Published in final edited form as:

J Geriatr Oncol. 2014 July ; 5(3): 331–336. doi:10.1016/j.jgo.2014.03.003.

Do Age and Quality of Life of the Cancer Patient Influence Quality of Life of the Caregiver?

Varun Shahi, BS¹, Maria I. Lapid, MD², Simon Kung, MD², Pamela J. Atherton, MS³, Jeff A. Sloan, PhD⁴, Matthew M. Clark, PhD², and Teresa A. Rummans, MD²

¹Mayo Medical School, Mayo Clinic, Rochester, MN, USA

²Department of Psychiatry & Psychology, Mayo Clinic, Rochester, MN, USA

³Division of Biomedical Statistics and Informatics, Mayo Clinic, Rochester, MN, USA

⁴Health Sciences Research, Mayo Clinic, Rochester, MN, USA

Abstract

Background—There are significant burdens associated with providing care for loved ones with cancer. However, caregiver quality of life (QOL) is often overlooked. With the increasing number of older adults with cancer, it is important to determine whether a patient's age and QOL have any association with the caregiver's QOL.

Objective—The objective of our study was to describe caregiver QOL and explore whether patient age and other psychosocial factors impact caregiver QOL.

Design—Baseline information from patients with advanced cancer undergoing radiation and their caregivers, who were enrolled in a randomized, controlled clinical trial to test the effectiveness of a structured, multidisciplinary QOL intervention, was analyzed for this study.

Measurement—Caregivers completed the Caregiver Quality of Life Index—Cancer Scale (CQOLC). Both patients and caregivers completed the Linear Analogue Self-Assessment (LASA) to measure QOL, and Profile of Mood States (POMS) to measure mood states.

Results—Overall, 131 patient-caregiver pairs participated in the study. At baseline, caregivers of older adults (≥ 65 years) had higher mental ($P=0.01$), emotional ($P=0.003$), spiritual ($P<0.01$), and social support ($P=0.03$) LASA QOL scores. Caregivers of older adults also had higher baseline QOL (CQOLC, $P=0.003$) and mood (POMS, $P=0.04$) than caregivers of younger adults. Caregivers of patients with higher LASA QOL scores had higher overall ($P=0.02$), mental ($P=0.006$), physical ($P=0.02$), emotional ($P=0.002$), and spiritual LASA QOL scores ($P=0.047$).

Conclusions—Caregivers of older adults with advanced cancer demonstrated better QOL and fewer mood disturbances compared to caregivers of younger patients. When patients have good QOL, caregivers also had good QOL.

Corresponding author: Maria I. Lapid, M.D., Associate Professor of Psychiatry, Mayo Clinic Department of Psychiatry & Psychology, 200 First Street SW, Rochester, MN 55905, USA PH507-284-4159; FX507-284-4158; lapid.maria@mayo.edu.

Author Disclosure Statement

No competing financial interests exist.

Keywords

informal caregiver; well-being; psychosocial; intervention

Background

Quality of life (QOL) is often difficult to maintain for patients with cancer and for their caregivers. Overall QOL consists of 5 domains of well-being (WB): physical, cognitive, social, emotional, and spiritual (1, 2). Aside from the negative psychological impact of receiving a cancer diagnosis, multiple domains of QOL also often decline in cancer patients during oncologic treatment and its associated high symptom burden (1, 3, 4). Caregiving during cancer treatment is labor intensive, with patients requiring assistance with basic and instrumental activities of daily living, emotional and psychosocial support, and an advocate for their healthcare (5). This large burden of responsibility of care placed upon the caregiver during the time of cancer diagnosis and treatment can lead to a reduction in the caregiver's QOL (6).

