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Changes in Spirituality and Quality of Life in Patients Undergoing Radiation Therapy

Bethany T. Samuelson, MD¹, Erik K. Fromme, MD, MCR², and Charles R. Thomas Jr, MD³

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Abstract

Purpose: Investigations into the role of spirituality in cancer confirm the association of good spiritual well-being with many positive outcomes. This study aimed to evaluate potential changes in spirituality over the course of radiation therapy (RT). **Patients and Materials:** The Functional Assessment of Chronic Illness Therapy–Spiritual questionnaire measuring spiritual well-being and quality of life (QOL) was administered to adult patients undergoing RT. Scores were compared using student *t* tests and chi-square analysis. **Results:** Despite statistically significant declines in QOL measures such as physical well-being ($P < .001$) and overall well-being ($P < .001$), no significant changes were noted in spirituality for all comers. A significant increase in the Sp-12 spirituality measure ($P = .001$) was noted in patients with breast cancer, independent of age, gender, and purpose of treatment. Sp-12 scores were positively correlated with overall QOL scores ($P < .001$).

Keywords

spirituality, spiritual well-being, cancer, palliative care, quality of life, radiation therapy

Introduction

The relationship between spiritual well-being and quality of life (QOL) in patients with cancer has been increasingly studied in recent years. A number of studies have examined this link, as well as links between spirituality and patient perception of quality of care, depression and anxiety, and likelihood of requesting aggressive life-prolonging care. This literature reminds us that spirituality is an essential part of the cancer experience for many patients,^{1–3} and that spiritual well-being is associated with a number of positive outcomes, including increased QOL^{2,4–6} and positive, active cognitive-coping strategies.⁷ Spiritual well-being was also negatively correlated with outcomes such as depression and anxiety.⁸

Additional studies have found that many patients with cancer report that their spiritual needs go unmet, either by their religious community or by the medical system,² and a number of patients have indicated that they feel it is appropriate for their physicians to inquire about their spiritual needs.^{3,9} Those patients who do feel their needs are being met report higher QOL overall,² and those who feel they have unmet spiritual needs report lower satisfaction with their care.³

The message of these investigations is clear, good spiritual well-being is an important and potentially beneficial part of the cancer experience, and those patients with cancer who report good spiritual well-being also report better outcomes. What is less clear is how the medical system impacts the spiritual well-being of patients with cancer, an essential question to answer if we hope to positively impact our patients on this level.

Recent literature also suggests that, as opposed to gradual changes with progression over time experienced by patients with more slowly progressive diseases, patients with cancer experience greatest psychological and spiritual distress at 4 distinct transition points: diagnosis, discharge after treatment, disease progression, and terminal stages.¹⁰ The aim of this study was to examine the spiritual well-being and QOL of radiation therapy (RT) patients at 2 of these essential transition points, at the beginning of treatment, closest in time to either diagnosis or progression, and at the end or discharge from treatment. We compared patient reported spiritual well-being and QOL at these time points to examine whether and how they change over the course of treatment. By doing so, this study establishes baseline trends for these measures in a large general radiotherapy population and identifies future areas for prospectively evaluating spirituality indices.

We chose the Functional Assessment of Chronic Illness Therapy–Spiritual (FACIT–Sp) well-being tool with its

¹ Oregon Health & Science University School of Medicine, Portland, OR, USA

² Radiation Medicine, Hematology/Oncology Knight Cancer Institute, Oregon Health & Science University, Portland, OR, USA

³ Radiation Medicine, Knight Cancer Institute, Oregon Health & Science University, Portland, OR, USA

Corresponding Author:

Bethany T. Samuelson, Department of Medicine, University of California San Francisco, 505 Parnassus Avenue, Rm 987, San Francisco, CA 94143, USA
Email: bethany.samuelson@gmail.com

