Published in final edited form as:
Support Care Cancer. 2014 May ; 22(5): 1349–1362. doi:10.1007/s00520-013-2093-z.

Assessment of clinical and nonclinical characteristics associated with health-related quality of life in patients with high-grade gliomas: a feasibility study

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Abstract

Purpose—Results from several studies suggest that there is value in evaluating the association between nonclinical characteristics of patients and quality of life (QoL), but few studies have focused on brain cancer. The primary goal of this feasibility study was to explore the relationship between clinical factors and nonclinical factors and QoL in brain cancer patients.

Methods—Participants in this cross-sectional study were drawn from two hospital sites. Eligible patients were 18–75 years old with a pathologically confirmed diagnosis of a brain cancer histology and stable disease after treatment. Data were obtained from medical chart review and a self-administered survey consisting of main study variables and two QoL standardized measures. Independent sample *t* test was used to determine differences between patient factors and QoL measures.

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Conflict of Interest The authors declare that they have no competing interests.

Disclosures None.

Results—The sample population was comprised of 26 patients with a median age at survey of 57.5 years (range 33–72). Quality of life was adversely associated with younger age, having underage children and living alone. Patients' meaning of QoL differed by gender, however most patients viewed it as affecting multiple aspects of their lives.

Conclusions—Nonclinical characteristics were significantly associated with QoL more often than clinical characteristics. Identifying these factors may help improve the quality of care for these patients. This effort demonstrates the relevancy and feasibility of conducting a larger scale study to confirm or refute these findings.

Keywords

High-grade gliomas; Health-related quality of life; Sociodemographics; Perceptions/beliefs; Adults

Introduction

Patients with high-grade gliomas experience high morbidity and recurrence with a median survival ranging from just over a year for grade IV tumors [1] and 2–3 years for grade III tumors [2]. Although treatment advances for high-grade gliomas in recent years are promising [3], treatment generally has toxic effects with palliative results. While headaches, seizures, and nausea are common, other symptoms include personality changes, and neurological and cognitive deficits [4]; all which may negatively affect health-related quality of life (QoL). Quality of life is an important issue particularly for patients with an incurable disease [5] and an important outcome measurement in clinical practice but most efforts have been focused solely on clinical associations.

Results from several studies suggest that there is value in evaluating the association between QoL and nonclinical characteristics of patients, such as sociodemographics and perceptions/beliefs. Sociodemographics were shown to be better predictors of QoL than clinical characteristics in bladder and head/neck cancer patients, respectively [6, 7]. Patients' perceptions/beliefs have been studied in non-brain tumor patients in relation to QoL [6, 8]. In brain cancer studies, the evaluation of sociodemographics in adults has been limited in scope and quantity [9, 10]; and there are no published reports that have evaluated the association between patients' perceptions/beliefs and QoL. The current study explores whether there is an association between individual-level characteristics and QoL in brain cancer patients. The main goal of this study was to test the feasibility of assessing patients' sociodemographics, clinical factors, and perceptions/beliefs as they relate to QoL in patients with high-grade gliomas using two QoL instruments.

Methods

Sample and procedures

For this cross-sectional study, sixty-nine eligible patients were identified from two participating brain tumor referral centers in the Chicago area upon institutional review board approval. Most eligible patients were approached in clinic; those that were not due in clinic for some time were approached by mail. Participating patients provided written consent to a detailed chart review, passive follow-up to ascertain their status, and chose to complete a paper-based survey or secure web-based survey via SurveyMonkey software (www.surveymonkey.com). They may have been undergoing chemotherapy, which was generally well-tolerated and did not hinder their participation, but had completed the remaining portion of their first course of treatment (surgery and/or radiation).

Eligibility criteria included having a pathologically confirmed diagnosis of a high-grade glioma with one of the following histologies: glioblastoma [International Classification of Diseases for Oncology version 3 (ICDO-3) histology codes 9440-9442], anaplastic astrocytoma (9401 and 9411), anaplastic oligodendroglioma (9451 and 9460), anaplastic ependymoma (9392), anaplastic ganglioglioma (9505/3), or anaplastic oligoastrocytoma/ anaplastic mixed glioma (9382/3); diagnosis between July 2008 and March 2010; 18–75 years old, fluency in English or Spanish; and completion of surgery and/ or radiotherapy. Patients with speech or writing impairment were not excluded since the study design allowed for patient-assistance in completing the questionnaire. Patients with metastatic brain tumors were excluded as were patients that lacked the cognitive capacity to consent or complete the survey as determined by treating physicians using accepted methods.

Independent variables

Independent variables were obtained by both medical chart review and survey completion. The following sociodemographic and clinical variables were dichotomized for analytic purposes: adult children (yes vs. no), underage children (yes vs. no), employment status (employed vs. other; retired vs. other); income (<\$100,000 vs. ≥\$100,000); surgical resection (gross/total vs. other); primary site (frontal/temporal vs. other); and postneurodiagnostic results (evidence of tumor vs. other). Postoperative length of hospital stay was defined as (date of surgical discharge−date of surgical treatment) and time from diagnosis to survey as (date of survey completion−date of diagnosis). Three types of therapy were considered; physical, occupational, and speech. Investigator-generated perception/ belief variables were dichotomized as follows: ease of travel to/from medical visits as ("very easy/easy" vs. "sometimes easy, sometimes difficult", "difficult, very difficult"); perception of income as ("I can save/I get enough for my needs" vs. "I am just able to make ends meet", "I don't get enough for my needs", and "I am in desperate need"); and treatment expectation (be cured vs. some cancer left and/or symptoms, no expectations/no effect).

Outcome measures

The Functional Assessment of Cancer Therapy for brain tumor patients version 4 (FACT-Br) is a 50-item instrument, comprised of 27 core items and a 23-item brain subscale that assesses QoL in brain tumor patients [11]. The Ferrans and Powers Quality of Life Index Cancer version III (FPQLI-C) is a validated 66-item instrument that is separated into two 33-item sections; one measures QoL of oncology patients in terms of importance and the other in terms of satisfaction with life [12]. These instruments were chosen because both are self-administered, multidimensional, and have been validated in English and Spanish for use with brain tumor [11, 13] and cancer [12, 14] patients, respectively. Both measures gather subjective information but from different perspectives. The FACT-Br is composed of a combination of status and evaluation questions which ask for information on the status of a particular aspect of life whereas FPQLI-C is comprised completely of evaluation questions which go a step further by asking the subjects to evaluate the status [15]. Additionally, because they were conceptualized differently each instrument may identify factors associated with different aspects of QoL [10], which is valuable given little research has been conducted regarding nonclinical characteristics. For both instruments, a higher score indicates better QoL.

