

Quality of life and symptom burden in cancer patients in Kenya.

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Abstract

Purpose: The study determined the quality of life (QoL) and symptom burden among cancer patients undergoing treatment. **Method:** A descriptive correlational study was conducted. Patients with different types of cancer in an oncology unit of a tertiary level hospital completed the Modified Version of the Memorial symptom assessment scale and interviewer administered Quality of Life (QOL) questionnaire. **Results:** 168 patients were enrolled in the study. The most severe symptoms reported were pain, fatigue and lack of appetite. Most common type of cancer was breast cancer with most patients at an advanced cancer stage. Average QoL score was 70.3 which is a moderate QoL score. There was significant difference in education level ($p = 0.012$), marital status ($p = 0.039$), income ($p = 0.011$), cancer stage ($p = 0.020$) and treatment type in relation to QoL. There was negative association between symptom burden and QoL. Type of treatment ($p = 0.0035$) and symptom burden ($p = 0.0001$) were independent predictors of QoL. **Conclusion:** Results for this study show that patients with lower education levels, with an income of less than £30, those at an advanced stage cancer on chemo-radiation and have been on treatment for more than six months had a decreased QoL score. Comprehensive patient assessment tools need to be developed, care giver education on early detection and patient support should be provided during the treatment period.

1. Introduction

Cancer is the third-leading cause of death with an annual incidence estimated at 47,887 new cancer cases and a mortality of 32,987 in 2018 in Kenya (Sung et al., 2021). In developing countries most cancer patients (75%) have late or delayed diagnosis and access to treatment (Kabura, 2018). It is reported that only 35% of the low-income countries had oncology services in the public sector in 2015. Majority (90%) of the well-equipped countries have treatment services available compared to the low-income countries hence the poor diagnosis (Ranjbar et al., 2018). Cancers with most notable symptoms include, prostate, esophageal, colorectal cancers, breast, cervical and esophageal cancers with the leading cause of death being esophageal cancer at 13.2 % (4,351 deaths). Cervical cancer is second at 10% (3,266 deaths) while breast cancer comes in third at 7.7% (2,553 deaths) (Nagai & Kim, 2017).

Approximately 65% of patients with colorectal cancer, rectal cancer (67%) and colon cancer (64%) have a 5-year relative survival rate. The survival rate is expected to improve with early diagnosis, improved treatment and good follow-up post-treatment. For patients with stages I or II disease, the 5-year survival rates are 91% and 82%, respectively. However, the rate declines to 12% for stage IV disease to. For AML patients, chemotherapy is the standard treatment for many older adults, among whom the disease is most common. However, allogeneic stem cell transplantation and radiation therapy can be used to improve treatment outcomes.

Approximately 60% to 85% of adults aged 60 years and younger with AML can expect to attain complete remission status after the first phase of treatment, and 35% to 40% of patients in this age group will be cured. The 5-year relative survival for children and adolescents is 67%, but it declines to 54%, 32%, and 7% for patients aged 20 to 49 years, 50 to 64 years, and 65 years and older, respectively. The 1-year relative survival rate for lung cancer increased from 34% to 47%

for those diagnosed during stages I and II disease, largely because of improvements in surgical techniques and chemo-radiation. Because early disease is typically asymptomatic, the majority of lung cancers (61%) are diagnosed at a late stage. The 5-year relative survival rate is 57% for patients with stage I disease and declines to 4% for those with stage IV disease. The 5-year relative survival for SCLC (6%) is lower than that for NSCLC (23%) for all stages combined, as well as for each stage. With a prominent increase in cancer survivorship, research aimed at understanding the different and changing needs of each patient in the population is highly relevant (Miller et al., 2019).

