Symptom Interference and Relation between the Domains of Quality of Life among Cancer Patients of Tertiary Care Hospital

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Abstract

Introduction: Quality of life (QOL) should be considered as the main outcome measure for patient with advanced cancer. QOL of cancer patients is affected by several factors. **Objectives:** The objective of the study was to assess the symptom interference and the relation between the domains of QOL among cancer patients. **Methodology:** An exploratory survey conducted among 768 patients diagnosed as Stage III or IV of cancer of breast/cervix/head and neck/gastrointestinal tract/lung/colorectal. Data were collected using pretested reliable structured interview questionnaire. **Results:** Out of 768 cancer patients, symptoms burden was interfered completely in their relationship with others among 445 (57.9%), sleep among 491 (63.9%), and QOL among 433 (56.4%). The domains of QOL were general well-being, physical well-being, psychological well-being, familial relationship, sexual and personal abilities, cognitive well-being, economic well-being, informational support, doctors' cooperation, and body image. Since the data were not following the normal distribution, Spearman rho was computed to assess the relationship between the domains. The data revealed that there is a positive statistically significant correlation between the domains of general well-being of the participants with physical wellbeing ($r = 0.265$, $P = 0.001$), psychological well-being ($r = 0.195$, $P = 0.001$), sexual and personal abilities ($r = 0.278$, $P = 0.001$), and body image ($r = 0.168$, $P = 0.001$). The study inferred that cancer patients with good cognitive well-being and high economic status had a sense of positive body image. **Conclusion:** Cancer patients have poor QOL in physical and psychological domains. QOL of patients is affected by the symptoms suffering during the treatment and diagnosis. Symptoms need to be managed effectively to improve the QOL of cancer patients.

Keywords: Cancer patients, domains, quality of life

Introduction

The Global Cancer Database 2018 estimates that there were 18.1 million new cases of cancer and 9.6 million deaths from cancer in 2018. Worldwide, cancer is an important cause of morbidity and mortality with irrespective of the status of the people.[1] Noncommunicable diseases are now responsible for the majority of global deaths.[2] Cancer patients experience many symptoms which affect their quality of life (QOL). The management of cancer pain is a critical issue in the care of patients with cancer.[3] After diagnosis of cancer, patient has to undergo treatments such as surgery, chemotherapy, and radiotherapy. These treatments affect cancer patients in different way on their QOL. Physical, mental, emotional, and social aspects of cancer patient's life get deteriorated due to symptoms experienced.[4-7] A study conducted by Head *et al.* at Louisville to find the relationship between weight loss and health-related QOL in persons treated for head-and-neck cancers (HNCs). Functional Assessment of Cancer Therapy for Head and Neck scale was used among 151 HNC patients to assess the QOL. The mean and standard deviation (SD) of subscale is as follows: physical well-being – 19.0 ± 7.4, social well-being – 21.8 ± 5.1, emotional well-being – 17.9 ± 5.1, functional well-being – 16.1 ± 7.6, and HNC-specific scale – 20.2 ± 8.8.[8]

Symptoms have major negative impact on QOL. There is an association between symptoms load and the emotional

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suffering, physical and social functioning, and global QOL.[9] Most of the cancer patient's QOL is affected by several factors. Various types of tool are available to assess the QOL. These tools consist domain-specific to assess within the overall QOL. About 39.4% of the cancer patients reported that pain is the troublesome symptoms affecting on QOL.[10-12] The assessment of QOL is an important outcome measure of quality care received by the cancer patients. There is significant correlation found between Karnofsky Performance Scale and the domains of McGill QOL Questionnaire ($P < 0.05$).[13]

A mixed-methods study was conducted among HNC patients in a tertiary care hospital, South India. The study found a moderate-positive correlation between social and emotional domains ($r = 0.440$, $P = 0.001$) and emotional versus HNCS ($r = 0.487$, $P = 0.001$) domains. A weak-positive correlation was found between physical versus functional domains ($r = 0.279$, $P = 0.041$).[14] Nurses are spending more time with cancer patients and have more responsibilities to improve the QOL at the end of life.[15] Thus, this study aimed to determine the symptoms interfered and the relationship between the domains of QOL from obtained data from cancer patients.