Statistical analysis

Descriptive statistics were computed for all patient characteristics and for overall outcomes and subscales. Reliability was evaluated with Cronbach's alpha coefficient for each QoL scale. An acceptable Cronbach's alpha (≥.70) provides stronger support for the results yielded from using the instruments [16], particularly when they are administered to patient populations that differ from the one used to develop the QoL instrument. Pearson correlation analysis was performed to identify significant relationships between measures of FACT-Br and FPQLI-C. Two-sided independent sample t test was used to compare mean scores between patient factors and QoL measures with the significance level of $p < 0.10$ for this exploratory analysis. Quantitative analyses were performed using SAS version 9.2 (SAS Institute, Cary, NC).

Content analysis was used to analyze the qualitative responses to the question: “What does quality of life mean to you?” Theme groupings were created based on the subscale names from the FACT-Br and FPQLI-C. Common subscale names were combined to create a single theme category (i.e., emotional well-being (FACT-Br) and spiritual/psychological (FPQLI-C)=emotional/psychological theme) because the analysis was a textual account and did not involve scoring the subscales. Patients’ responses were converted into quantitative measures by tallying responses within theme groupings. In some instances, an individual response could be tallied in multiple theme groupings. Responses were stratified by gender. Qualitative analyses were performed using computerized tables.

Results

Sample characteristics

Thirty-one of the 54 eligible patients contacted, enrolled in the study for an overall response rate of 57.4 %. The analytic sample included 26 patients as outlined in Fig. 1. Six participants were deceased at the time of follow-up, which was a minimum of 6 months post-diagnosis. Characteristics of decedents included median age of 58 years (range=43–68 years), median time since diagnosis to death of 11.5 months (range= 8–19 months), equal gender distribution, and a diagnosis of glioblastoma (data not shown).

Patient characteristics are summarized in Table 1. While 23 patients were still undergoing chemotherapy at time of survey, the remaining patients either had surgery only (n =1) or had completed all treatment (n =2). At least two-thirds of patients (65.4–73.8 %) reported completing each of the four survey sections without assistance (data not shown). Patients preferred the paper-based survey (65.4 %) and the median time interval from diagnosis to survey was 7.6 months. No significant differences between participants and nonparticipants, paper and web-based surveys or recruitment were observed for gender, age at diagnosis, race/ethnicity, facility, histology, or education (data not shown).

Correlation of the FACT-BR and FPQLI-C

Table 2 demonstrates the relationship between the FACT-Br and FPQLI-C domains. The overall scale for the FACT-Br had a moderately high correlation with the overall scale for the FPQLI-C ($r = 0.74$, $p < 0.01$), suggesting that the instruments measure similar QoL aspects overall. However, the correlation coefficients between the individual subscales varied widely, ranging from $r = -0.12$ to 0.59. Correlation coefficients >0.42 were significant ($p < 0.05$) and coefficients ≥0.52 were very significant ($p < 0.01$). With few exceptions, the socioeconomic and family subscales of the FPQLI-C had relatively low correlations with the overall and subscale of the FACT-Br. Similarly, the social/family subscale of the FACT-Br correlates moderately low with the score of the FPQLI-C ($r = 0.27$, $p = 0.20$). Instances of low correlation suggest that each QoL instrument has distinct domains that measure aspects of QoL not found in the other.

Quality of life score statistics

The descriptive statistics for the FACT-Br and FPQLI-C scales are summarized in Tables 3 and 4. Mean scores varied by survey type but were not statistically significant for either QoL instrument (data not shown). The Cronbach's alpha coefficients varied by survey type but each scale demonstrated good internal consistency.

For all patients, the overall mean for the FACT-Br scale was 122.0 out of a possible maximum score of 184. Patients scored lowest on the functioning well-being scale and scores ranged from 50.7 to 52.1 % of the total subscale score. The overall alpha coefficients ranged from 0.70 to 0.82 which were higher or comparable to results based on the validation sample of newly diagnosed and recurrent brain cancer patients for the instrument [physical: 0.76; social/family: 0.69; emotional: 0.75; functional: 0.84; brain cancer concerns: 0.84] [11].

For FPQLI-C, the mean scores for all patients ranged from 16.6 to 24.2 on a 30-point scoring scale. Patients scored the lowest on the health/functioning subscale and the highest on the family subscale. The validation study for the FPQLI-C, based on a sample of breast cancer patients, reported alpha coefficients for the total scale and the four subscales that ranged from 0.66 to 0.95; the family subscale had the lowest internal consistency [12]. Based on all patients in this study, the alpha coefficient for the total scale was 0.84 with coefficients for the subscales ranging from 0.88 to 0.92.

Association between FACT-Br and patient characteristics

Significant associations ($p < 0.10$) between FACT-Br scores and various patient factors are shown in Table 3. Having adult children was associated with higher physical well-being ($p = 0.0084$) and functional well-being scores ($p = 0.0348$). Conversely, having minors was associated with worse emotional well-being [yes=13.2 (SD 4.2) vs. no=17.4 (SD 4.8), $p = 0.0479$]. Longer duration from time of diagnosis to survey completion was associated with lower QoL scores in three of the six outcome measures (overall [127.3 (SD 15.6) vs. 113.0

(SD 14.8), p =0.0372], physical well-being [21.0 (SD 3.5) vs. 15.8 (SD 5.7), p =0.0085], emotional well-being [18.0 (SD 3.8) vs. 13.1 (SD 5.2), p = 0.0108]). There was a negative association (lower QoL) between how well chances for survival was explained and the brain subscale [very well=47.0 (SD 7.9) vs. somewhat well, not very well=55.9 (SD 8.5), p =0.0123]. Patients that perceived they "could save" or "had enough for their needs" had higher overall QoL scores [126.7 (SD 17.2) vs. 115.3 (SD 13.9), p =0.0978] and functional well-being scores [15.4 (SD 4.6) vs. 12.6 (SD 3.5), p =0.0978] than patients that were "just able to make ends meet", "didn't get enough for their needs", or were "in desperate need".

Association between FPQLI-C and patient characteristics

The FPQLI-C was significantly associated (p <0.10) with many nonclinical patient characteristics and two clinical characteristic, type of surgical resection and time from diagnosis to survey (Table 4). There was a positive association between being married and higher QoL scores (indicating better QoL), overall [19.9 (SD 3.7) vs. 14.2 (SD 3.9), p =0.0054] and for every domain. Similar to the FACT-Br, patients with longer duration from time of diagnosis (≥8 months) to survey completion had lower QoL than patients who were more recently diagnosed when surveyed [health/functioning 18.1 (SD 4.0) vs. 14.4 (4.8), p =0.0446]. Having adult children was associated with higher QoL scores for the psychological/spiritual domain (p =0.0912). Gross resection rather than subtotal or biopsy only was associated with higher socioeconomic scores [gross resection=21.2 (SD 2.6) vs. 18.4 (SD 5.0), p =0.0891].