Table 1. Patient Characteristics

Characteristic	Mean	Range
Age at Diagnosis	61.13	27-86
Characteristic	<i>n</i>	%
Total	406	
Gender		
Male	270	66.5
Female	136	33.5
Primary Tumor Location		
CNS	27	6.7
Breast	71	17.5
Sarcoma	15	3.7
Genitourinary	4	1.0
Gynecologic	14	3.4
Lymphoma	11	2.7
Head/Neck	9	2.2
Lung	50	12.3
Skin/Melanoma	8	2.0
GI	68	16.7
Bone	6	1.5
Prostate	123	30.3
Purpose of Treatment		
Definitive	340	83.7
Palliative	64	15.8

Likert-type scale for its good internal consistency, reliability, and significant correlation with QOL, as well as ease of administration and completion,¹¹ and combined this data with demographic data from a retrospective chart analysis. This study was approved by the Oregon Health & Science University Institutional Review Board.

Methods

Population

Questionnaires, including the FACIT-Sp, were offered to 1369 consecutive adult patients presenting to the Department of Radiation Medicine at Oregon Health and Science University between January 1, 2006 and December 31, 2008 for their first RT treatment for any diagnosis. Patients were also requested to complete questionnaires following their final RT treatment and at the time of their first treatment follow-up visit. In all, 722 (52.7%) patients completed some component of the FACIT-Sp at least once over the course of treatment. Of these, 406 completed the Sp12 both before and after their course of treatment. Table 1 lists additional patient characteristics.

Data Collection

Quality of life was measured using FACIT-Sp, which combines the FACT-General (FACT-G), a well-validated cancer-specific QOL instrument, with the Sp-12, a measure of spirituality. The 108-point FACT-G is comprised of four 24- to 28-point subscales measuring physical, emotional, functional, and social domains. Sp-12 is a 48-point scale including 2 subscales, meaning-peace and faith. The FACIT-Sp simply adds together

FACT-G and Sp-12 scores for a total possible score of 156 (best possible QOL). Demographic data were collected from the electronic medical record of all patients who completed at least 1 questionnaire, including gender, age at diagnosis, race, ethnicity (Hispanic or non-Hispanic), marital status, number of children, zip code, insurance type, and employment status. Additional disease-specific data, including primary tumor location, type and stage of disease, and purpose of treatment (palliative vs definitive) were also noted.

Analysis

Average pre- and post-RT scores were calculated and compared utilizing 2-tailed Student *t* test with Bonferroni correction for multiple comparisons (8 comparisons, $\alpha = .00625$). Average scores for individual questions, with response options ranging from 0 or “not at all” to 4 or “very much,” were calculated and compared similarly. Calculations were performed for the group as a whole and exploratory subgroup analysis was conducted based on gender, purpose of treatment, and diagnosis. Chi-square analysis was used to compare changes in reported scores between these groups. Pearson correlations were used to assess the degree of relationship between various scales and subscales. All analyses were conducted utilizing SPSS v18 or 19.

Clinically significant changes in FACT-G and subscales were assessed by comparing the mean changes in each scale or subscale to the published minimally important difference (MID) ranges for this instrument.¹²

Results

All Participants Statistical Analysis

Differences between pre- and post-RT scores for each scale and subscale, along with statistical and clinical significance are included in Figure 1. Patients demonstrated a statistically and clinically significant drop in physical well-being. Despite a statistically significant drop in overall QOL and increase in emotional well-being, there were no other clinically significant changes.

For the physical well-being subscale (range 0 = *not at all*, 1 = *a little bit*, 2 = *somewhat*, 3 = *quite a bit*, and 4 = *very much*), the items with the greatest magnitude of change included, “I have lack of energy” (1.60-2.07; $P < .001$), “I have nausea” (0.36-0.70; $P < .001$), “I am bothered by the side effects of treatment” (0.59-1.44; $P < .001$), “I feel ill” (0.48-0.84; $P < .001$), and “I am forced to spend time in bed” (0.56 to 0.95; $P < .001$). These questions demonstrated both statistically and clinically significant changes.

For the functional well-being scale, declines in “I am able to work” (2.46-2.11; $P < .001$) and “my work is fulfilling” (2.81-2.38; $P < .001$) were statistically and clinically significant.

For the faith subscale of Sp-12 “My illness has strengthened my faith or spiritual beliefs” (2.11-2.31; $P = .001$) was the only question to demonstrate statistically significant change.