Patients with cancer and those undergoing treatment experience multiple symptoms which often occur together and interact with each other leading to a high symptom burden which influences the patients' wellbeing hence low quality of life (QoL) (Gilbertson-White et al., 2019). The most common symptoms experienced by cancer patients include fatigue, pain, anxiety, sexual dysfunction and partial or total loss of specific functional capacities, all which affect the patients' different aspects of wellbeing (Nayak et al., 2017; Schmidt et al., 2015). These symptoms might persist unrecognized and undertreated because of under-reporting (Gandhi et al., 2014). Studies conducted in Africa show that majority of cancer patients have more than three symptoms affecting their social, physical, psychological and/or spiritual well-being (Pandya et al., 2019; Nayak et al., 2015). Thus, there is a critical need to comprehensively examine the quality of life and symptom burden among cancer patients in Kenya.

Cancer symptoms affect the QoL of patients undergoing cancer management. Different types of cancer present with different types of symptoms and thus a focus on all the cancers would enable the understanding of the general symptom burden in these patients. To the best of our

knowledge, few studies have characterized symptom burden and QoL in hospitalized cancer patients undergoing cancer treatment in Kenya.

The objective of the current study was to compare the physical and psychological symptom burdens of patients with cancer, by cancer type and treatment regimen.

2. Methods

2.1. Aim/Objective

The aim of this study was to assess the disease-related symptom burden and the QoL among cancer patients in a tertiary hospital in Kenya. The specific objective was to describe the association between sociodemographic characteristics, disease characteristics, symptom burden and QoL and also to determine the predictors of QoL among cancer patients.

2.2. Study Design/Setting

The study used a descriptive correlational study design aimed at investigating the relationship between symptom burden and QoL among cancer patients. The tertiary hospital was selected because it is the largest referral hospital in Kenya with a bed capacity of 2000 and receives the highest referral number of cancer patients in the country both as inpatient and outpatient cases. The Cancer Care Center within the facility has a bed capacity of 600 with approximately 60 qualified oncology nurses and it provides services at a subsidized rate.

2.3. Recruitment

Patients who met the inclusion criteria were approached at the cancer care center. The purposes and modalities of the study were explained. A written informed consent was obtained from participants who agreed to be part of the study. Patients who had a difficulty in participating due to challenges like writing and reading were assisted by the researcher.

2.4. Sample size

From a target population of 300 Fisher's formula was used to come up with a sample size of 168.

2.5. Inclusion criteria

Cancer patients 18 years and above undergoing cancer treatment for the last six months were included in the study. We excluded cancer patients who are newly diagnosed and those who were unable to respond to questions.

2.6. Data collection tools

Information on demographic characteristics, disease-related characteristics, symptoms, distress, and QoL was collected by using standardized questionnaires.

Sociodemographic characteristics and disease-related characteristics were collected using a detailed self-administered and interviewer-administered QoL questionnaire, which is The Functional Assessment of Cancer Therapy – General (FACT-G) questionnaire. An analysis of the original 28-item version of the instrument revealed five factors relating to: Physical, social & family well-being, emotional, functional well-being and relationship with the care giver. The instrument score ranges from 0 -4 on each category of symptoms with 0 being no symptom while 4 represents the most severe symptom.

2.6.1 Symptom burden

Symptom burden was measured using a modified version of the Memorial Symptom Assessment Scale (MSAS-SF). The MSAS-SF is a patient-rated instrument in which patients rate symptom distress associated with 26 physical symptoms, and the frequency of 4 psychological symptoms during the past 7 days. Each symptom is scored from 0 to 4, which range from “no symptom” to “very much.” If the symptom is not present, a value of zero is assigned. Distress is rated on a 5-

point (0–4) Likert scale (0-not at all, 1- a little bit, 2- somewhat, 3- quite a bit, 4- very much,).

Frequency of psychologic symptoms is scored as rarely (1), occasionally (2), frequently (3), and almost constantly (4). The sequence of symptoms on the short form differs from that of the standard form.