Content analysis

Twenty-four of the 26 patients (92.3 %) responded to the question, "What does quality of life mean to you?" and selected responses are displayed in Table 5. Patients' responses encompassed five major themes, or aspects of life: functional/functioning, emotional/psychological, physical/health, economic, and social/family, with no one identifying QoL with spiritual well-being. The two most common QoL themes were functional/functioning (75 %) and emotional/psychological (58.3 %), of which more than half of respondents were females [functional/functioning (57.1 %); and emotional/psychological (61.1 %)]. Responses related to emotional/psychological QoL aspects had three subthemes relating to fear/worry, coping, and happiness. Other subthemes included active/energy, independence, pain, and good health. Seventy-five percent of respondents who identified QoL with economic aspects were men. As expressed by one male patient, QoL meant the: "Ability to continue providing for my family and participating in family activities. I am the family sole provider". For one patient quality of life meant: "(having) good compassionate doctors". While many patients' responses covered multiple themes, some responses were focused on a single theme: "Live happy" and "Being able to take care of myself—i.e.: preparing food, shopping, dressing myself, basic needs". When asked, "What type of brain tumor do you have?", only 69.2 % correctly identified their tumor type (data not shown).

Discussion

Overview of results

Quality of life, a patient-reported outcome, provides a subjective assessment of different aspects of an individual's life and is becoming an increasingly common tool in cancer management. In this study, several significant associations with non-clinical patient characteristics (age, living arrangement, educational status, children, health insurance, explanation of prognosis) were observed for the overall scale or at least one of the domains for both FACT-Br and FPQLI-C. Of note, living alone and having underage children were associated with poorer QoL while having adult children was associated with better QoL. QoL scores as measured by FPQLI-C were most often affected by living arrangement while those for FACT-Br were most often affected by time from diagnosis to survey. Of the 19 individual variables identified in this study as being significantly associated with the QoL measures, several variables (age, race/ethnicity, educational status, adult children, lifetime occupation, time from diagnosis to survey, ease of travel to/from medical visits, manageability of out-of-pocket expense, prognosis explained) were identified with both measures. Patients’ meaning of QoL differed by gender, however most patients viewed it as affecting multiple aspects of their lives.

Sociodemographic factors

Sociodemographics as possible QoL determinants are understudied in this population. Some brain cancer studies failed to find an association with age and overall QoL [10, 17] but we found a trend towards poorer QoL in the younger cohort. Our findings of no association between QoL and gender agree with Brown et al. [18] but contradict another study that reported a negative association for females [10]. However, we did find a trend towards poorer QoL for females for most domains. This phenomenon may be explained by the tendency for females to continue their daily duties (or feel obligated to) despite illness [19]. Two major findings from Glantz et al. [20] concluded that females were more likely to be abandoned by their partner after a serious medical illness than males and that regardless of gender, separation or divorce adversely affected quality of life and quality of care. None of our study participants were separated or divorced at the time of survey (range 3-19 months) which may explain why study participants scored within the mid to high range of the scales. We found that patients with adult children scored significantly higher on physical and functional well-being and psychological/ spiritual subscales while those with underage children scored significantly lower on emotional well-being scales. These findings may be explained by adult children's capacity to provide support to their parent during this difficult time and the patients’ inability to cope with the prospect of leaving their underage children without a parent. Although these findings have not been replicated in other studies, two breast cancer studies found that having underage children was a significant predictor of negative changes in QoL after surgery [21] and those with unmarried children had significantly lower QoL scores [22], which lends credence to our hypothesis.

Clinical factors

There is reasonable consensus that clinical factors are associated with survival but less evidence that these factors are associated with QoL. Unlike Giovagnoli et al. [23] who found no association between primary site and QoL, our results showed that primary site was significantly associated with functional well-being (FACT-Br). Shorter length of time from diagnosis to survey (<8 months) had a significant positive effect on several QoL domains. Similarly, shorter length of time from completion of radiation to survey was associated with better physical well-being (FACT-Br). Progressive decline in neurological and cognitive function followed by death is the disease course for malignant gliomas [24]. Perhaps patients that were more recently diagnosed or completed radiation therapy earlier reported better QoL because their disease course had not yet reached a progressive and debilitating state unlike longer-term survivors or they had yet to experience the late effects of radiation. In agreement with some brain tumor studies [25, 26], but contradictory to another study [27], was our finding of no association between QoL and lateralization of the tumor (left, right, or midline symmetry). Gross surgical resection was associated with better QoL as measured by the socioeconomic subscale (FPQLI-C). No other clinical characteristics were associated with QoL (i.e., histology, tumor size). Determining QoL probably has more to do with clinical status (stable vs. unstable) than tumor malignancy or location [23].

Perception/belief factors

To what extent personal beliefs and perceptions effect quality of life is unclear. Studies have demonstrated a direct relationship between annual income and QoL [8, 28, 29]. While this was not supported in the current study, results did show a significant positive association between QoL and higher satisfaction with manageability of out-of-pocket expenses on physical and functional well-being (FACT-Br) subscales and with income perception on functional well-being (FACT-Br) and socioeconomic (FPQLI-C) subscales, respectively. Believing that prognosis was well explained had a significant negative effect (worse QoL) on health/functioning and psychological/spiritual scores (FPQLI-C). High-grade gliomas are associated with markedly short length of survival. Therefore, faced with the realization of a poor prognosis, it is understandable that patients who perceived their prognosis was well explained would have lower QoL scores.

Limitations

The major constraint to this study is the small sample size, which may have limited our ability to detect weaker associations. Because significant tests are sensitive to sample size, a larger sample size would have been needed to detect a weak association. Selection bias is inherent in this study due to nonrandomization. Lack of heterogeneity in treatments completed at time of survey precluded an assessment of the association between time from different therapies and QoL. Our use of a convenience patient sample is surely not representative of patients with high-grade gliomas. While participants and nonparticipants did not differ in terms of age, gender, race/ethnicity, or histology, participants may have been healthier than those that refused. Participants were clinically stable at time of consent and may have still been clinically stable at time of survey. If one were to assume that extremely ill patients would report lower QoL scores then our reported scores may be overestimated. By definition, this cross-sectional study provided information at one point in time. Repeated evaluations at regular intervals, such as in a longitudinal study would be more informative and allow us to assess QoL throughout the disease course.

Conclusion

This study confirms some earlier findings but also identifies new factors that have not been previously explored in high-grade glioma patients. While the FACT-Br is one of the most widely used instruments for reporting QoL in brain tumor patients [30], the FPQLI-C has rarely been used in a brain tumor-specific study. However, we identified QoL determinants using both assessment tools, thus adding validity to our findings. Because the FPQLI-C includes additional domains which proved important in this population, using FPQLI-C may prove valuable in future brain tumor studies. This study also sheds light on the emotional supportive needs of patients with underage children (FACT-BR) and the multiple needs of patients who live alone (FPQLI-C), which is important knowledge for clinicians to have while managing this disease. Finally, inclusion of the qualitative variable, “What does quality of life mean to you?” adds depth to our findings and provides insight into what high-grade glioma patients deem important.