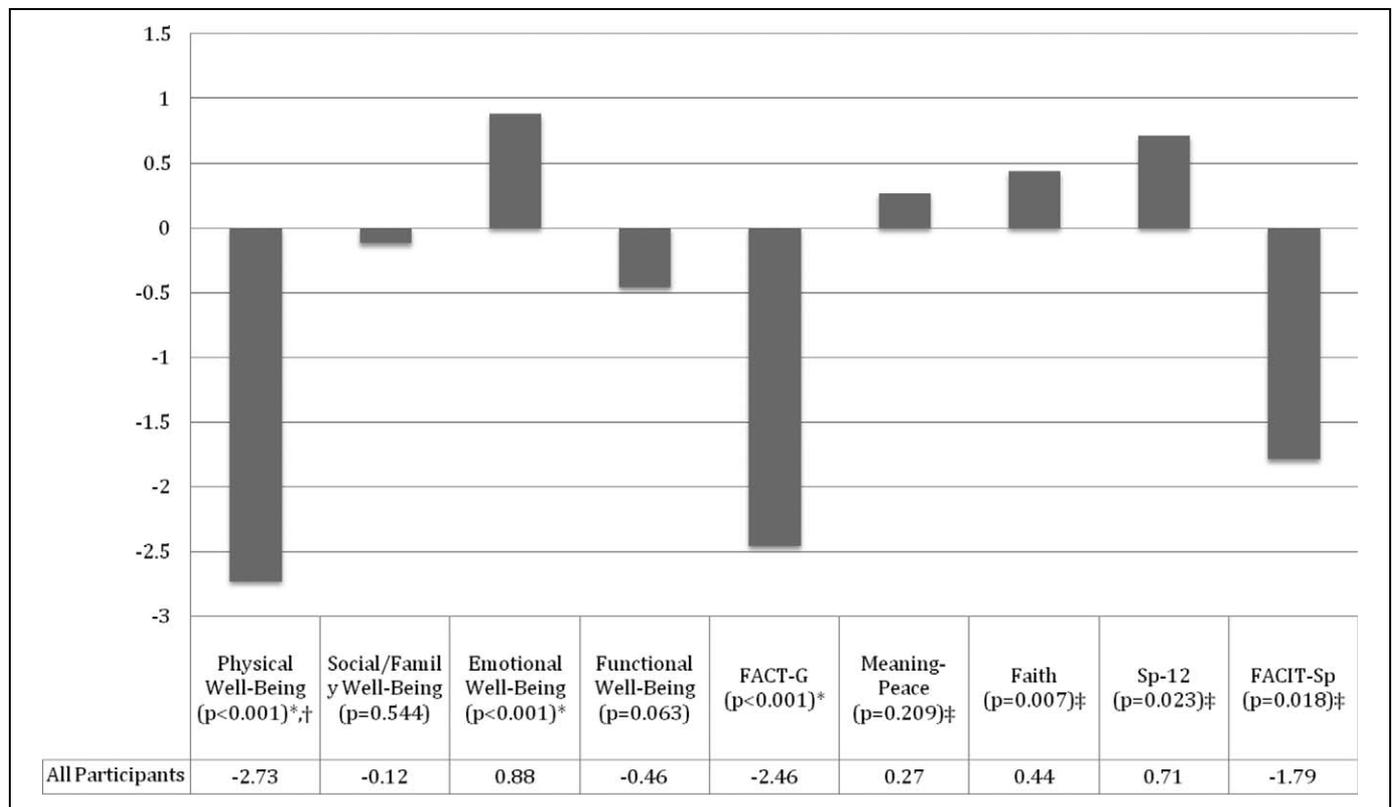


Figure 1. Changes in FACIT-Sp scale and subscale measures between treatment initiation and completion. *Statistically significant change; †change is within or above the minimally important difference range (MID); ‡no previously calculated MID available. FACIT-Sp indicates Functional Assessment of Chronic Illness Therapy–Spiritual; MID, minimally important difference.

