month duration prior to their recruitment in the study and willing to participate were included in the study. Patients in advanced stage of the disease, those badly affected by the treatment and those on adjuvant therapy were excluded.

Ethical issues were considered, prior official approval was obtained from health authorities from the directorate of health of Erbil and both hospitals. Verbal informed consent was obtained from all patients before the interview; they were assured that their participation is voluntary and their responses would be anonymous and kept confidential. The research protocol was approved by the research ethics committee of the College of Medicine of Hawler Medical University.

Data related to socio-demographic characteristics were obtained. FACT-G version 4 was used to assess the different domains of quality of life of the enrolled patients (Cella et al., 1993). Although the questionnaire of FACT-G was constructed to be a self-administered one, yet it was more convenient to collect data through direct interview by the researchers since 50% of the patients were illiterate. The interview was carried out in both hospitals. The process started after obtaining verbal consent from the patient who met the inclusion criteria, the process was standardized based on the selection criteria of the patients. The average interview time was between 20 and 25 minutes. Assessment of the physical and emotional domains included 7 and 6 items, respectively. The score of these domains was estimated on a scale of 5 degree, (0-4) for each item with an overall score range of (0-28) and (0-24), respectively. Then the total scores were further categorized into three groups; the scores of physical well-being were (0-9), (10-19), and (20-28) and that of emotional well-being were (0-8), (9-17) and (18-24). Lower scores reflect better functioning and accordingly these scores reflect a mild, moderate or bad

effect of therapy on QoL, respectively. On the other hand social (family) and functional domains were evaluated through responding to 7 items on the same scale of (0- 4) degree with an overall score of (0-28). Those with higher scores assigned to have better QoL and further stratification of the scores yield scores of (0-9), (10-19), and (20-28), respectively to be related to bad, moderate, and mild effect of therapy on these domains of life (Cella et al.,1993).

All data was managed using the Minitab version 15, statistical program. Discrete data was presented as frequency distribution, and the mean \pm SD was calculated for continuous data. Tests of association were used; student-t test, χ^2 test and when it was not applicable Fisher exact test had been used. Pearson correlation test, analysis of variance using one-way ANOVA test were also used. P value equal or less than 0.05 was considered as statistically significant.

3. Results

3.1 Socio-Demographic Characteristics of the Patients

Regarding the socio-demographic characteristic of both study groups; those on radiotherapy and those on chemotherapy seemed to be nearly matched; there was no significant statistical differences between the variables, except for the residence, which was found to have marginal statistical difference (P = 0.048). The mean \pm SD of age of patients receiving radiotherapy and those treated with chemotherapy were 43.59 \pm 15.12 and 45.67 \pm 16.13, respectively. Details are in Table 1.

Table 1. Socio-demographic characteristics of both study groups (n-200)

Variables	Radiotherapy group	Chemotherapy group	P value †
	No (%)	No (%)	
Gender			
Male	35 (35)	37 (37)	0.768
Female	65 (65)	63 (63)	
Educational status			
Illiterate	50 (50)	50 (50)	0.831
1-6	26 (26)	22 (22)	
> 6-12	21 (21)	26 (26)	
>12-18	3 (3)	2 (2)	
Marital status			
Married *	84 (84)	90 (90)	0.596
Single	16 (16)	10 (10)	
Occupation			
Employee	28 (28)	38 (38)	0.232
Non-employee	72 (72)	62 (62)	
Residence			
Urban	42 (42)	29 (29)	0.048
Rural	58 (58)	71 (71)	
Total	100	100	

* Including widowed and divorced;

† χ^2 test.

3.2 Impact of Type of Treatment on Different Domains of QoL of Cancer Patients

The least affected domain of the QoL of the studied cancer patients was the emotional well-being since 91% and 92% of those treated with radiotherapy or chemotherapy respectively were mildly affected (P = 0.8). The

physical well-being of patients treated with radiotherapy was significantly less affected than those treated with chemotherapy ($P < 0.001$), as 75% of those with radiotherapy were only mildly affected while 47% of those treated with radiotherapy were moderately affected, yet neither of them was badly affected. On the other hand the social well-being was badly affected in 88%, and 90% of those treated with radiotherapy or chemotherapy, respectively ($P = 0.651$). The functional well-being of cancer patients was also badly affected; 93% of those treated with radiotherapy and 77% of those treated with chemotherapy were badly affected ($P < 0.001$) (Table 2).