Our findings demonstrate that nonclinical characteristics are associated with QoL in patients with high-grade gliomas. Sociodemographic factors as determinants of QoL have not been examined extensively in this population and individual beliefs have not been examined at all. Given the exploratory and limited nature of this study, it is imperative that further studies on a larger scale be conducted to confirm results identified in this study. A better understanding of the relationship between QoL and sociodemographic and belief factors may have aid in directing prevention and management strategies. Improving quantity of life in patients with high-grade gliomas may currently pose a challenge but efforts should be continually made to improve their QoL.

Acknowledgments

The authors sincerely thank the patients and their families for their participation. We thank the medical and research staff for their assistance, particularly Nina Paleologos, MD; Ayman Omar, MD; Patricia Lada, RN; Mara Motley; Christina Papirnik; and Candice Zahora, RHIA. The authors would also like to thank Bridget J. McCarthy, PhD for her contributions to the development of this study.

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Funding Kimberly R. Porter was supported by a National Cancer Institute pre-doctoral fellowship through the cancer prevention and control training grant at the University of Illinois at Chicago (2 R25 CA057699, co-Is Davis, FG and Fitzgibbon, ML).

Abbreviations

QoL	Health-related quality of life
FACT-Br	Functional Assessment of Cancer Therapy for brain tumor patients
FPQLI-C	Ferrans and Powers Quality of Life Index Cancer

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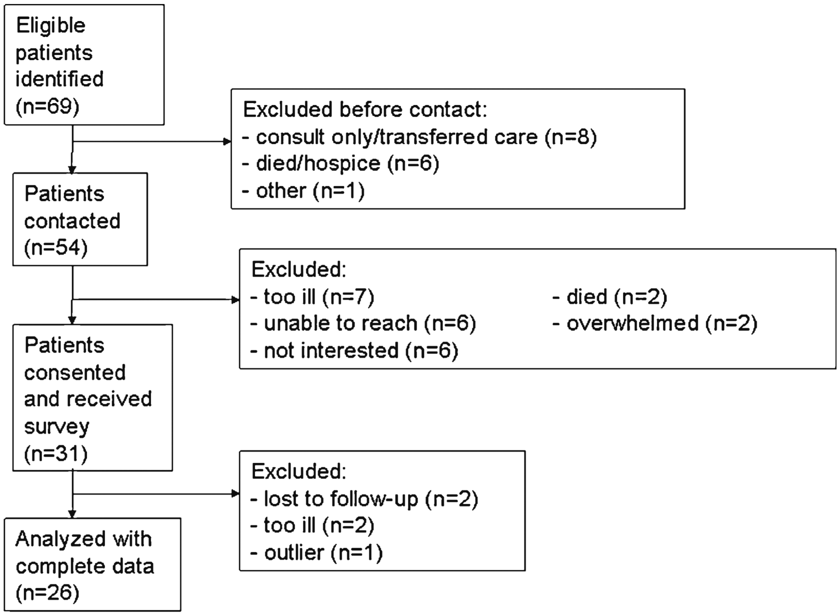

Fig. 1.

Flowchart of recruitment

Table 1

Patient characteristics: sociodemographics, clinical, and perception/beliefs

Characteristics	# of patients (%)
Sociodemographics	
Median age at survey	57.5 years (SD 10.8)
Gender	
Male	13 (50.0)
Female	13 (50.0)
Race/ethnicity	
Non-hispanic white	23 (88.5)
Other	3 (11.5)
Education	
Completed college	14 (53.9)
Not college graduate	12 (46.2)
Handedness	
Right	24 (92.3)
Right/ambidextrous	2 (7.7)
Living arrangement	
Alone	4(15.4)
With others	22(84.6)
Marital status	
Married with a partner	21(80.8)
Single/widowed	5(19.2)
Children	
Yes	24 (92.3)
No	2 (7.7)
Lifetime occupation	
White collar	20 (80.0)
Blue collar	5 (20.0)
Employment status	
Employed	13 (50.0)
Retired	5 (19.2)
Unemployed/other	8 (30.8)
Health insurance	
Private	17 (65.4)
Medicare/COBRA/None	9 (34.6)
Income, annual household	
<$50,000	5 (21.7)
$50,000–99,999	6 (26.1)
≥$100,000	12 (52.2)
Clinical	
Type of surgical resection	

Characteristics	**# of patients (%)**
Biopsy	4 (15.4)
Subtotal	10 (38.5)
Gross/total	12 (46.2)
Laterality	
Left	14 (53.9)
Right	9 (34.6)
Bilateral/midline	3 (11.5)
Primary site	
Frontal	11 (42.3)
Temporal	10 (38.5)
Parietal/ventricle, NOS/spinal cord/brain, NOS	5 (19.2)
Histology	
Glioblastoma	21 (80.8)
Anaplastic astrocytoma/oligodendroglioma/oliastrocytoma/mixed glioma	5 (19.2)
Tumor size (mm)	
≤36	18 (69.2)
37+	8 (30.8)
Length hospital stay	
0–3days	9 (34.6)
4+ days	17 (65.4)
Disposition discharge	
Home, independent	12 (70.6)
Home, dependent/rehabilitation center	5 (29.4)
Unknown	9 (34.6)
Postneurodiagnostic results	
Evidence of tumor	14 (56.0)
No evidence	7 (28.0)
Postneurodiagnostic test, biopsy or results unknown	4 (16.0)
Comorbid condition	
None	8 (30.8)
1	6 (23.1)
2	7 (26.9)
3 or more	5 (19.2)
Chemotherapy ended by survey completion	
Yes	2 (8.0)
No	23 (92.0)
Perceptions/beliefs	
Ease of travel to/from doctor visits/treatment	
Very easy/easy	11 (42.3)
Sometimes easy, sometimes difficult/difficult	15 (57.7)
Perception of income	
I can save	5 (19.2)

Characteristics	**# of patients (%)**
I get enough for my needs	9 (34.6)
I am just able to make ends meet	6 (23.1)
I don't get enough for my needs	4 (15.4)
I am in desperate need	2 (7.7)
Out-of pocket expense	
Very manageable	7 (26.9)
Somewhat manageable	13 (50.0)
Barely manageable	2 (7.7)
Not at all manageable	4 (15.4)
Treatment expectation	
Be cured of my cancer	11 (42.3)
Some cancer left/symptoms left	10 (38.5)
No expectations/no effect	5 (19.2)
Prognosis explained	
Very well	14 (53.9)
Somewhat	10 (38.5)
Not very well	2 (7.7)
Current health	
Same/better	8 (32.0)
Worse	17 (68.0)
Any therapy (physical, occupational, speech)	
Yes	10 (38.5)
No	16 (61.5)
Diagnosis to survey	
3–7 months	15 (57.7)
>7 months	11 (42.3)
Radiation completion to survey	
1–4 months	14 (56.0)
≥5 months	11 (44.0)
Survey administration	
Paper-based	17 (65.4)
Web-based	9 (34.6)