For the social/family well-being scale, emotional well-being scale, or meaning-peace subscale, no individual questions demonstrated both statistically and clinically significant changes for the whole sample.

Change in FACT-G and Sp-12 scores were positively, albeit weakly correlated (Pearson R : .398, P < .001), an association which remained constant even when controlling for gender, race, marital/partnered status, zip code, employment or insurance status, primary tumor location, and purpose of treatment (palliative vs definitive) in linear regression analysis.

Subgroup Statistical Analysis: Gender

For women, decline in overall QOL (FACT-G) was neither statistically or clinically significant (81.76-79.23; P = .007) while it was statistically, but not clinically significant for men (81.08-78.66; P = .001). Additionally, women demonstrated statistically significant increases in both faith subscale (10.92-11.82; P = .001) and overall Sp-12 (36.09-37.46; P = .006) scores, a change not observed in men. Meaning-peace scores (25.17-25.65; P = .160) also trended upward nonsignificantly in women.

Univariate chi-square analysis revealed that patients with breast cancer accounted for much of the differences between men and women—demonstrating statistically significant improvements in meaning-peace subscale (P = .031), faith

subscale (P = .039), Sp12 (P = .010), and FACIT-Sp (P = .005) scores. In a linear regression analysis with Sp12 score as the dependent variable, breast cancer was identified as the best predictor of increased spirituality (B = 2.754, P = .007). This effect was independent of age or whether the goal of RT was palliative or potentially curative (definitive). Additional differences between patients with breast cancer and those with other malignancies are shown in Figure 2.

SubGroup Statistical Analysis: Palliative Versus Definitive Treatment

Patients receiving definitive RT were largely similar to all comers, with statistically and clinically significant declines in physical well-being (22.84-20.01; P < .001) and statistically but not clinically significant declines in FACT-G scores (83.29-80.56; P < .001). Patients undergoing palliative RT had statistically and clinically significant changes in only one subscale, physical well-being (18.08-15.93; P = .001).

Discussion

The aim of this study, among many studies demonstrating the effect of spirituality on the cancer experience, was to examine patient spirituality over the course of RT. Although spirituality