Unfortunately, caregiver QOL often goes unnoticed with as many as 30% of caregivers experiencing some form of distress (7) and complete exhaustion (8). Caregivers with unmet needs, lack of social support, and higher stress were found to have worse mental health (9-11). Those who provide more intense support to cancer patients during treatment experience negative outcomes, are less effective partners in the care of the patient, and more frequently delay their own healthcare needs (5). Age differences have also been reported, with older caregivers having better psychosocial but worse physical adjustment (12). Caregivers have distinct needs from those of the patient (13), and other factors that can influence the QOL of the caregiver include caregiver's spirituality (14), educational programs for patients and caregivers designed to address the emotional and physical needs of both (15), and psychological and physical symptoms of the caregiver (16). To add to the challenge of maintaining caregiver QOL, improving patient QOL does not necessarily improve caregiver QOL (17).

Given the significant burdens associated with providing care for a loved one with advanced cancer and advanced age, QOL of caregivers for this patient population deserves empirical attention, and factors that impact caregiver QOL need to be further studied. In the setting of a rapidly aging population in the United States with an increasing number of older patients with cancer (18) an important factor to investigate is whether a patient's age has any association with the caregiver's QOL (19). Older cancer patients have been shown to have worse physical functioning than younger cancer patients (20, 21). While we cannot change the patient's age, we can identify which caregivers might be at higher risk of worse QOL based on the patient's age, and thus attempt focused interventions to try to improve caregiver QOL. Thus, the goal of this secondary study was to describe QOL of caregivers of patients with advanced cancer and explore whether patient age and QOL impact the caregiver's QOL.

Methods

The larger study from which our data were derived was a randomized, two-group, controlled clinical trial to compare the efficacy of a structured, multidisciplinary intervention to standard care in maintaining overall QOL of patients with advanced cancer undergoing radiation therapy and their caregivers (3). This randomized trial was approved by the Mayo Clinic Institutional Review Board and registered at ClinicalTrials.gov (NCT01360814). Patients were diagnosed with advanced cancer (brain, gastrointestinal, head and neck, lung, and others) within the previous 12 months and were scheduled to receive at least one week of radiation therapy (>85% of the patients were also receiving chemotherapy). Caregivers were defined as the primary, non-professional caregiver as identified by the patients. Patients and caregivers were randomly assigned, as a pair, to either the intervention or usual care (control) and completed a series of QOL assessments at baseline. This secondary study is exploratory and hypothesis-generating utilizing data collected at baseline.

Measures

Caregivers completed three assessments administered in a booklet form. The Caregiver Quality of Life Index-Cancer Scale (CQOLC) is validated and contains 35-items measuring components of physical, social, financial, psychological, caregiver burden and family dimensions (22, 23). One total score is calculated. The Linear Analog Self-Assessment (LASA) contains 10 standalone items rated on individual 0-10 Likert scales. These include an overall QOL item plus questions regarding mentality, physicality, emotion, social activity, spirituality, fatigue, social support, and financial and legal concerns. The items have been validated as measures of global QOL dimensional constructs in numerous settings (24). The Profile of Mood States-Brief (POMS-B) form is a 30-item assessment measuring anger-hostility, tension-anxiety, depression-dejection, confusion-bewilderment, fatigue-inertia, and vigor-activity, and overall mood disturbance (25). Reliability and validity testing has been performed within cancer patient populations (26).

All assessments were scored according to specific scoring algorithms. To aid in comparability and interpretability of scores, all total and subscale scores were transformed to a uniform percentage of theoretical range scale. If a lower score indicated better QOL, mood or functioning, it was reversed. All scores were then converted to a 0-100 percentage scale. Thus all scores have the same range and meaning, i.e. a score of 100 reflects best QOL, mood or functioning. Patients were categorized according to LASA overall QOL scores (≤ 50 vs >50). Previous research has indicated that this cutoff, as measured by the visual analog Spritzer Uniscale, is a prognostic factor (27). As the linear analog scale has been shown to be comparable to the visual analog scale, this categorization is valid in this study (28). Caregiver QOL scores were compared according to patient's age and LASA overall QOL categorization using Wilcoxon techniques. Effect sizes, as an indication of clinical meaning, were computed as the difference between group means divided by the pooled standard deviation. Sizes of 0.2, 0.5, and 0.8 were interpreted as small, medium and large (29).