MSAS-SF subscales include: The global distress index (GDI) in which there are 4 psychological symptoms (feeling sad, worrying, feeling irritable, and feeling nervous) and 6 physical symptoms (lack of energy, pain, lack of appetite, feeling drowsy, constipation, dry mouth). The physical symptom distress score (PHYS) comprises of 12 prevalent physical symptoms (lack of energy, pain, lack of appetite, feeling drowsy, constipation, dry mouth, nausea, vomiting, change in taste, weight loss, feeling bloated, and dizziness). The psychological symptom distress score (PSYCH) includes 6 prevalent psychological symptoms (worrying, feeling sad, feeling nervous, difficulty sleeping, feeling irritable, and difficulty concentrating). The number of symptoms is derived from screening for the presence of 32 symptoms at each interview.

2.6.2 Quality of life

The Functional Assessment of Cancer Therapy – General (FACT-G) questionnaire was used to measure QoL. Four components of QoL i.e Physical Well-being, Social & Family Well-being, Emotional Well-being and Functional Well-being were measured. The range of total scores are from 0 to 108 where 108 represents the highest quality of life while 0 represent the lowest. The FACT-G Version 4 has 27 questions, each of which is answered using a 5-point [Likert scale](#) ranging from 0 (Not at all) to 4 (Very much). Questions were phrased so that higher numbers indicated a better health state, leading to some items being reverse-scored. Questions measure the respondents' health state over the last 7 days in four subscales: Physical Well-Being (PWB, 7 questions), Social/Family Well-Being (SWB, 7 questions), Emotional Well-Being

(EWB, 6 questions), and Functional Well-being (FWB, 7 questions). Disease-specific versions of the FACT-G contain these four core subscales, with additional questions appended to address disease-specific factors.

2.7. Data analysis

Data was analyzed using the statistical program for social scientists (SPSS) version 25.00 with a significance interval at ($p < 0.05$).

Descriptive statistics such as mean, standard deviation, frequencies, and percentages were used to summarize study variables. For continuous variables, Pearson's correlation coefficient was used. T-test and ANOVA were used to identify relationship between the independent and dependent variables in the study. The multiple regression model was used to identify the predictors of QoL.

2.8 Ethical consideration

The approval to conduct the study was obtained from the University Ethics and Research Committee, National Commission for Science, Technology and Innovation, Hospital Ethics/Research Committee. Eligible participants were informed of the study and signed an informed consent.

3. Results

3.1. General Characteristics of the participants.

The average age of the respondents was 50.5 (SD ± 14) years, majority 57.2% (n =95) were female, 45.8% (n =76) had secondary-school level education, 75.9% (n =126) were married and majority 41% (n =68) were earning a monthly income of less than £30 (Table 1). The results showed that there was significant difference in QoL based on the stage of cancer, ($F = 3.354$, $p = 0.02$) and type of treatment ($F = 1.921$, $p = 0.009$). In assessing the clinical characteristics,

30.7% (n =51) had breast cancer, 48.8% (n =81) were at stage III and 54.2% (n =90) had chemo-radiation as the type of treatment. The majority of patients had breast cancer and 74.4% (n =125) were at stages III and IV while 54.2% (n =90) had chemo-radiation as the type of treatment. The average time since diagnosis was 26.9 (SD±15) months as illustrated in table 2. The analysis of symptom burden found that pain, 81.3% (n=135), lack of energy 75.9% (n =126), lack of appetite 72.9% (n =121), hair loss 65.1% (n =108) and nausea 62.7% (n =104) were the most prevalent symptoms among respondents. In measuring the severity of symptoms among respondents, the findings showed that hair loss ($M =2.45, SD=1.233$), problems with sexual interest ($M =2.3, SD=1.608$), pain ($M =2.18, SD=0.724$), lack of appetite, ($M =2.11, SD=0.884$) and lack of energy, ($M =2.11 SD=0.774$) were moderately severe as shown in table 3.