Table 2. Impact of type of treatment on different domains of QoL of cancer patients

QoL Domains	Mildly affected No. (%)	Moderately affected No. (%)	Badly affected No. (%)	P value*
Physical				
Radiotherapy	75 (75)	25 (25)	--	< 0.001
Chemotherapy	43 (43)	47 (47)	--	
Social				
Radiotherapy	--	12 (12)	88 (88)	0.651
Chemotherapy	--	10 (10)	90 (90)	
Emotional				
Radiotherapy	91 (91)	9 (9)	--	0.800
Chemotherapy	92 (92)	8 (8)	--	
Functional				
Radiotherapy	--	7 (7)	93 (93)	< 0.001
Chemotherapy	--	23 (23)	77 (77)	

* χ^2 test.

3.3 Mean Scores of Different Domains of QoL According to Type Of Treatment

A statistically significant higher mean of physical well-being, and emotional well-being, which represent lower functioning was found among those treated with chemotherapy than those treated with radiotherapy ($P < 0.001$ and 0.024, respectively). Functional well-being has a significantly higher mean, which reflects better functioning among those treated with chemotherapy than those treated with radiotherapy ($P = 0.023$). On the other hand, no statistical difference was found between the mean scores of social well-being among the two groups ($P = 0.306$). These findings are shown in Table 3.

Table 3. Differences in mean scores of different domain of QOL according to type of treatment

QoL Domain	Radiotherapy group (n=100) Mean score \pm SD	Chemotherapy group (n=100) Mean score \pm SD	P value (t- test)
Physical well-being*	8.01 \pm 2.84	10.09 \pm 3.66	< 0.001
Social well-being [†]	5.87 \pm 2.77	6.25 \pm 2.45	0.306
Emotional well-being [§]	4.91 \pm 2.33	5.67 \pm 2.41	0.024
Functional well-being**	5.19 \pm 2.78	6.31 \pm 4.00	0.023

* Physical domain scores: mild (0-9), moderate (10-19, and bad (20-28);

[†] Social domain scores: mild (20-28), moderate (10-19), and bad (0-9);

[§] Emotional domain scores: mild ((0-9), moderate (10-19, and bad (20-28);

** Functional domain scores: mild (20-28), moderate (10-19), and bad (0-9).

3.4 Differences in Physical, Social, Emotional and Functional Well-Beings According to the Type of Cancer

Assessment of the effect of the main types of cancer (breast, blood, and GIT) on different domains of QoL revealed no differences between them regarding their physical ($P= 0.580$), social ($P= 0.072$), and emotional well-being ($P= 0.977$). However, there was a statistically significant difference in the mean scores of functional well-being ($P= 0.030$); GIT cancer patients were the most badly affected, having the lowest score (Table 4).

Table 4. Differences in physical, social, emotional and functional well-being according to the type of cancer

QoL domain	No.	Mean scores \pm SD	P value*
Physical			
Breast	70	9.271 \pm 3.587	0.580
Blood	55	8.691 \pm 3.527	
GIT	33	8.667 \pm 3.517	
Social			
Breast	70	5.471 \pm 2.744	0.072
Blood	55	6.527 \pm 2.324	
GIT	33	5.970 \pm 2.404	
Emotional			
Breast	70	5.200 \pm 2.319	0.977
Blood	55	5.291 \pm 2.753	
GIT	33	5.212 \pm 1.965	
Functional			
Breast	70	5.629 \pm 3.515	0.030
Blood	55	6.727 \pm 3.851	
GIT	33	4.697 \pm 2.942	

*ANOVA test.