General linear modeling techniques, using SAS[®] programming, were utilized to determine variables significantly influential on the caregiver QOL. Multivariate models were

constructed using independent baseline variables of patient age, gender, performance status, tumor grade, tumor site, and QOL scores; and caregiver relationship to patient. Dependent variables were the LASA items, the POMS total score and the CQOLC total score.

Results

Population Characteristics

One hundred and thirty-one patient-caregiver dyads participated in the study. No differences existed between caregivers in the intervention and control groups, so the caregiver data were combined. The majority of the caregivers were spouses ($n=98$, 75%). Others were adult children (9.9%), parents (4.6%), significant others (3.8%), and friends (1.5%). Patients had a mean age of 59.3, standard deviation of 10.9 and range of 31-81. There were 90 (60%) patients younger than age 65 and 41 (31%) patients age 65 or older. As assessed by a clinician using the Eastern Cooperative Oncology Group (ECOG) performance score, the majority of patients was physically fully active and most reported good QOL. The baseline characteristics of caregivers and patients are summarized in Table 1. Further patient details are published elsewhere (3). QOL results are based on 130 caregivers and 129 patients, as one patient-caregiver dyad withdrew because the patient was hospitalized prior to study participation and one patient decided to decline.

Caregiver QOL With Regard to Patient Age

At baseline, caregivers of older adults (≥ 65 years) had higher mental (mean 81.0 vs 71.6, $P=0.01$), emotional (mean 78.5 vs 65.5, $P<0.01$), spiritual (mean 85.9 vs 74.2, $P<0.01$), and social support (mean 90.2 vs 82.6, $P=0.03$) scores (Table 2). Caregivers for older adults also had higher CQOLC scores (mean 72.9 vs 65.9, $P<0.01$) and mood (POMS mean 72.9 vs 65.9, $P=0.04$) than caregivers of younger adults. Effect sizes for comparisons between patient age were moderate, ranging from 0.04 to 0.61. Although the difference in caregiver mood (POMS total) was statistically significant, there was only a small effect size of 0.37 compared to the moderate effect sizes for the other QOL scores. Emotional, spiritual, financial and CQOLC had effect sizes greater than 0.50.

Caregiver QOL With Regard to Patient QOL

Caregivers of patients with higher baseline LASA overall QOL scores (>50) had higher scores on LASA overall QOL (mean 76.5 vs 66.0, $P=0.02$), mental WB (mean 77.5 vs 64.7, $P<0.01$), physical WB (mean 75.0 vs 65.6, $P=0.02$), emotional WB (mean 73.2 vs 58.3, $P<0.01$), and spiritual WB (mean 79.8 vs 70.7, $P=0.047$) (Table 3). They also had higher CQOLC scores (mean 70.4 vs 60.6, $P<0.001$) and mood (POMS mean 74.4 vs 64.8, $P<0.001$). Effect sizes for comparisons ranged from 0.26 to 0.78. All statistically significant outcomes had at least a moderate effect size, and the CQOLC had a large effect size.

Generalized Linear Modeling

Significant contributors to caregiver QOL were identified by the multivariate modeling. The existence of head & neck tumor site ($p=0.04$) and patient POMS score ($p<0.01$) influenced caregiver LASA overall QOL. Caregivers of those with head and neck cancer had lower mean scores than those with other cancers (66.7 vs 75.4) and there is a positive relationship