METHODOLOGY

An exploratory survey was done among 768 patients aged above 30 years and diagnosed to be in Stage III or IV of cancer of breast/cervix/head and neck/gastrointestinal tract/lung/colorectal cancer and have undergone radiotherapy or chemotherapy or surgery or combination of them. The patients were selected by convenient sampling method. Patients who were unable to perform activities and who had psychiatric problems were excluded from the study. A total of 12 hospitals from the Southern part of Karnataka (Manipal, Mangalore, and Bengaluru) were selected by purposive sampling. Out of which, seven hospitals permitted to conduct the study. Data were collected by structured interview questionnaire after obtaining permission from the respective hospital administrators and the consent from the cancer patients.[16]

Description of quality of life domains
The researcher used the QOL questionnaire version II to assess the QOL of cancer patients-Indian scenario, designed and validated by Vidhubala *et al*. with a reliability of Cronbach alpha 0.90 and split-half reliability of 0.80 (using alpha coefficient and Guttman split-half reliability method). This QOL scale had 41 items with 11 factors namely, psychological well-being (8 items), general well-being (5 items), physical well-being (10 items), familial relationship (4 items), sexual and personal abilities (2 items), cognitive well-being (3 items), optimism and belief (2 items), economic well-being (3 items), informational support (2 items), patient–physician relationship (1 item), and body image (1 item). The items from the tool are scored direct and reverse directions in order to yield global QOL. Out of 41 items, 39 items were in Likert four-point scale that rated on a response scale of "not at all" (1) to "very much" (4). The remaining two

items were in ten-point semantic scale. For item 40 (on overall physical condition) and 41 (an overall QOL), the response option ranged from "very poor" (1) to "excellent" (10), and the period was during the past 2 weeks. The total score of the whole tool consisted of a maximum score of 176 and a minimum score of 41. The author categorized the total score into five: above 165 – very high QOL, 147–165 – high QOL, 118–146 – average QOL, 99–117 – low QOL, and below 99 – very low QOL. The higher score indicates better QOL among cancer patients.[17]

Ethical considerations
The objectives of the study were informed to the patients and informed consent was obtained. The study was approved by the institutional ethics committee. Administrative permission was obtained from the seven hospitals prior to the data collection. Confidentiality of the information was maintained.

Statistical analysis
The obtained data were coded, tabulated, and analyzed using the SPSS package version 16 (IBM SPSS Inc., Chicago, IL, USA) and were interpreted using descriptive and inferential statistics on the basis of objectives and hypotheses of the study.

RESULTS

The data were collected from 768 cancer patients. The findings of the study data show that 232 (30.2%) of the participants were in the age group of 51–60 years, 301 (39.2%) of them had their education until primary school, and 308 (40.1%) of the participants were suffering from HNC. Most of the participants, i.e., 596 (77.6%) were suffering from the illness for <1 year, and the duration of treatment was <6 months for most (76.2%) of them, and 443 (57.7%) were suffering from Stage III of cancer, and remaining 325 (42.3%) were in Stage IV.[16]

Description of quality of life among cancer patients
With regard to QOL of cancer patients, the different domains of QOL such as general well-being, physical well-being, psychological well-being, familial relationship, sexual and personal abilities, optimism and belief, economic well-being, informational support, patient–physician relationship, and body image were assessed and published in the article Indian Journal of Palliative Care 2017;23:445-50.[3]

Among 768 cancer patients, 632 (82.3%) (300 + 332 = 632) were in the category of below-average QOL score. Very few, i.e., 4 (0.5%), had high QOL score. The overall mean QOL score was 105 ± 12.93 [Table 1]. The mean and SD of subscale or domains of QOL of cancer patients is depicted in Table 2.

Interference of the symptoms burden
Majority of the cancer patients suffer from various kinds of symptoms, and these symptoms interfere in their daily activities. The frequency and percentage distributions of interference of symptoms to general activity, mood, walking ability, routine work, sleep, relationship, and QOL were assessed and scored as: did not interfere (0), partially interfered (3), and completely interfered (5). The data presented in Table 3 show that the majority, i.e., 549 (71.5%) of the participants' general activity

was partially interfered with symptoms, and the mood was completely interfered among 402 (52.3%). The symptoms partially interfered in the walking ability for 483 (62.9%) and 431 (56.1%) in their normal work. The complete interference was reported in the areas of their relationship with others by 445 (57.9%), sleep by 491 (63.9%), and QOL by 433 (56.4%) cancer patients.