3.5 Quality of Life of Cancer Patients in Relation to Type of Therapy and Type of Cancer

The effect of type of therapy, being chemotherapy or radiotherapy was also assessed among patients suffering from the three types of cancer (breast, blood, and GIT). The functional well-being was the most badly affected ($P = 0.039$) in those with breast cancer receiving radiotherapy, while physical well-being had marginal significant difference ($P = 0.049$), being better in those receiving radiotherapy. Patients suffering from blood cancers found to have a significantly lower mean \pm SD of emotional well-being in patients on radiotherapy than those on chemotherapy ($P = 0.041$), reflecting better QoL in those receiving radiotherapy. The physical well-being was most badly affected in patients with GIT cancers treated with chemotherapy ($P = 0.001$). Details are shown in Table 5.

Table 5. Quality of life of cancer patients in relation to type of therapy and type of cancer

QoL domain	Radiotherapy		Chemotherapy		P value*
	No.	Mean scores \pm SD	No.	Mean scores \pm SD	
Breast cancer					
Physical		8.55 \pm 2.59		10.41 \pm 4.60	0.049
Social	38	4.92 \pm 2.62	32	6.13 \pm 2.78	0.069
Emotional		4.74 \pm 2.18		5.75 \pm 2.40	0.071
Functional		4.82 \pm 2.99		6.59 \pm 3.88	0.039
Blood cancers					
Physical		7.75 \pm 3.43		7.74 \pm 3.18	0.993
Social	24	6.54 \pm 2.69	31	6.58 \pm 2.20	0.954
Emotional		4.46 \pm 2.26		5.94 \pm 2.95	0.041
Functional		6.83 \pm 2.55		6.65 \pm 4.66	0.849
GIT cancers					
Physical		6.82 \pm 2.16		10.63 \pm 3.38	0.001
Social	17	6.12 \pm 2.69	16	5.81 \pm 2.214	0.720
Emotional		4.82 \pm 2.24		5.63 \pm 1.59	0.244
Functional		4.18 \pm 2.60		5.29 \pm 3.26	0.306

* t- test.

4. Discussion

Cancer incidence is increasing all over the world (WHO, 2007). Kurdistan Region and other parts of Iraq have been exposed to several carcinogenic hazards, which may be responsible for the increased risk of cancer in this region (Othman et al., 2011).

Different scales had been used to evaluate the burden of cancer on different domains of QoL of patients and as a tool for the relationship between different strategies used in the treatment of cancers (Heydarnejad, Hassanpour, & Dehkordi, 2011; Snoek, 2000).

The study revealed that the least affected domain of the QoL of cancer patients, whether they were treated by radiotherapy or chemotherapy was the emotional one. This could be related to the coherence of people living in the unique culture of Iraq and other developing countries, which is characterized by intimate and close relationship between family members, friends and neighbors; besides that most of them are living among extended families. However, patients treated with radiotherapy had better emotional well-being than those on chemotherapy, with significant statistical difference ($P = 0.024$). Physical well-being was just mildly affected in the majority of those treated with radiotherapy compared to the moderate effect in about half of those treated with chemotherapy. Physical well-being was significantly better ($P < 0.001$) in those on radiotherapy than those on chemotherapy. These results are inconsistent with results of an Iranian study (Dehkordi, Heydarnejad & Fatehi, 2009). A similar study in Saudi Arabia (Al Ahwal, 2005) revealed that chemotherapy caused more nausea and poor tolerance to side effects than radiotherapy.

The functional and social well-beings of all cancer patients in this study were badly affected, whether on radiotherapy or chemotherapy, with statistically significant difference ($P < 0.001$) and better functioning of patients on chemotherapy. Studies in Iran (Dehkordi et al., 2009) and Turkey (Bozcuk et al., 2002) had revealed similar results. This may be related to the fact that most cancer patients in Iraq cannot deal with the new events and changes in their body image and daily activities that resulted from their disease, neither in their social or occupational life. Such a defect might be related to the lack of the psycho-behavioral therapy and rehabilitation care which should be provided in all stages of management, started early at the time of diagnosis and persistent during therapy. This subject should be efficiently addressed by the medical team in coordination with the family members.