(Pearsons $r=0.38$) between caregiver overall QOL and patient POMS scores. Caregiver mental WB was significantly modeled by patient age group ($p=0.02$) where mean caregiver WB was higher for those with older patients (80.1 vs 71.5), head & neck tumor site ($p=0.03$) where those with patients having head & neck cancer had lower mean WB (67.1 vs 76.0) and patient POMS score ($p=0.01$) ($r=0.33$). Caregiver emotional, spiritual, social support and financial WB were influenced by patient age group ($p<0.01$, $p<0.01$, $p=0.01$, $p<0.01$, respectively) where mean QOL scores were higher for caregivers with older patients (78.5 vs 65.5; 85.9 vs 74.2; 90.2 vs 82.6; 77.6 vs 58.2, respectively). Caregiver social activity and POMS were influenced by patient POMS score ($p=0.02$, $p=0.03$, respectively and $r=0.29$, $r=0.40$, respectively). Significant factors for caregiver fatigue were patient gender ($p=0.02$), lung tumor site ($p<0.01$) and gastrointestinal tumor site ($p=0.048$). Mean caregiver fatigue was better if patients were female (51.3 vs 44.6), had gastrointestinal cancer (49.8 vs 45.2) or had lung cancer (61.2 vs 44.8). Caregiver legal concerns were influenced by the relationship to the patient ($p<0.01$). If the patient was a spouse or significant other, the better the mean score (78.7 vs 65.5). CQOLC score was influenced by patient age group ($p<0.001$) where those with older patients had higher QOL (72.6 vs 66.4) and patient POMS score ($p<0.01$, $r=0.44$).

Discussion

Our data show that caregivers of cancer patients who are older demonstrate better QOL and less mood disturbances than caregivers of younger adult cancer patients. In addition, caregivers of patients with good QOL also demonstrate better QOL compared to caregivers whose care recipients have poor QOL.

It is interesting that caregivers of older cancer patients reported higher levels of mental, emotional, and spiritual WB, felt more socially supported, had fewer financial concerns and had fewer mood disturbances than caregivers of younger cancer patients. These differences were both statistically significant and, based on effect size, clinically significant. This finding agrees with a previous study reporting lower caregiver QOL with younger cancer patients (30). We also found caregivers of older patients also had higher (but non-significant) physical WB, fatigue, and social activity. Thus, when designing future interventions to improve caregiver QOL, one focus area would be on caregivers of younger patients. Another focus area would be the physical domains of QOL, which were lower than the emotional and spiritual domains in caregivers of older patients.

Our second main finding is that caregivers of cancer patients with good QOL also demonstrate better QOL. These caregivers report statistically and clinically significant higher overall QOL, higher QOL in the domains of mental, physical, emotional, and spiritual WB, and better mood. While differences in other QOL domains of fatigue, social activity, and social support were not clinically meaningful (either not statistically significant or had a small effect size), caregivers of patients with good QOL still rated these domains higher. Our results seem intuitive, and in agreement with several other studies (31, 32). However, we do not know whether the patient QOL affects caregiver QOL, or vice versa. Given the involvement of the primary caregiver in the life of a patient during the difficult journey through cancer diagnosis and treatment, it seems likely that the QOL of the

caregiver would also impact the QOL of the patient. Resiliency training for the caregiver as well as the cancer patient might provide a positive synergistic effect on both of their QOL.

The strengths of our study include our focus on patient-caregiver dyads and a unique methodology utilizing patient characteristics to help describe caregiver traits. Accordingly, one of the limitations is the lack of caregiver age. We cannot ascertain whether caregiver age, and not patient age, is a main factor in the higher caregiver QOL of older patients. Because the majority (75%) of caregivers in our study were spouses, they were likely similar to the patient in age and other age-related characteristics such as occupational, social, or family obligations, level of financial concerns, number of health problems, and past major life experiences. We did not include caregiver characteristics such as gender, living location, and employment status. We also did not compare caregiver QOL between other categories of patient characteristics, such as the type of concurrent cancer treatment, which may affect caregiver QOL. Another limitation is the small and unbalanced sample size, which makes definitive conclusions impossible. Finally, our study occurred at a tertiary academic cancer care center in Southeast Minnesota, with a primarily Caucasian and suburban population, which limits generalizability.