3.2. Disease-related symptom burden and QoL.

The symptom burden as included in the MSAS-SF were grouped into three major categories, psychological symptoms, physical symptoms and the global distress index. The average GDI score was 1.6 with a range of between 0 and 3.1. The total memorial scale score was 0.8 with a minimum score of 0 and maximum of 1.9. Pearson correlation was conducted to investigate the relationship between symptom burden and patient QoL as shown in Table 4. There was negative relationship between physical wellbeing ($r = - 0.428, p<0.0001$), emotional wellbeing, ($r = - 0.402, p<0.0001$), functional wellbeing ($r = - 0.323, p<0.0001$) and total FACT-G score ($r = - 0.473, p<0.0001$), and symptom burden score.

3.3. Quality of life among respondents

The average quality of life score was 70.3 with a minimum score recorded of 32 and a maximum score recorded as 102. (Table 5).

The findings revealed that there was significant difference in level of education ($F=3.303$, $p=0.012$), marital status ($F=2.586$, $p=0.039$) and monthly income ($F=4.627$, $p=0.011$) based on QoL.

3.4. Predictors of QoL

The findings from multiple regression analysis conducted revealed that; type of treatment ($t=2.129$, $p=0.035$) and symptom burden ($t=-7.102$, $p<0.0001$) were independent predictors of QoL among respondents as shown in Table 6.

3.5. Results summary

The study sought to investigate disease related burden and the quality of life among cancer patients in a tertiary hospital in Kenya. Out of 166 patients investigated, 57.2% were female. The average age of the respondents was 51 years, 46% had secondary-school level education and 76% were married. The disease characteristics investigated also showed that 33.1% of the respondents had breast cancer with 48.8% at stage III. The mean duration since diagnosis was 26 months. Pain was the highest prevalent symptom among respondents with 81% while feeling irritable was the least burden prevalent in only 5.4% of the respondents. The total MSAS score was 0.8. The average QoL score was 70.3. There were significant differences in the level of education ($p=0.012$), marital status ($p=0.039$), monthly income ($p=0.011$), stage of cancer ($p=0.020$) and type of treatment based on QoL. There was a clear negative association between symptom burden and QoL. Type of malignancy treatment and symptoms were independent predictors of QoL.

4. Discussion

Cancer burden has been increasing significantly, creating an undue burden to patients. Among the major effects of cancer on patients involve the burden of symptoms and patient QoL which is

immensely affected. This study investigated disease-related symptom burden and the QoL of cancer patients. The average age of the participants in our study was 50 years, while more than half were female. These findings are consistent with most previous studies which have found high cancer prevalence in women and individuals between 50 and 60 years old (Nayak et al., 2017; Ranjbar et al., 2018). Furthermore, the study found that almost half of the participants had a secondary-school level of education while the majority were married. In addition, almost half of the participants were unemployed. This could be attributed to the adverse effects associated with cancer disease and the need for regular care, limiting the ability of the patient to work. This is especially true for patients in later stages of the disease as found in the present study, whereby 75.3% of the participants were in stage III and IV.

The level of disease-related symptom burden and QoL among cancer patients' findings from the study found that the average total MSAS score was 0.8 ± 0.3 . The subscale analysis revealed that the GDI which comprises of four prevalent psychological symptoms (feeling sad, worrying, feeling irritable, and feeling nervous) and the distress associated with the six prevalent physical symptoms (lack of appetite, lack of energy, pain, feeling tired, constipation, dry mouth) was the highest, with an average of 1.6 ± 0.9 . The PHYS includes the prevalence, severity, and effect associated with 12 prevalent physical symptoms, which include anorexia, fatigue, pain, tiredness, constipation, dry mouth, nausea, vomiting, change in taste, weight loss, bloating and dizziness, and had an average score of 0.9 ± 0.5 . The PSYCH, which includes the average of the frequency, severity and distress associated with six prevalent psychological symptoms, including anxiety, sadness, insomnia, irritability, and poor concentration, was the least with an average of 0.2 ± 0.4 . These findings are comparable to a research conducted by Duke et al. (2020) in cancer patients in USA which found that the average total MSAS score was 0.77, while among the subscales