Relationship among the domains of quality of life of cancer patients

This section presents that the correlation with the domains of QOL such as general well-being, physical well-being, psychological well-being, familial relationship, sexual and personal abilities, cognitive well-being, economic well-being, informational support, doctors' cooperation, and body image is depicted in Table 4. Since the data were not following the

Table 1: Frequency and percentage of quality of life score categories (*n*=768)

Categories	Score	Frequency (%)	Mean±SD
Very low	Below 99	300 (39.1)	105.32±12.93
Low	99-117	332 (43.2)	
Average	118-146	132 (17.2)	
High	147-165	4 (0.5)	
Very high	Above 165	-	

SD: Standard deviation

Table 2: Mean and standard division of the quality of life domains (*n*=768)

Domains	Total score	Mean±SD
General well-being	32	10.65 (3.23)
Physical well-being	40	20.35 (4.72)
Psychological well-being	32	18.04 (5.82)
Familial relationship	16	13.73 (1.45)
Cognitive well-being	12	8.52 (1.52)
Economic well-being	12	8.94 (0.53)

SD: Standard deviation

Table 3: Frequency and percentage distributions of interference of symptoms to general activity, mood, walking ability, routine work, sleep, relationship, and quality of life (*n*=768)

Areas	Frequency (%)		
	Did not interfere	Partially interfered	Completely interfered
General activity	57 (7.4)	549 (71.5)	162 (21.1)
Mood	2 (0.3)	364 (47.4)	402 (52.3)
Walking ability	98 (12.8)	483 (62.9)	187 (24.3)
Normal work (includes work outside home and housework)	84 (10.9)	431 (56.1)	253 (32.9)
Relationship with other people	5 (0.7)	318 (41.4)	445 (57.9)
Sleep	-	277 (36.1)	491 (63.9)
QOL	3 (0.4)	332 (43.2)	433 (56.4)

QOL: Quality of life

normal distribution, Spearman rho was computed to assess the relationship between the domains.

The data in Table 4 show that there was a positive statistically significant correlation of the domains of general well-being of the participants with physical well-being ($r = 0.265$, $P = 0.001$), psychological well-being ($r = 0.195$, $P = 0.001$), sexual and personal abilities ($r = 0.278$, $P = 0.001$), and body image ($r = 0.168$, $P = 0.001$). The findings also revealed that the domain of physical well-being of the participants has significantly positive correlation with the domains of psychological well-being ($r = 0.530$, $P = 0.001$), familial relationship ($r = 0.363$, $P = 0.001$), sexual and personal abilities ($r = 0.234$, $P = 0.001$), cognitive well-being ($r = 0.433$, $P = 0.001$), and body image ($r = 0.409$, $P = 0.001$). There was also significant positive correlation of psychological well-being with the domains of familial relationship ($r = 0.491$, $P = 0.001$), sexual and personal abilities ($r = 0.190$, $P = 0.001$), cognitive well-being ($r = 0.354$, $P = 0.001$), and body image ($r = 0.377$, $P = 0.001$). Statistically significant positive correlation was found between familial relationship with the domains of cognitive well-being ($r = 0.391$, $P = 0.001$) and body image ($r = 0.210$, $P = 0.001$). There is also a statistically significant positive correlation of sexual and personal abilities with informational support ($r = 0.186$, $P = 0.001$) and body image ($r = 0.152$, $P = 0.001$). The data also show a positive correlation with the domains of cognitive ($r = 0.234$, $P = 0.001$) and economic ($r = 0.168$, $P = 0.001$) well-being with body image, which is statistically significant. There is a correlation between the informational support and the doctor's cooperation, which is statistically significant ($r = 0.280$, $P = 0.001$). There was no correlation with the other domains of QOL. Thus, it is inferred that the sense of good physical well-being, psychological well-being, sexual and personal abilities, and the positive body image enhance the general well-being of the cancer patients. All these areas go hand in hand with the general well-being. The physical well-being enhances the psychological well-being, familial relationship, sexual and personal abilities, cognitive well-being, and sense of positive body image. Good familial relationship, high sexual and personal abilities, cognitive ability, good informational support, and the sense of positive body image would enhance the psychological well-being of the cancer patients. Cancer patients with better cognitive ability and sense of positive body image have better familial relationship. The good informational support and the sense of positive well-being have better sexual and personal abilities for cancer patients. Cancer patients with good cognitive well-being and high economic status have a sense of positive body image. The doctors' cooperation in the care of cancer patients has a major role in enhancing the informational support [Table 3].