Table 2

Pearson correlation matrix for subscale and total scores of the FACT-Br and FPQLI-C for 26 brain cancer patients

	Ferrans and Powers quality of life index—cancer				
Functional assessment of cancer therapy—brain	**Health and functioning**	**Socioeconomic**	**Psychological/spiritual**	**Family**	**Total score**
Physical well-being	0.58[a]	0.03	0.52[a]	–0.12	0.45[b]
Social/family well-being	0.12	0.25	0.26	0.42[b]	0.27
Emotional well-being	0.51[b]	0.11	0.58[a]	0.25	0.51[b]
Functional well-being	0.59[a]	0.23	0.50[b]	0.06	0.52[a]
Brain cancer subscale	0.49[b]	0.46[b]	0.29	0.11	0.45[b]
Total score	0.79[a]	0.42[b]	0.69[a]	0.21	0.74[a]

Twenty-four patients completed the FACT-Br and all 26 patients completed the FPQLI-C

[a] $p < 0.01$

[b] $p < 0.05$

Table 3

Study-based statistics and mean scores for FACT-Br and patient factors

	Mean (SD)					
Characteristics	**Total**[a]	**Physical**	**Social/family**	**Emotional**	**Functional**	**Brain**
FACT-Br						
Score range[b]	90–151	3–26	13–27	6–24	6–23	34–69
Overall Mean (SD)	122.0 (16.6)	19.0 (5.2)	21.1 (3.6)	16.3 (4.9)	14.4 (4.3)	51.2 (9.4)
Cronbach's alpha	0.70	0.77	0.82	0.80	0.78	0.79
Patient						
Age at survey						
33–49 years	109.9 (16.5)[c]	15.1 (7.3)[c]	19.9 (4.2)	13.0 (4.7)[c]	11.0 (4.3)[c]	50.9 (9.0)
>50 years	126.9 (14.3)	20.4 (3.1)	21.4 (3.5)	17.2 (4.7)	15.3 (3.8)	51.4 (9.6)
Gender						
Male	122.9 (12.9)	19.8 (3.4)	20.5 (3.3)	16.5 (4.3)	14.2 (3.3)	52.1 (9.0)
Female	120.8 (20.7)	18.0 (6.5)	21.5 (4.2)	15.6 (5.7)	14.1 (5.2)	50.3 (9.8)
Race/ethnicity						
White	122.0 (16.9)	19.6 (4.0)[c]	20.9 (3.5)	15.9 (5.2)	14.1 (4.3)	50.7 (9.4)
Other	122.0 (17.7)	14.0 (10.1)	21.3 (5.5)	17.0 (3.0)	14.7 (4.9)	55.0 (8.0)
Education						
Completed college	123.1 (18.0)	18.7 (6.6)	21.1 (4.2)	15.3 (4.7)	13.5 (5.2)	54.3 (7.2)[c]
Not college grad	120.7 (15.5)	19.1 (3.0)	20.8 (3.2)	16.8 (5.3)	14.8 (2.9)	47.9 (10.3)
Handedness						
Right	122.8 (17.1)	19.0 (5.3)	21.2 (3.6)	15.8 (5.1)	14.2 (4.5)	51.8 (9.4)
Other	113.0 (5.7)	18.0 (0.0)	18.6 (5.1)	18.5 (0.7)	13.0 (0.)	44.9 (2.7)
Living arrangement						
With others	122.1 (17.3)	18.9 (5.4)	21.2 (3.8)	16.5 (5.1)	14.2 (4.4)	51.3 (9.8)
Alone	121.1 (2.7)	19.2 (1.8)	19.3 (2.7)	12.8 (2.3)	13.5 (4.3)	50.8 (4.3)
Marital status						
Married/with a partner	122.6 (17.6)	18.9 (5.6)	21.1 (3.9)	16.4 (5.2)	14.2 (4.5)	52.0 (9.4)
Single/widowed	117.7 (6.2)	18.9 (1.5)	20.2 (2.9)	14.1 (3.2)	14.0 (3.9)	47.1 (8.2)
Children (minors)						
Yes	118.4 (17.5)	17.3 (8.2)	20.3 (3.9)	13.2 (4.2)[c]	12.5 (5.6)	55.1 (5.6)
No	123.8 (16.3)	19.7 (2.8)	21.3 (3.6)	17.4 (4.8)	14.8 (3.5)	49.4 (10.1)
Children (adults)						
Yes	124.7 (15.8)	20.3 (3.3)[c]	21.3 (3.5)	16.6 (4.5)	15.3 (3.8)[c]	49.9 (10.0)
No	115.5 (19.4)	14.2 (7.1)	21.2 (3.5)	14.0 (6.4)	11.2 (4.4)	55.0 (6.6)
Lifetime occupation						
White collar	119.6 (16.4)	18.7 (5.5)	21.5 (3.8)	15.9 (5.0)	14.1 (4.6)	49.5 (9.2)[c]
Blue collar	134.0 (12.6)	20.5 (3.1)	19.5 (2.7)	18.3 (4.6)	15.5 (2.3)	59.5 (5.9)
Employment status						