In summary, the caregivers of older advanced cancer patients receiving radiation and caregivers of those patients having higher QOL had better (higher) scores in many QOL domains. Based on effect sizes, patient QOL had a stronger effect on caregiver QOL than patient age. These results indicate that when designing interventions to improve caregiver QOL, the age and QOL of the patient may be important considerations when determining intervention content.

Acknowledgement

Funding for this study was provided by the Linse Bock Foundation and the Saint Marys Hospital Sponsorship Board. The content of this manuscript is solely the responsibility of the authors and does not necessarily represent the official views of Linse Bock Foundation or the Saint Marys Hospital Sponsorship Board.

References

1. Rummans TA, Clark MM, Sloan JA, Frost MH, Bostwick JM, Atherton PJ, et al. Impacting quality of life for patients with advanced cancer with a structured multidisciplinary intervention: a randomized controlled trial. *J Clin Oncol.* Feb 1; 2006 24(4):635–42. [PubMed: 16446335]
2. Efficace F, Bottomley A, Osoba D, Gotay C, Flechtner H, D'Haese S, et al. Beyond the development of health-related quality-of-life (HRQOL) measures: a checklist for evaluating HRQOL outcomes in cancer clinical trials--does HRQOL evaluation in prostate cancer research inform clinical decision making? *J Clin Oncol.* Sep 15; 2003 21(18):3502–11. [PubMed: 12972527]
3. Clark MM, Rummans TA, Atherton PJ, Cheville AL, Johnson ME, Frost MH, et al. Randomized controlled trial of maintaining quality of life during radiotherapy for advanced cancer. *Cancer.* Feb 15; 2013 119(4):880–7. [PubMed: 22930253]
4. Clark MM, Bostwick JM, Rummans TA. Group and individual treatment strategies for distress in cancer patients. *Mayo Clin Proc.* Dec; 2003 78(12):1538–43. [PubMed: 14661683]
5. Kim Y, Schulz R. Family caregivers' strains: comparative analysis of cancer caregiving with dementia, diabetes, and frail elderly caregiving. *J Aging Health.* Aug; 2008 20(5):483–503. [PubMed: 18420838]
6. McMillan SC. Quality of life of primary caregivers of hospice patients with cancer. *Cancer Pract.* Jul-Aug;1996 4(4):191–8. [PubMed: 8900760]