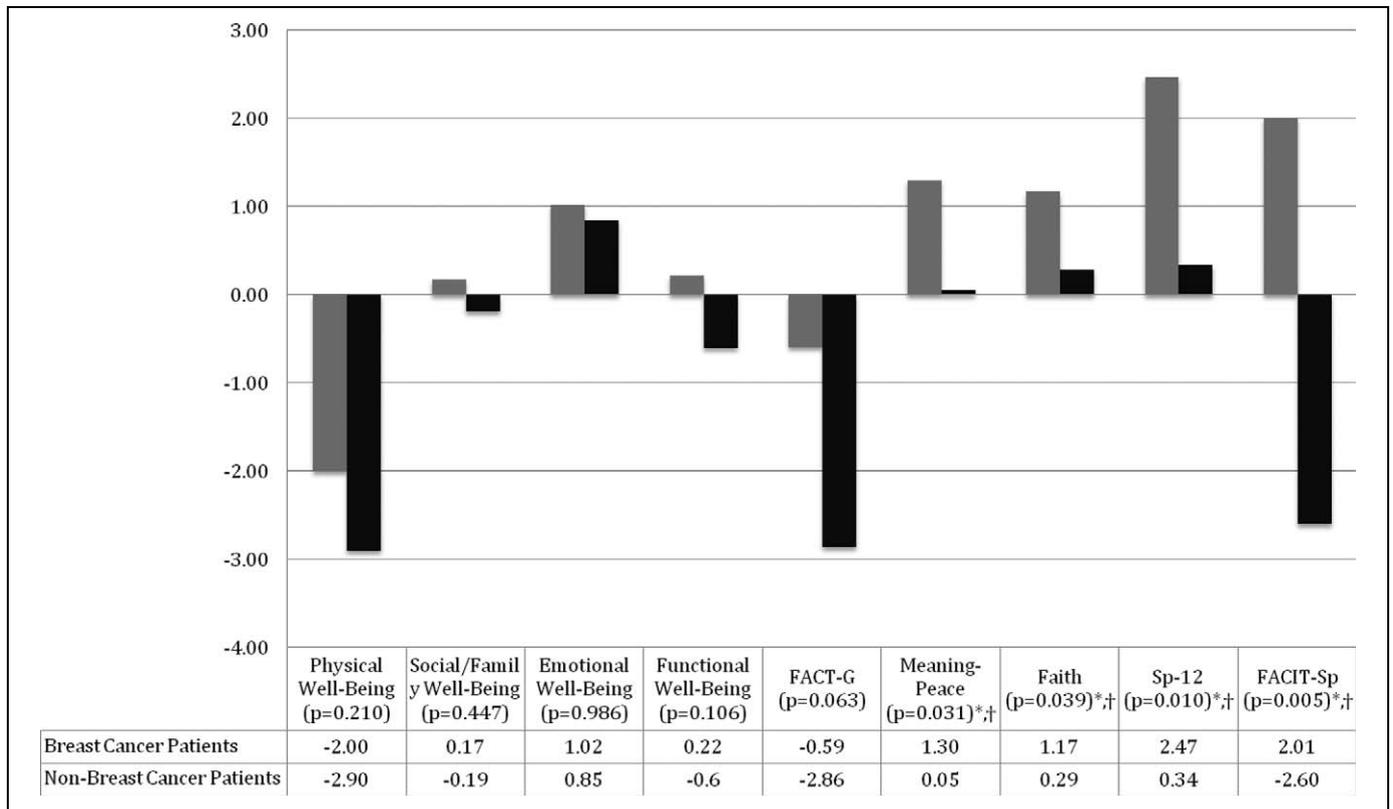


Figure 2. Changes in FACIT-Sp scale and subscale measures between treatment initiation and completion, differences between patients with breast cancer and those with other diseases are demonstrated. *Statistically significant change; †no previously calculated MID available. FACIT-Sp indicates Functional Assessment of Chronic Illness Therapy–Spiritual; MID, minimally important difference.

is by definition very personal, the available literature indicates that many patients with cancer find spirituality to be an important part of coping with their cancer experience, and we wondered whether the experience of completing a course of RT for cancer would provide these patients with an opportunity for spiritual growth. Therefore, we hypothesized that we would see an increase in spirituality scale scores at the end of RT. Our results demonstrated that other than in patients with breast cancer, spirituality did not change significantly over the course of treatment.

There are several possible explanations for the lack of change. First, while FACIT-Sp has been psychometrically validated as a measure of spirituality in research for people with chronic and/or life-threatening illnesses,¹¹ we are currently unaware of any studies proving Sp-12's responsiveness to change or its ability to measure changes in spirituality over time. However, the FACIT-Sp was used by Johnson et al to examine changes in spiritual well-being in a group of 103 patients with advanced cancer undergoing RT. Their study successfully utilized the FACIT-Sp to measure changes in a number of elements of spiritual well-being over time and demonstrated strong correlations with the patients' own assessment of their spiritual well-being as measured by a single-item spiritual well-being linear analogue self-assessment.⁷ The majority of other studies utilizing the FACIT-Sp have been cross-sectional and not longitudinal.¹³

Second, perhaps immediately after completing radiotherapy is too soon to see the “spiritual impact” of the experience. Patients may need time to take stock of their health and lives before the impact of that experience is realized. While measurements were taken at 2 of the key transition points previously identified,¹⁰ our attempt to collect data from patients at a 6-week posttreatment follow-up visit garnered a poor participation rate because most patients followed up with physicians in their local communities rather than return to Oregon Health & Science University, a tertiary academic medical center. Often, the follow-up visit is when patients anticipate learning the most meaningful information about their response to treatment, and most of the short-term side effects, particularly fatigue, have peaked and begun to improve for many patients.