Discussion

The present study observed that the cancer patients had very low-level QOL in general well-being among 738 (96.1%), physical well-being in 555 (72.3%), and psychological well-being in

Table 4: Correlation with the domains of quality of life (*n*=768)

	General well-being	Physical well-being (*r*)	Psychological well-being (*r*)	Familial relationship (*r*)	Sexual and personal abilities (*r*)	Cognitive well-being (*r*)	Economic well-being (*r*)	Informational support (*r*)	Doctors cooperative (*r*)	Body image (*r*)
General well-being		0.265*	0.195*	−0.012	0.278*	0.047	−0.060	0.008	0.001	0.168*
Physical well-being			0.530*	0.363*	0.234*	0.433*	−0.061	0.105	0.089	0.409*
Psychological well-being				0.491*	0.190*	0.354*	−0.101	0.144*	0.066	0.377*
Familial relationship					−0.007	0.391*	−038	0.097	0.030	0.210*
Sexual and personal ability						0.061	−0.008	186*	0.087	0.152*
Cognitive well-being							0.057	0.055	0.090	0.234*
Economic well-being								0.065	−0.007	0.168*
Informational support									0.280*	0.067
Doctors cooperative										0.021
Body image										

*Correlation is significant at 0.05 levels (two-tailed)

411 (53.5%) participants. Seven hundred and nineteen (93.6%) of them reported below-average economic well-being. The mean SD of domains of QOL was as follows: general well-being – 10.65 + 3.23, physical well-being – 20.35 + 4.72, psychological well-being – 18.04 + 5.82, and economic well-being – 8.94 + 0.53. Further, it revealed that there is a statistically significant positive correlation between the domains of general well-being of the participants with physical well-being, psychological well-being, sexual and personal abilities, and body image. Similar findings identified by Gruenigen, *et al.*, 2010[6]; Head *et al.*, 2011;[8] Cui *et al.*, 2014;[13] Nayak SG, 2019[14] and Bayumi and Mohamed, 2016.[18] Symptom clusters have a negative impact on their quality of life,[19] due to physical symptoms the emotional wellbeing also affected among lung cancer patients.[20] Gandhi, Roy, Thakar, Sharma, and Mohanti, (2014) who conducted a cohort study among head and neck cancer patients and observed that the 50% of the cancer patients emotional functions was disturbed by the symptoms burden[21] The study conducted by Kannan *et al*. also found that the overall mean QOL score of the study population was 122.38 ± 13.86, and about 80% of the population had average and below-average QOL and affected almost all domains.[22] Psychological well-being and functional well-being domains were more impaired among Jordanian breast cancer patients.[23] A study done in Turkey among breast cancer survivors found that there is negative correlation between age and physical, functional and overall well-being,[24] and poor psychological domains in QOL among cancer patients in Nigeria.[7] Saudi breast cancer survivors had low global QOL, and because of good social support, they had highest emotional score.[25] Different stages of breast cancer patients showed difference in all the domains of QOL, and future perspectives of the cancer patients were strongly and positively correlated to body image.[26]

Limitation

The convenience sampling method was used in this study which might affect the generalizability of the results.

CONCLUSION

QOL is a multidimensional concept. Symptoms affect the QOL. If health professionals are taken care about the symptoms burden experienced by the cancer patients, their physical well-being enhances the psychological well-being, familial relationship, cognitive well-being, and sense of positive body image. Therefore, interventions are important to improve all the domains of QOL, which enhance the overall QOL of patients with cancer.

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Conflicts of interest

There are no conflicts of interest.

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