Mean (SD)						
Characteristics	**Total**[a]	**Physical**	**Social/family**	**Emotional**	**Functional**	**Brain**
Employed	118.6 (16.2)	19.8 (4.0)	21.3 (3.8)	14.9 (4.8)	14.6 (4.2)	48.0 (10.8)
Other	125.9 (16.8)	18.0 (6.1)	20.6 (3.6)	17.3 (5.1)	13.6 (4.5)	54.7 (5.8)
Health insurance						
Private	120.5 (18.0)	18.4 (5.9)	21.8 (3.3)	15.6 (5.5)	13.6 (4.3)	51.1 (10.8)
Other	125.6 (12.7)	19.9 (5.9)	19.2 (4.0)	16.9 (3.7)	15.1 (4.3)	51.6 (5.1)
Income, annual, h						
<$100,000	123.8 (13.3)	18.8 (6.2)	22.5 (3.5)	17.5 (3.3)	15.5 (3.9)	49.3 (9.1)
≥$100,000	123.5 (18.1)	19.7 (4.7)	19.9 (3.8)	16.0 (5.5)	13.4 (4.8)	54.6 (8.6)
Type of surgical resection						
Gross/total	123.2 (20.7)	18.3 (6.7)	21.2 (3.0)	15.6 (5.6)	14.7 (4.5)	53.4 (10.4)
Subtotal/biopsy	120.8 (11.9)	19.4 (3.3)	20.7 (4.3)	16.5 (4.5)	13.7 (4.3)	49.2 (7.8)
Laterality						
Left	122.1 (17.4)	18.6 (5.6)	20.7 (4.1)	15.5 (5.5)	14.6 (3.5)	51.5 (10.4)
Other	121.9 (16.4)	19.3 (4.7)	21.3 (3.3)	16.7 (4.4)	13.6 (5.2)	50.9 (7.9)
Primary site						
Frontal/temporal	124.6 (17.2)	19.9 (4.0)[c]	20.6 (3.5)	15.9 (5.4)	14.9 (4.2)[c]	52.3 (9.8)
Other	112.2 (9.6)	14.8 (7.3)	22.6 (4.3)	16.6 (2.6)	11.0 (3.5)	47.2 (5.2)
Histology						
Glioblastoma	121.4 (16.9)	18.6 (5.2)	21.4 (4.0)	16.3 (5.3)	14.4 (4.0)	50.6 (10.0)
Other	124.6 (17.0)	20.0 (5.0)	19.3 (1.6)	15.0 (3.4)	12.8 (5.8)	53.7 (4.9)
Tumor size (mm)						
≤36	122.0 (17.1)	18.3 (5.6)	21.2 (3.7)	16.8 (4.7)	13.8 (4.8)	50.9 (9.2)
>37	122.0 (16.9)	20.3 (3.8)	20.5 (3.9)	14.5 (5.4)	14.8 (3.0)	52.1 (9.8)
Length of hospital stay						
0–3 days	125.6 (15.9)	19.4 (3.3)	21.6 (3.4)	15.4 (3.9)	13.0 (4.1)	53.6 (9.2)
≥4 days	123.6 (18.6)	18.5 (4.6)	21.7 (3.4)	16.4 (6.8)	15.8 (4.9)	51.3 (11.2)
Disposition discharge						
Home, indep.	128.1 (17.1)	19.5 (4.4)	21.2 (3.7)	14.7 (4.9)	15.1 (5.2)	55.7 (7.7)
Other	123.0 (19.4)	19.3 (4.5)	22.1 (1.6)	18.8 (6.1)	13.5 (4.5)	49.3 (12.8)
Postneurodiagnostic results						
Evidence of tumor	123.7 (18.3)	18.5 (6.1)	21.2 (3.3)	17.3 (5.8)	14.6 (4.4)	52.0 (9.3)
No evidence of tumor	119.1 (17.2)	18.7 (4.7)	20.9 (3.2)	14.9 (4.2)	14.4 (4.5)	50.1 (10.7)
Comorbid condition						
None	114.5 (16.7)	15.3 (6.3)	20.9 (3.0)	14.1 (6.8)	12.9 (3.8)	51.4 (8.8)
≥1	125.7 (15.7)	20.6 (3.4)	21.0 (4.0)	16.9 (3.7)	14.7 (4.5)	51.2 (9.7)
Chemotherapy ended by survey completion						
Yes	119.8 (21.4)	17.5 (9.7)	23.5 (7.0)	16.7 (1.9)	12.8 (6.8)	49.3 (8.5)
No	122.4 (16.1)	19.2 (4.1)	20.5 (2.7)	15.9 (5.4)	14.4 (3.9)	51.6 (9.5)
Physical therapist						
Yes	122.6 (20.5)	17.9 (7.0)	23.5 (3.7)[c]	15.8 (4.1)	13.4 (5.6)	49.7 (10.8)

Mean (SD)						
Characteristics	**Total**[a]	**Physical**	**Social/family**	**Emotional**	**Functional**	**Brain**
No	121.7 (15.4)	19.4 (4.1)	19.8 (3.1)	16.1 (5.4)	14.5 (3.6)	52.0 (8.6)
Occupational therapist						
Yes	123.5 (17.5)	17.1 (7.6)	22.2 (4.8)	17.1 (4.8)	14.7 (5.4)	49.1 (8.4)
No	121.6 (16.8)	19.5 (4.2)	20.6 (3.3)	15.7 (5.1)	13.9 (4.0)	51.9 (9.6)
Speech pathologist						
Yes	128.5 (15.2)	20.3 (3.4)	21.5 (3.8)	18.3 (4.8)	17.3 (2.9)	51.3 (14.4)
No	120.7 (16.9)	18.6 (5.4)	20.9 (3.8)	15.6 (5.0)	13.6 (4.3)	51.2 (8.4)
Time from diagnosis to survey						
3–7 months	127.3 (15.6)[c]	21.0 (3.5)[c]	21.0 (4.1)	18.0 (3.8)[c]	14.7 (4.5)	52.6 (9.3)
>8 months	113.0 (14.8)	15.8 (5.7)	20.9 (3.1)	13.1 (5.2)	13.4 (4.0)	49.1 (9.1)
Time from surgery and radiation therapy to survey						
1–4 months	125.7 (14.8)	20.9 (3.6)	20.9 (4.3)	17.6 (3.5)[c]	14.6 (4.7)	51.7 (8.9)
>5 months	116.7 (18.2)	16.3 (5.7)	21.0 (2.9)	14.0 (5.9)	13.6 (3.9)	50.7 (10.0)
Ease of travel to/from doctor visits/treatment						
Very easy/easy	131.0 (15.4)[c]	20.6 (4.7)	21.0 (3.4)	16.7 (4.5)	16.1 (4.8)[c]	56.6 (6.2)[c]
Other	114.3 (13.8)	17.5 (5.2)	20.9 (4.0)	15.5 (5.4)	12.7 (3.3)	47.0 (9.2)
Perception of income						
"I can save/I get enough for my needs"	126.7 (17.2)[c]	19.9 (4.1)	21.6 (3.5)	16.0 (5.2)	15.4 (4.6)[c]	53.7 (8.7)
Other	115.3 (13.9)	17.6 (6.1)	20.2 (3.9)	16.0 (4.9)	12.6 (3.5)	48.0 (9.3)
Out-of-pocket expenses						
Very manageable	133.2 (16.1)[c]	21.7 (2.7)[c]	22.4 (3.8)	17.2 (3.8)	17.3 (4.9)[c]	54.6 (10.0)
Other	117.3 (14.8)	17.8 (5.4)	20.4 (3.6)	15.6 (5.4)	13.0 (3.5)	49.9 (8.8)
Treatment expectation						
Be cured of my cancer	121.9 (20.2)	19.1 (6.5)	21.0 (4.5)	16.2 (4.7)	14.5 (3.8)	50.8 (10.8)
Other	122.0 (14.2)	18.8 (4.2)	20.9 (3.2)	15.9 (5.3)	13.9 (4.7)	51.5 (8.4)
Prognosis explained						
Very well	117.2 (11.4)	18.3 (5.5)	21.3 (3.2)	16.3 (5.6)	14.2 (2.5)	47.0 (7.9)[c]
Other	127.6 (20.3)	19.4 (4.8)	20.6 (4.2)	15.8 (4.4)	14.1 (5.9)	55.9 (8.5)
Current health						
Same/better	115.3 (14.4)	18.4 (3.9)	19.9 (4.1)	14.9 (4.3)	12.9 (3.9)	49.2 (9.2)
Worse	125.3 (17.0)	19.1 (5.7)	21.5 (3.5)	16.6 (5.3)	14.8 (4.6)	52.2 (9.3)