7. Blanchard CG, Toseland RW, McCallion P. The effects of a problem-solving intervention with spouses of cancer patients. *J Psychosocial Oncol.* 1996; 14(2):1–21.
8. Coristine M, Crooks D, Grunfeld E, Stonebridge C, Christie A. Caregiving for women with advanced breast cancer. *Psychooncology.* Oct-Nov;2003 12(7):709–19. [PubMed: 14502595]
9. Kim Y, Kashy DA, Spillers RL, Evans TV. Needs assessment of family caregivers of cancer survivors: three cohorts comparison. *Psychooncology.* Jun; 2010 19(6):573–82. [PubMed: 19582798]
10. Kim Y, Carver CS. Recognizing the value and needs of the caregiver in oncology. *Curr Opin Support Palliat Care.* Jun; 2012 6(2):280–8. [PubMed: 22436321]
11. Kim Y, Carver CS, Rocha-Lima C, Shaffer KM. Depressive symptoms among caregivers of colorectal cancer patients during the first year since diagnosis: a longitudinal investigation. *Psychooncology.* Feb; 2013 22(2):362–7. [PubMed: 22109965]
12. Kim Y, Spillers RL, Hall DL. Quality of life of family caregivers 5 years after a relative's cancer diagnosis: follow-up of the national quality of life survey for caregivers. *Psychooncology.* Mar; 2012 21(3):273–81. [PubMed: 22383269]
13. Ugalde A, Krishnasamy M, Schofield P. Supporting informal caregivers of people with advanced cancer: A literature review. *The Australian Journal of Cancer Nursing.* 2011; 12(2):12–6.
14. Son KY, Lee CH, Park SM, Oh SI, Oh B, Tak SH, et al. The factors associated with the quality of life of the spouse caregivers of patients with cancer: a cross-sectional study. *J Palliat Med.* Feb; 2012 15(2):216–24. [PubMed: 22283431]
15. Creedle C, Leak A, Deal AM, Walton AM, Talbert G, Riff B, et al. The impact of education on caregiver burden on two inpatient oncology units. *J Cancer Educ.* Jun; 2012 27(2):250–6. [PubMed: 22241024]
16. Cora A, Partinico M, Munafo M, Palomba D. Health risk factors in caregivers of terminal cancer patients: a pilot study. *Cancer Nurs.* Jan-Feb;2012 35(1):38–47. [PubMed: 21372699]
17. Clark MM, Rummans TA, Sloan JA, Jensen A, Atherton PJ, Frost MH, et al. Quality of life of caregivers of patients with advanced-stage cancer. *Am J Hosp Palliat Care.* Jun-Jul;2006 23(3): 185–91. [PubMed: 17060277]
18. Mazzola P, Radhi S, Mirandola L, Annoni G, Jenkins M, Cobos E, et al. Aging, cancer, and cancer vaccines. *Immun Ageing.* 2012; 9(1):4. [PubMed: 22510392]
19. Jayani R, Hurria A. Caregivers of older adults with cancer. *Semin Oncol Nurs.* Nov; 2012 28(4): 221–5. [PubMed: 23107179]
20. Akechi T, Okuyama T, Uchida M, Nakaguchi T, Ito Y, Yamashita H, et al. Perceived needs, psychological distress and quality of life of elderly cancer patients. *Jpn J Clin Oncol.* Aug; 2012 42(8):704–10. [PubMed: 22581912]
21. Koo K, Zeng L, Chen E, Zhang L, Culleton S, Dennis K, et al. Do elderly patients with metastatic cancer have worse quality of life scores? *Support Care Cancer.* Sep; 2012 20(9):2121–7. [PubMed: 22081058]
22. Weitzner MA, Jacobsen PB, Wagner H Jr, Friedland J, Cox C. The Caregiver Quality of Life Index-Cancer (CQOLC) scale: development and validation of an instrument to measure quality of life of the family caregiver of patients with cancer. *Qual Life Res.* 1999; 8(1-2):55–63. [PubMed: 10457738]
23. Edwards B, Ung L. Quality of life instruments for caregivers of patients with cancer: a review of their psychometric properties. *Cancer Nurs.* Oct; 2002 25(5):342–9. [PubMed: 12394561]
24. Bretscher M, Rummans T, Sloan J, Kaur J, Bartlett A, Borkenhagen L, et al. Quality of life in hospice patients. A pilot study. *Psychosomatics.* Jul-Aug;1999 40(4):309–13.
25. McNair D, Lorr M, Droppelman L. Profile of Mood States: Manual. San Diego, CA: Educational and Testing Service. 1971
26. MHS. Profile of Mood States. Available from: <http://www.mhs.com/product.aspx?gr=cli&prod=poms&id=resources>.
27. Qi Y, Schild SE, Mandrekar SJ, Tan AD, Krook JE, Rowland KM, et al. Pretreatment quality of life is an independent prognostic factor for overall survival in patients with advanced stage non-small cell lung cancer. *J Thorac Oncol.* Sep; 2009 4(9):1075–82. [PubMed: 19546817]