assessed, the GDI average was the highest with an average of 1.15, physical symptom average with 1.02 and psychological subscale with an average of 0.84 (Duke et al., 2020). Similarly, Torres et al. (2019) found a similar trend, although the average scores were very high, with the prevalence of symptom burden higher in female patients compared to males. The study found that the GDI average was 3.4 vs. 5.0 in males and females, respectively. The physical subscale average was 3.4 in male and 4.8 in female patients, and the psychological subscale average with 3.2 vs. 4.5 in males and females respectively (Torres et al., 2019). The difference in high symptom burden observed in their study compared to this study could be attributed to different target groups. This study assessed symptom burden in adult cancer patients, while in their study, they assessed both children and adults. Similarly, in our study, the sampling technique was simple random sampling, while in their study, they utilized convenience sampling.

The study also found that the most prevalent symptoms among adult cancer patients were pain which was symptomatic in 81.3% of the patients. 75.9% experienced lack of energy, 72.9% experienced lack of appetite, 65.1% suffered from hair loss, and 62.7% were symptomatic to nausea. The most asymptomatic symptoms among the participants were feeling irritable, feeling nervous, worrying and coughing. The study findings are similar with Torres et al. (2019) who discovered that tiredness, nausea, anorexia and pain were the most frequent symptoms among the participants in the study (Torres et al., 2019). Physical symptoms are the most common among cancer patients because they directly influence patients' general well-being and limit their ability to carry out their normal daily activities. This trend has been observed in most studies assessing symptom burden in cancer patients (Lin et al., 2015, Henry et al., 2018).

Symptom severity assessment in the study found that hair loss, problems with sexual interest, pain, lack of appetite and lack of energy were the most severe symptoms. The study also

revealed that hair loss, pain, lack of appetite, lack of energy and problems with sexual interest were the most distressing symptoms among the participants. This can be attributed to the fact that these symptoms impede the normal functionality of a patient. Hair loss had a direct impact on individual physical appearance, thus making it more distressing. Lack of appetite directly affects patient energy levels; hence, these two symptoms occur in tandem. These findings are comparable to Rau et al. (2020), who found that fatigue was the most distressing symptom in cancer patients. However, the study found that most respondents were not being treated on time for fatigue (Rau et al., 2020). Lin et al. (2017), in a study investigating symptom patterns of patients with cancer, also found that pain, fatigue and lack of appetite were both severe and distressing symptoms in patients (Lin et al., 2011).

Nevertheless, the study found a varied functional QoL score, with physical well-being recording the highest average with 20.03, social well-being with an average of 18.98, emotional well-being with 16.42 and functional well-being had the lowest average at 14.7 (Duke et al., 2020). The difference, in this case, may be attributed to variation in symptoms severity and distress in specific symptoms among participants. However, a study conducted in Ethiopia by Abegaz et al. (2018) found a lower quality of life with an average score of 52 (Abegaz et al., 2018). The low QoL could be attributed to the study setting since it was conducted in a rural setting, influencing patient well-being considering differences in lifestyle.

The findings revealed a difference in the QoL based on education, marital status, and monthly income among the study participants. The participants who had tertiary-level education had a high QoL. Higher education equips an individual with more knowledge, which helps understand the expected complications associated with their different cancer types and adjust their expectations. Furthermore, participants who were single and separated had higher quality of life

while those who earned more than £66.22 had higher QoL. This may be attributed to the fact that they have reduced responsibilities in their daily lives and thus concentrate more on taking care of their own needs. Higher income improves individual ability to afford improved care, which is essential in controlling symptom severity and distress. The study findings tally with Nayak et al. (2017), who said that patient financial situation, education level was among the factors associated with functional QoL among cancer patients (Nayak et al., 2017). Similarly, Gandhi et al. (2014) found that patient low income and education level were key factors associated with poor QoL among cancer patients.