FACT-Br Functional Assessment of Cancer Therapy—Brain, based on 24 questionnaires

[a] The total FACT-Br score is the summation of the four general subscales and the brain subscale scores

[b] Score range for FACT-Br: 0–28 (Physical, Social/Family, Functional well-being); 0–24 (Emotional well-being); 0–76 (Brain cancer subscale); 0–184 (TOTAL)

[c] $p < 0.10$

Table 4

Study-based statistics and mean scores for FPQLI-C and patient factors

Mean (SD)					
Characteristics	**Total**	**Health/functioning**	**Socio-economic**	**Phychological/spiritual**	**Family**
FPQLI-C					
Score range[a]	8–25	9–25	5–25	4–29	11–30
Overall mean	18.8 (4.3)	16.6 (4.6)	19.7 (4.3)	18.0 (6.7)	24.2 (4.9)
Cronbach's alpha	0.84	0.88	0.92	0.88	0.90
Patient					
Age at survey					
33–49 years	16.5 (3.9)[b]	13.7 (5.2)[b]	18.7 (2.7)	13.5 (6.4)[b]	24.3 (5.1)
>50 years	19.6 (4.2)	17.6 (4.1)	20.1 (4.7)	19.6 (6.2)	24.2 (5.0)
Gender					
Male	19.4 (3.2)	17.0 (3.9)	20.3 (2.8)	18.5 (5.7)	25.3 (3.8)
Female	18.2 (5.2)	16.1 (5.4)	19.1 (5.4)	17.5 (7.8)	23.1 (5.7)
Race/ethnicity					
White	18.4 (4.1)	16.1 (4.2)	19.6 (4.5)	17.5 (6.5)	23.5 (4.8)[b]
Other	22.0 (4.7)	20.3 (7.1)	20.4 (0.8)	21.5 (8.7)	29.5 (0.9)
Education					
Completed college	17.9 (4.5)	15.5 (4.5)	20.0 (5.1)	15.9 (6.6)[b]	23.8 (5.4)
Not college grad	19.8 (4.0)	17.8 (4.7)	19.4 (3.3)	20.4 (6.2)	24.6 (4.5)
Handedness					
Right	18.7 (4.3)	16.4 (4.8)	19.5 (4.4)	18.0 (6.6)	24.3 (4.7)
Other	19.8 (5.7)	18.1 (4.1)	22.3 (2.0)	17.4 (10.6)	23.7 (9.0)
Living arrangement					
With others	19.7 (3.6)[b]	17.2 (4.7)	20.8 (2.8)[b]	19.1 (6.2)[b]	25.5 (3.7)[b]
Alone	13.6 (4.2)	13.1 (2.7)	13.9 (6.7)	11.9 (6.7)	16.9 (4.3)
Marital status					
Married/with a partner	19.9 (3.7)[b]	17.3 (4.8)[b]	20.9 (2.7)[b]	19.3 (6.3)[b]	25.6 (3.8)[b]
Single/widowed	14.2 (3.9)	13.4 (2.4)	14.6 (5.9)	12.6 (6.0)	18.3 (4.9)
Children (minors)					
Yes	18.5 (3.7)	16.2 (5.4)	20.7 (2.5)	15.6 (6.2)	25.1 (4.4)
No	18.9 (4.6)	16.7 (4.5)	19.2 (4.9)	19.0 (6.8)	23.8 (5.2)
Children (adults)					
Yes	19.4 (4.4)	17.5 (4.6)	19.4 (4.6)	19.4 (6.0)[b]	24.2 (5.0)
No	17.4 (4.2)	14.1 (4.6)	21.1 (3.0)	14.1 (11.4)	24.6 (5.2)
Lifetime occupation					
White collar	18.8 (3.3)	16.1 (4.1)	20.7 (2.9)[b]	17.6 (5.6)	24.7 (4.1)
Blue collar	19.1 (7.9)	18.7 (7.1)	17.2 (7.1)	19.1 (5.6)	23.0 (7.8)
Employment status					

Mean (SD)					
Characteristics	**Total**	**Health/functioning**	**Socio-economic**	**Phychological/spiritual**	**Family**
Employed	18.4 (2.7)	15.9 (3.5)	20.3 (2.7)	17.0 (4.4)	24.1 (3.6)
Other	19.1 (5.5)	17.3 (5.6)	19.1 (5.4)	18.9 (8.5)	24.3 (6.1)
Health insurance					
Private	19.4 (3.5)	16.7 (4.7)	20.9 (2.8)^b	18.4 (6.0)	25.9 (3.4)^b
Other	17.5 (5.4)	16.4 (4.9)	17.5 (5.8)	17.3 (8.2)	21.0 (5.9)
Income, annual (h)					
<$100,000	18.7 (5.3)	17.0 (5.4)	18.5 (5.0)^b	18.1 (7.7)	24.1 (6.0)
≥100,000	19.0 (3.3)	16.4 (4.0)	21.5 (2.4)	17.6 (6.3)	24.1 (4.1)
Type of surgical resection					
Gross/total	19.4 (4.2)	17.3 (5.3)	21.2 (2.6)^b	17.6 (7.1)	24.6 (5.0)
Subtotal/biopsy	18.3 (4.4)	16.0 (4.2)	18.4 (5.0)	18.3 (6.6)	23.8 (4.9)
Laterality					
Left	19.3 (3.7)	17.2 (4.6)	20.0 (3.2)	18.7 (6.2)	24.7 (4.3)
Other	18.2 (5.0)	15.9 (4.8)	19.4 (5.4)	17.2 (7.4)	23.7 (5.7)
Primary site					
Frontal/temporal	18.7 (4.6)	16.9 (4.9)	19.4 (4.7)	17.7 (7.0)	23.5 (5.0)
Other	19.3 (2.7)	15.1 (3.4)	20.8 (1.9)	19.4 (5.8)	27.4 (3.3)
Histology					
Glioblastoma	19.0 (4.5)	16.6 (4.9)	20.2 (4.3)	18.1 (7.1)	24.4 (5.2)
Other	18.1 (3.1)	16.5 (3.9)	17.7 (3.8)	17.4 (5.2)	23.4 (3.8)
Tumor size (mm)					
≤36	19.0 (4.9)	17.1 (5.1)	19.9 (4.7)	17.9 (7.7)	23.9 (5.7)
≥37	18.3 (2.4)	15.3 (3.3)	19.3 (3.5)	18.1 (4.1)	24.9 (2.1)
Length of hospital stay					
0–3 days	18.0 (4.9)	15.9 (4.4)	18.2 (5.9)	17.3 (6.7)	24.2 (6.2)
≥4 days	20.1 (4.7)	17.9 (5.7)	22.0 (2.5)	19.4 (8.3)	24.0 (4.8)
Disposition discharge					
Home, indep.	20.0 (4.1)	17.8 (5.3)	21.2 (3.5)	19.2 (6.6)	25.1 (4.3)
Other	17.7 (6.5)	16.2 (5.2)	18.1 (7.3)	17.3 (9.7)	21.4 (7.5)
Postneurodiagnostic results					
Evidence of tumor	19.0 (4.9)	16.8 (5.2)	19.5 (5.2)	18.4 (7.4)	25.0 (5.1)
No evidence of tumor	18.1 (3.9)	16.1 (4.2)	21.3 (2.4)	15.4 (6.6)	22.3 (5.3)
Comorbid condition					
None	18.7 (4.3)	15.2 (5.5)	21.1 (3.3)	17.1 (7.3)	26.1 (4.7)
≥1	18.8 (4.4)	17.1 (4.3)	19.1 (4.6)	18.4 (6.6)	23.4 (4.9)
Chemotherapy ended by survey completion					
Yes	19.2 (4.2)	16.1 (5.4)	20.7 (3.3)	18.3 (6.5)	26.1 (3.6)
No	18.7 (4.4)	16.6 (4.7)	19.5 (4.5)	17.9 (6.9)	23.9 (5.1)
Physical therapist					
Yes	18.2 (5.0)	16.1 (4.5)	18.9 (6.1)	17.6 (6.7)	23.4 (6.3)