Whether the type of cancer being breast, blood or GIT, cancer had an effect on different domains of life of cancer

patients, statistical analysis revealed no differences between them regarding their physical, social, and emotional well-being. The only detected difference was in their functional well-being, which seemed to be most badly affected in those with GIT cancers. Such findings may be related to the symptoms associated with GIT cancers, being mostly affecting the usual pattern of eating, besides the embarrassing conditions related to the surgical intervention of bowel that may be maximized by radiotherapy or chemotherapy. Similar findings were reported by studies in China (Deng, Lan, & Luo, 2013) and Turkey (Alacacioglu et al., 2010).

Assessment of QoL of patients with breast cancer revealed that functional well-being was badly affected in those receiving radiotherapy than in those treated with chemotherapy, while the physical well-being was better in those receiving radiotherapy. This may be related to the effect of radiation on one hand, and the nature of the disease which might have metastasized to other organs on the other hand. A study in Jordan revealed that physical well-being of breast cancer patients was more badly affected in those receiving chemotherapy than those on radiotherapy. The author stated that the main problem of patients with breast cancer in relation to their functional activity was their lack of ability to have fun, being less pleased with their lives, and more worried with their future (Alzabaidey, 2012). The difference could be due to availability of better cancer treatment facilities, better quality drugs, well-organized nursing care and good doctor-patient interaction.

Patients with blood cancer had significantly better QoL in emotional domain among those receiving radiotherapy than those on chemotherapy. This might be related to the adverse reactions of chemotherapy and less side effects of radiotherapy for blood cancer patients, which depend on the dose of the treatment, the part of the body being exposed to radiation, the length of radiation period and other factors. A study in Brazil (Andrade, Sawada & Barichello, 2013), revealed that the emotional and cognitive side effects of chemotherapy negatively influenced the QoL of hematologic oncology patients.

Furthermore, those with GIT cancers treated with chemotherapy were more badly affected in their physical well-being than those treated with radiotherapy, which might be related to the effect of chemotherapy, which could aggravate their already present GIT symptoms. A study in Korea had shown that role and emotional functioning improved with increasing age, and stomach-specific symptoms (pain, eating restrictions, and anxiety) lessened, male survivors had better physical and role functioning than females (Bae et al., 2006). These differences could be attributed to the availability of well-established cancer treatment facilities with sophisticated diagnosing equipment and well qualified medication.

The long-lasting adverse reactions of chemotherapy or radiotherapy and the management of cancer associated symptoms are two areas that may be crucial for clinicians and patients with cancer to be taken into consideration when trying to identify and improve quality of life consequences.

Education programs to physicians and healthcare workers dealing with cancer patients can also improve better doctor-patient interaction, consequently, they can have an active role in supporting patients and their families to deal with the adverse reactions of the treatment and enhance better social and functioning well-being.

Data were not available on the choice of chemotherapy drugs and their dosage, irradiation dosage, tumor localization, kind of cancer and stage of the disease at the time of the interview, although the mentioned factors could have substantial impact on QoL. In addition to that there may be a possibility of imbalance between those responding and those refused to participate in the study. The cross-sectional design allows identifying strong and weak domains of QoL with possible correlations but conclusions about causality cannot be judged based on such study. The small sample size within subgroups caused some instability during analysis of subgroups, which could be considered as another limitation of the study. Accordingly these results are not definitive and should be subjected to further investigation, with a larger sample size and a proper case control study.

In conclusion, the emotional domain of QoL was the least affected, while the social and functional domains were the most badly affected ones among cancer patients, whether they were treated with radiotherapy or chemotherapy. Functional well-being was most badly affected in GIT patients. The physical well-being of patients with GIT or breast cancer receiving chemotherapy was evidently more badly affected. Regular evaluation of QoL of patients with cancer could be a part of comprehensive management plan with an emphasis on the social and functional domains among cancer patients.

Competing interests

The authors affirm that they have no competing interests.

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