Stage of cancer was also associated with quality of life. Participants with stage 3 and stage four had low QoL. The findings from our study are expected considering that the latter stages of cancer are characterized by adverse complications, increased symptom severity and distress, which have a detrimental influence on patient QoL. These findings are analogous to Kjaer et al. (2016), who found that quality of life among cancer patients is significantly associated with stage of cancer as well as treatment regimens (Kjaer et al., 2011). A systematic review conducted by Shrestha et al. (2019) also found that cancer staging is a key factor in defining QoL among cancer patients (Shrestha et al., 2019).

In investigating the relationship between symptom burden and QoL, findings from the present study also revealed that there was a negative relationship between physical wellbeing, emotional wellbeing, functional wellbeing, total functional QoL and symptom burden score. Thus, an increase in patient burden leads to a reduction in all aspects of QoL. These findings are comparable to a study conducted by Change et al. (2020), who found that there was a significantly strong negative relationship between patient QoL and symptom burden. Patients who had a higher symptom burden were associated with reduced functional QoL. This is as a

result of increased severity and distress of symptoms (Chang et al., 2000). The findings are similar with Duke et al. (2020), who identified that there was a negative association between all QoL subscales and symptom burden as assessed by the memorial symptom assessment scale.

The study also found that type of treatment and symptom burden were significant predictors of QoL among cancer patients. The type of treatment integrates different approaches, which tend to take a toll on the patient's physical, emotional and psychological wellbeing. Treatment regimens such as radiation and chemotherapy have an adverse implication on patients' physical wellbeing, such as hair loss which a major symptom burden among participants in this study. These findings are in line with Kjaer et al. (2011), who found that symptom burden and type of treatment regimen were key factors associated with QoL among cancer patients. Similarly, Ramasubbu et al. (2021), in a study conducted investigating factors affecting adult cancer patient QoL, symptom burden, stage of cancer and type of treatment, were independent predictors of quality of life. Ranjbar et al. (2018) also found that symptom burden was a key QoL predictor among cancer patients.

The findings revealed that the average score for QoL among participants was 70.28 ± 12 . The specific subscales assessed under the functional QoL revealed that the emotional wellbeing subscale had an average of 20 ± 3.9 , the social wellbeing subscale average score was 19.3 ± 4.2 , while the physical wellbeing subscale average score was 15.6 ± 4.9 . The findings show that majority of the participants had a low rating on their physical well-being. This can be attributed to the severity and distressful nature of the physical symptoms among the participants. The findings concur with Duke et al. (2020) that cancer patients had a high functional QoL score with an average of 77.

5. Conclusion

Our results concluded that the overall QoL of the patients who participated in the study was generally moderate at 70.28 ± 12 based on the symptom distribution and severity. Based on the research, education level, income and marital status were the key sociodemographic factors that affect the QoL among the study patients. Cancer type, treatment period and treatment type were identified as the most common disease characteristics that affect QoL among cancer patients. According to the study there is a negative relationship between physical wellbeing, emotional wellbeing, functional wellbeing, total FACT-G score and the QoL. The findings also found that type of treatment, cancer stage, income, education level and symptom burden were significant QoL predictors among cancer patients.

Conflict of interest: None

Table 1: Association between demographic and QoL

Demographic characteristics	FACT_G Mean	n	Pearson r	t-statistic	F-statistic	P-value
Age			-0.127			0.103
Gender						
Male	72.324	71		1.831		0.069
Female	68.758	95				
Level of education						
None	65.212	5				
Primary	66.222	45			3.303	0.012
Secondary	70.573	75				
Tertiary	79.000	41				
Occupation						
Unemployed	66.935	46				
Self employed	71.302	96			2.432	0.091
Formal employment	72.625	24				
Marital status						
Single	71.870	23				
Married	70.254	126			2.586	0.039
Widowed	67.167	12				
Separated	79.500	5				
Religion						
None	64.000	1				
Protestant	70.590	117			0.438	0.733
Catholic	70.000	45				
Muslim	58.000	1				
Monthly income						
Less than £33.11	60.029	68				
£ 33.11 – 66.22	66.553	47			4.627	0.011
More than £66.22	74.059	51				