Mean (SD)					
Characteristics	**Total**	**Health/functioning**	**Socio-economic**	**Phychological/spiritual**	**Family**
No	19.1 (4.0)	16.8 (4.9)	20.1 (3.1)	18.2 (7.0)	24.6 (4.1)
Occupational therapist					
Yes	18.5 (6.2)	17.3 (5.9)	18.0 (6.7)	18.2 (6.6)	22.8 (7.3)
No	18.9 (3.5)	16.3 (4.3)	20.3 (3.0)	17.9 (6.1)	24.7 (3.8)
Speech pathologist					
Yes	21.4 (3.7)	19.7 (4.1)	21.7 (1.2)	21.8 (5.8)	24.5 (5.6)
No	18.3 (4.3)	16.0 (4.6)	19.3 (4.5)	17.3 (6.7)	24.2 (4.9)
Time from diagnosis to survey					
3–7 months	20.2 (3.4)[b]	18.1 (4.0)[b]	20.8 (2.7)	19.7 (5.8)	25.2 (3.6)
>8 months	16.9 (4.7)	14.4 (4.8)	18.3 (5.6)	15.6 (7.3)	22.8 (6.2)
Time from surgery & radiation therapy to survey					
1–4 months	19.9 (3.3)	17.8 (4.0)	20.6 (2.7)	19.1 (5.5)	25.2 (3.7)
>5 months	17.5 (5.0)	15.1 (5.1)	18.7 (5.5)	16.7 (8.0)	23.0 (5.9)
Ease of travel to/from doctor visits/ treatment					
Very easy/easy	20.8 (3.7)[b]	18.7 (5.1)[b]	21.2 (2.6)	20.7 (6.0)[b]	25.6 (3.8)
Other	17.3 (4.2)	15.0 (3.8)	18.6 (5.0)	16.0 (8.0)	23.2 (5.4)
Perception of income[a]					
"I can save/I get enough for my needs"	19.9 (3.6)	17.3 (4.4)	22.1 (2.0)	19.0 (6.4)	24.3 (4.5)
Other	17.5 (4.8)	15.7 (5.0)	16.9 (4.5)	16.8 (7.1)	24.1 (5.5)
Out-of-pocket expenses					
Very manageable	20.6 (2.9)	18.1 (4.2)	22.3 (2.1)[b]	20.8 (3.9)	24.5 (4.2)
Other	18.1 (4.5)	16.0 (4.8)	18.8 (4.5)	17.0 (7.3)	24.1 (5.2)
Treatment expectation					
Be cured of my cancer	17.6 (5.3)	16.2 (5.5)	18.0 (5.1)[b]	15.9 (7.8)	23.2 (5.6)
Some cancer left/symptoms left/no expectations	19.6 (3.2)	16.9 (4.1)	21.0 (3.1)	19.5 (5.5)	25.0 (4.4)
Prognosis explained					
Very well	17.0 (3.6)[b]	14.6 (3.1)[b]	18.5 (4.8)	15.4 (5.8)[b]	23.3 (5.4)
Other	20.8 (4.2)	18.9 (5.2)	21.1 (3.3)	20.9 (6.6)	25.3 (4.2)
Current health					
Same/better	19.3 (4.6)	16.8 (5.7)	19.3 (3.0)	18.9 (6.8)	26.2 (3.9)
Worse	19.2 (3.3)	16.9 (4.1)	20.7 (3.2)	18.4 (6.1)	24.1 (4.2)

FPQLI-C Ferrans and Powers Quality of Life Index–cancer; scores based on all 26 questionnaires

[a] Score range for FP-QLIC: 0–30 for overall and all domains

[b] $p < 0.10$

Table 5

Themes, patterns, and selected responses based on response to “What does quality of life mean to you?”

Theme	Selected response
Functional/functioning	
n = 18 (75 %)	*Active/energy*
	“Being active”
	“Freedom in motility”
	“To be active and helpful to others”
	Independence
	“To be able to do things by yourself”
	“That I have the ability to function as a husband”
	“Being independent”
	“To be able to function as normal as I can...”
Emotional/psychological	
n = 14 (58.3 %)	*Fear/worry*
	“not being afraid”
	“...living without the fear of dying soon”
	“...no trouble about the future”
	Coping
	“...how you feel and try you get through it”
	“how well I can live emotionally”
	Happiness
	“Being happy most of the time”
	“to have a positive outlook on life”
	“I would like to be ...emotionally content”
Physical/health	
n = 12 (50 %)	*Pain*
	“living without pain”
	“being pain free”
	Good health
	“to feel good and healthy”
	“I would like to be physically well”
Economic	
n = 8 (30.8 %)	“...have no economic concerns of any type”
	“Financial stability”
	“...able to afford what I want to do and have”
Social/family	“how you affect the rest of your family”
n = 8 (30.8 %)	“I also feel sorry for my husband who has to carry the load while I recuperate”
	“...ability to do as many things as possible with my wife and to help her a small percentage of how she helps me”
	“Being able to be with my wife, family and friends (and dog)”