28. Sloan JA, Deuck A. Issues for statisticians in conducting analyses and translating results for quality of life end points in clinical trials. *J Biopharm Stat.* 2004; 14(1):73–96. [PubMed: 15027501]
29. Cohen, J. *Statistical power analysis for the behavioral sciences.* 2nd. Lawrence Earlbaum Associates; Hillsdale, NJ: 1988.
30. Valeberg BT, Grov EK. Symptoms in the cancer patient—Of importance for their caregivers' quality of life and mental health? *European Journal of Oncology Nursing.* 2013; 17(1):46–51. [PubMed: 22386554]
31. Kim Y, Loscalzo MJ, Wellisch DK, Spillers RL. Gender differences in caregiving stress among caregivers of cancer survivors. *Psychooncology.* Dec; 2006 15(12):1086–92. [PubMed: 16634112]
32. Wadhwa D, Burman D, Swami N, Rodin G, Lo C, Zimmermann C. Quality of life and mental health in caregivers of outpatients with advanced cancer. *Psychooncology.* Feb; 2013 22(2):403–10. [PubMed: 22135229]

Table 1**Baseline Caregiver Characteristics Distribution**

	A: Intervention (n=65), No. (%)	B: Control (n=66), No. (%)	Total (N=131), No. (%)	P value^a
Caregiver Relation to Patient				0.12
Spouse	48 (73.8)	50 (75.8)	98 (74.8)	
Significant other	4 (6.2)	1 (1.5)	5 (3.8)	
Parent	2 (3.1)	4 (6.1)	6 (4.6)	
Adult child	8 (12.3)	5 (7.6)	13 (9.9)	
Friend	2 (3.1)	0 (0)	2 (1.5)	
Other	1 (1.5)	6 (9.1)	7 (5.3)	
Patient Age				0.61
<65 Nongeriatric	46 (70.8)	44 (66.7)	90 (68.7)	
65 Geriatric	19 (29.2)	22 (33.3)	41 (31.3)	
Patient Gender				0.52
Male	41 (63.1)	45 (68.2)	86 (65.6)	
Female	24 (36.9)	21 (31.8)	45 (34.4)	
Patient ECOG PS				0.89
0=Fully active	34 (52.3)	33 (50)	67 (51.1)	
1=Restricted	29 (44.6)	30 (45.5)	59 (45)	
2=Ambulatory	2 (3.1)	3 (4.5)	5 (3.8)	
Patient Dominant Disease Site				0.58
Brain	11 (16.9%)	18 (27.3%)	29 (22.1%)	
Head & Neck	10 (15.4%)	11 (16.7%)	21 (16%)	
Lung	10 (15.4%)	7 (10.6%)	17 (13%)	
GI	25 (38.5%)	24 (36.4%)	49 (37.4%)	
Other	9 (13.8%)	6 (9.1%)	15 (11.5%)	
Patient Tumor Grade				0.17
1	1 (1.5%)	0 (0%)	1 (0.8%)	
2	8 (12.3%)	4 (6.1%)	12 (9.2%)	
3	25 (38.5%)	32 (48.5%)	57 (43.5%)	
4	17 (26.2%)	23 (34.8%)	40 (30.5%)	
5	14 (21.5%)	7 (10.6%)	21 (16%)	
Patient QOL Scores^{b,c}				

	A: Intervention (n=65), No. (%)	B: Control (n=66), No. (%)	Total (N=131), No. (%)	<i>P</i> value^a
Overall QOL (LASA)	68.8 (20.88)	71.1 (19.03)	69.9 (19.94)	0.57
Mental well-being (LASA)	76.3 (19.49)	80.0 (17.46)	78.1 (18.53)	0.23
Physical well-being (LASA)	63.5 (20.65)	65.0 (20.93)	64.3 (20.72)	0.62
Patient POMS	73.2 (14.33)	74.7 (11.35)	73.9 (12.91)	0.78

Abbreviations: ECOG PS, Eastern Cooperative Oncology Group performance score; LASA, Linear Analogue Self-Assessment; POMS, Profile of Mood States.

^a χ^2

^b Kruskal-Wallis.