Table 2: Relationship between disease features and QoL among cancer patients in KNH

Disease characteristics	FACT-G Mean	N	F-statistic	P-value
Type of cancer				
Breast Cancer	69.706	51		
Cancer of cervix	68.267	30		
Prostate cancer	71.094	32	0.393	0.853
Cancer of oesophagus	72.063	16		
Leukemia	69.600	15		
Others	72.364	22		
Stage of Cancer				
Stage 1	88.500	2		
Stage 2	72.436	39		
Stage 3	67.778	81	3.354	0.02
Stage 4	72.159	44		
Type of treatment				
Surgery	63.357	14		
Radiation	65.235	18		
Chemo-radiation	71.533	90	1.921	0.009
Chemotherapy	71.167	36		
Hormonal Therapy	74.000	8		

Table 3: Symptom severity among respondents

Symptom	Mean	SD
Hair loss	2.45	1.233
Problems with sexual interest or activity	2.30	1.608
Pain	2.18	0.724
Lack of appetite	2.11	0.884
Lack of energy	2.11	0.774
Constipation	1.95	1.014
Weight loss	1.89	0.863
Nausea	1.87	0.783
Numbness/tingling in hands/feet	1.75	0.820
Mouth sores	1.73	0.121
Feeling bloated	1.60	0.838
Vomiting	1.55	0.709
Difficulty sleeping	1.48	0.768
Swelling of arms or legs	1.46	0.814
Dizziness	1.46	0.727
Difficulty swallowing	1.40	1.009
Dry mouth	1.40	0.659
Change in the way food tastes	1.39	0.712
Sweats	1.34	0.656
Feeling drowsy	1.30	0.625
Itching	1.29	0.633
"I don't look like myself"	1.28	0.677
Changes in skin	1.27	0.671
Diarrhea	1.20	0.628
Problems with urination	1.20	0.574
Feeling sad	1.18	0.554
Shortness of breath	1.17	0.488
Feeling nervous	1.15	0.535
Worrying	1.14	0.503
Cough	1.13	0.420
Difficulty concentrating	1.13	0.374
Feeling irritable	1.08	0.388
Valid N (list wise)		

Table 4: Association between symptom burden and QoL.

Relationship	Correlation coefficient	p-value
Physical wellbeing and Symptom score	-0.428	p<0.0001
Social wellbeing and symptom score	-0.085	0.275
Emotional wellbeing and symptom score	-0.402	p<0.0001
Functional wellbeing and symptom score	-0.323	p<0.0001
FACT-G Score and symptom score	-0.473	p<0.0001

Table 5: Assessment quality of life

	Range	Minimum	Maximum	Mean	Std. Deviation
Physical wellbeing	2 - 28	2	28	15.57	4.899
Social wellbeing	2 - 28	2	28	19.31	4.169
Emotional wellbeing	6 - 24	6	24	20.43	3.881
Functional wellbeing	4 - 28	4	28	14.98	5.880
FACT_G Score	32 - 102	32.0	102.0	70.283	12.5006

Table 6: Predictors of QoL

Model		95.0% Confidence Interval for B			
Model	Variables	B	T	Lower Bound	Upper Bound
1	Cons		32.479	85.880	97.002
	Symptom burden scores	-0.530	-7.825	-34.355	-20.506
2	Cons		20.157	76.725	93.396
	Symptom burden scores	-0.509	-7.495	-33.279	-19.396
	Type of treatment	0.137	2.014	0.035	3.621

a. Dependent Variable: FACT -G Score

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