Another question raised by our data is why significant changes were noted in patients with breast cancer and no other groups? Previous studies utilizing the FACIT-Sp have demonstrated that women often report higher scores on both the Sp-12 and its 2 subscales,¹¹ and a number of studies have been done on the importance of spirituality to patients with breast cancer and specific subpopulations.^{14–18} One such study actually demonstrated that the use of spirituality as a coping mechanism decreased over time in young women with breast cancer, although these data were collected up to 12 months after initial diagnosis, a different timing strategy than the one employed in our study.¹⁹ Another study demonstrated that women with

breast cancer actually had lower self-reported spirituality scores than healthy comparisons, although this difference became nonstatistically significant when corrected for having children.²⁰ Yet another study comparing patients with breast cancer to those with benign breast problems demonstrated that women with breast cancer reported increased religious satisfaction significantly more often than those with benign breast problems,³¹ results more similar to our own. Other studies have demonstrated that up to 76% of patients with breast cancer use prayer as a healing modality²¹ and that 88% felt that spiritual or religious practice was important in coping with their illness.²²

The importance of this apparent difference in spiritual well-being demonstrated by our data is emphasized by the parallel improvements in overall QOL for these women. This finding is consistent with a number of previous studies demonstrating strong correlations between spiritual well-being and QOL in patients with chronic and/or life-threatening illnesses,^{2,4-6} although it does pose a contrast to a few studies and analyses which have been unable to identify such a correlation.^{13,23}

If the increased spiritual well-being scores in patients with breast cancer demonstrated by our data represents, rather than a disease-specific phenomenon, one caused by other factors, such as available resources and support, these findings may represent an area of opportunity to increase both spiritual well-being and overall well-being for patients with nonbreast malignancies. Until recently, there has been little available research on methods of supporting and improving spiritual well-being in patients with cancer, the majority of which had been performed in small groups of Japanese patients²⁴⁻²⁷ and may or may not have been applicable to patients of different cultural backgrounds. In the last few years, a few additional groups have studied potential methods of intervention to improve spiritual well-being. One study of an Oncologist Assisted Spiritual Intervention demonstrated that inquiries regarding spiritual concerns of patients by oncologists may be both acceptable and beneficial.⁹ Another study sponsored by the Pathfinders National organization demonstrated positive outcomes and feasibility of a multi-faceted psychosocial care program on a group of 50 patients with breast cancer at a major academic institution.²⁸ Changes in spirituality were then correlated with improvements in other Patient-Reported Outcomes (PROs).²⁹ Further research into disparities between resources available for patients with different diagnoses, as well as which resources contribute most directly to increased spirituality and increased QOL could potentially provide more opportunities to improve spirituality and other outcomes for nonbreast cancer patients.

The current study has some limitations, chiefly and as mentioned above, the lack of follow-up data. Part of this is likely a phenomenon of patients who undergo treatment at tertiary care centers, as well as those of our patients within the Veterans Administration system. These patients often travel long distances or even find temporary housing arrangements nearer to treatment centers and may find it difficult to return for follow-up visits.

Additional limitations include our poor response rate, lack of information about religious affiliation, and the fact that this

study was conducted in an institution with limited social work support and no chaplain support for radiotherapy patients. Additionally, the majority of our patients are residents of Oregon, the state with the largest percentage of self-reported nonreligious residents²⁹ and may not represent patient populations in areas with higher levels of self-reported religiosity.

Despite these potential limitations, this study also had a number of strengths, including the broad view of spirituality and meaning, independent of religiousness, assessed by the Sp-12, the variety of diseases our patients were treated for, and the power conferred by our population of 406, larger than many of the currently available studies. Additionally, our study took a longitudinal approach, where as much of the previously available data arose largely from cross-sectional studies.¹³

In conclusion, this study has demonstrated that spiritual well-being does not appear to change significantly for most patients over the course of radiotherapy, with the notable exception of patients with breast cancer, who report increased spiritual well-being over the course of treatment. Additionally, this study confirms the previously identified positive correlation between change in spiritual well-being and changes in overall QOL, with those reporting increased spiritual well-being also reporting improved overall QOL. Further research into methods of prospectively measuring, addressing, and improving spiritual well-being for patients undergoing radiotherapy is warranted and has the potential for broader-reaching improvements in overall well-being for these patients.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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