^c SD noted in parentheses.

Table 2

Mean Baseline Caregiver QOL by Patient Age

QOL Item ^a	<65 Nongeriatric ^b (n=89)	65 Geriatric ^b (n=41)	Total ^b (N=130)	Effect Size	P value ^c
LASA					
Overall QOL	72.0 (20.24)	78.3 (18.15)	74.0 (19.75)	0.32	0.11
Mental WB	71.6 (20.11)	81.0 (18.14)	74.5 (19.93)	0.47	0.01
Physical WB	71.1 (18.55)	76.8 (19.53)	72.9 (18.97)	0.30	0.14
Emotional WB	65.5 (23.68)	78.5 (18.11)	69.6 (22.82)	0.57	<0.01
Social activity	58.5 (26.18)	66.8 (25.24)	61.2 (26.08)	0.32	0.12
Spiritual WB	74.2 (19.35)	85.9 (18.16)	77.8 (19.69)	0.59	<0.01
Fatigue	44.5 (25.23)	52.2 (26.41)	46.9 (25.76)	0.30	0.12
Social support	82.6 (19.51)	90.2 (12.55)	85.0 (17.93)	0.42	0.03
Financial	58.2 (29.06)	77.6 (31.21)	64.3 (30.98)	0.61	<0.01
Legal	74.9 (26.30)	73.9 (31.37)	74.6 (27.90)	0.04	0.64
POMS Total	70.5 (14.11)	75.6 (13.12)	72.1 (13.96)	0.37	0.04
CQOLC Total	65.9 (12.78)	72.9 (10.43)	68.1 (12.48)	0.56	<0.01

Abbreviations: LASA, Linear Analogue Self-Assessment; POMS, Profile of Mood States; QOL, quality of life; WB, well-being; CQOLC, Caregiver Quality of Life Index-Cancer Scale.

^a Scored 0 to 100.

^b SD noted in parentheses.

^c Kruskal-Wallis.

Table 3

Mean Baseline Caregiver QOL by Patient Baseline LASA Score

QOL item ^a Missing (n=1)	50 ^b (n=30)	>50 ^b (n=99)	Total (N=130)	Effect Size	P value ^c
LASA					
Overall QOL	66.0 (22.53)	76.5 (18.37)	74.0 (19.82)	0.53	0.02
Mental WB	64.7 (22.55)	77.5 (18.26)	74.5 (20.00)	0.64	<0.01
Physical WB	65.7 (19.24)	75.0 (18.51)	72.8 (19.03)	0.51	0.02
Emotional WB	58.3 (23.35)	73.2 (21.71)	69.7 (22.90)	0.65	<0.01
Social activity	53.0 (29.02)	63.7 (24.85)	61.2 (26.16)	0.41	0.06
Spiritual WB	70.7 (21.96)	79.8 (18.52)	77.7 (19.67)	0.46	0.047
Fatigue	42.0 (22.19)	48.7 (26.64)	47.1 (25.74)	0.26	0.24
Social support	79.7 (23.85)	86.5 (15.54)	84.9 (17.95)	0.38	0.20
Financial	54.0 (30.69)	67.8 (30.46)	64.6 (30.95)	0.45	0.03
Legal	67.0 (29.61)	76.6 (27.13)	74.4 (27.91)	0.34	0.11
POMS Total (0-100)	64.8 (13.57)	74.4 (13.41)	72.2 (14.00)	0.69	<0.001
CQOLC Total (0-100)	60.6 (13.90)	70.4 (11.17)	68.1 (12.52)	0.78	<0.001

Abbreviations: LASA, Linear Analogue Self-Assessment; POMS, Profile of Mood States; QOL, quality of life; WB, well-being; CQOLC, Caregiver Quality of Life Index-Cancer Scale.

^a Scored 0 to 100.

^b SD noted in parentheses.

^c Kruskal-Wallis.