

Is spirituality related to survival in advanced cancer inpatients in Korea?

Original Article

Cite this article: Shin DW *et al* (2018). Is spirituality related to survival in advanced cancer inpatients in Korea? *Palliative and Supportive Care* **16**, 669–676. <https://doi.org/10.1017/S1478951517001031>

Received: 14 April 2017

Revised: 15 September 2017

Accepted: 28 October 2017

Key words:

Spirituality; meaning; peace; survival; advanced cancer; palliative care

Author for correspondence:

Sang-Yeon Suh, Department of Medicine, School of Medicine, Dongguk University, Seoul, South Korea. E-mail: lisasuhmd@hotmail.com

Dong Wook Shin, M.D., M.B.A., PH.D.¹, Sang-Yeon Suh, M.D., PH.D.^{2,3}, Sun-Hyun Kim, M.D., PH.D.⁴, Jeanno Park, M.D., PH.D.⁵, Seok Joon Yoon, M.D.⁶, Yu Jung Kim, M.D., PH.D.⁷, Beodeul Kang, M.D.⁷, Jung Hye Kwon, M.D., PH.D.⁸, Youngmin Park, M.D., M.P.H.⁹, Kwonoh Park, M.D., PH.D.¹⁰, David Hui, M.D., M.Sc.¹¹, Hyeon Jeong Kim, CANDIDATE OF B.SC.¹², Sanghwa Himchak, M.D.², Sanghee Shiny Lee, B.Sc.¹³ and Hong-Yup Ahn, PH.D.¹²

¹Department of Family Medicine/Supportive Care Center, Samsung Medical Center, Seoul, South Korea; ²Department of Family Medicine, Dongguk University Ilsan Hospital, Goyang, South Korea; ³Department of Medicine, School of Medicine, Dongguk University, Seoul, South Korea; ⁴Department of Family Medicine, Catholic Kwandong University, International St. Mary's Hospital, Incheon, South Korea; ⁵Department of Internal Medicine, Bobath Memorial Hospital, Seongnam, South Korea; ⁶Department of Family Medicine, Research Institute for Medical Sciences, Chungnam National University School of Medicine, Daejeon, South Korea; ⁷Department of Internal Medicine, Division of Hematology and Medical Oncology, Seoul National University Bundang Hospital, Seongnam, South Korea; ⁸Department of Internal Medicine, Kangdong Sacred Heart Hospital, Hallym University, Seoul, South Korea; ⁹Department of Family Medicine, National Health Insurance Service Ilsan Hospital, Goyang, South Korea; ¹⁰Department of Internal Medicine, Pusan National University Yangsan Hospital, Pusan, South Korea; ¹¹Department of Palliative Care and Rehabilitation Medicine, Division of Cancer Medicine, The University of Texas MD Anderson Cancer Center, Houston, Texas; ¹²Department of Statistics, Dongguk University, Seoul, South Korea and ¹³Department of Cancer Control and Population Health, National Cancer Center, Graduate School of Cancer Science and Policy, Goyang, South Korea

Abstract

Objective. Spirituality is what gives people meaning and purpose in life, and it has been recognized as a critical factor in patients' well-being, particularly at the ends of their lives. Studies have demonstrated relationships between spirituality and patient-reported outcomes such as quality of life and mental health. Although a number of studies have suggested that spiritual belief can be associated with mortality, the results are inconsistent. We aimed to determine whether spirituality was related to survival in advanced cancer inpatients in Korea.

Method. For this multicenter study, we recruited adult advanced cancer inpatients who had been admitted to seven palliative care units with estimated survival of <3 months. We measured spirituality at admission using the Korean version of the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-sp), which comprises two subscales: meaning/peace and faith. We calculated a Kaplan-Meier curve for spirituality, dichotomized at the predefined cutoffs and medians for the total scale and each of the two subscales, and performed univariate regression with a Cox proportional hazard model.

Result. We enrolled a total of 204 adults (mean age: 64.5 ± 13.0; 48.5% female) in the study. The most common primary cancer diagnoses were lung (21.6%), colorectal (18.6%), and liver/biliary tract (13.0%). Median survival was 19.5 days (95% confidence interval [CI_{95%}]: 23.5, 30.6). Total FACIT-sp score was not related to survival time (hazard ratio [HR] = 0.981, CI_{95%} = 0.957, 1.007), and neither were the scores for its two subscales, meaning/peace (HR = 0.969, CI_{95%} = 0.932, 1.008) and faith (HR = 0.981, CI_{95%} = 0.938, 1.026).

Significance of results. Spirituality was not related to survival in advanced cancer inpatients in Korea. Plausible mechanisms merit further investigation.

Introduction

Previous data have shown that lower quality of life (QOL) and depressed mood are associated with shorter survival among patients with advanced cancer (Giese-Davis *et al.*, 2011; Montazeri, 2009). Although the findings have been inconsistent among studies, researchers have found not only physical but also emotional, social, and cognitive functioning to be potential prognostic indicators of survival (Montazeri, 2009). Indeed, early psychosocial intervention to enhance coping and improve QOL had a positive influence in metastatic breast cancer (Spiegel *et al.*, 1989), supporting this relationship. Following that study, a wide variety of psychosocial interventions were tested including cognitive-existential group therapy, cognitive-behavioral therapy, supportive-expressive group therapy, and psychoeducational therapy, but they have produced inconsistent results (Fu *et al.*, 2016). Recently, an early palliative care intervention that aimed to improve QOL and mood also prolonged survival in metastatic lung cancer patients (Temel *et al.*, 2010). Overall,

although results are inconsistent, psychosocial interventions have the potential to increase survival (Fu et al., 2016).

Spiritual well-being (SWB) has been reported to be an important determinant of QOL and psychological well-being. Although there is no consensus on the definition of SWB, it is generally regarded as a multidimensional concept that includes faith, meaning of life, and peace of mind (Frost et al., 2013). Low SWB was associated with poor QOL (Winkelman et al., 2011) and worse psychological well-being, such as depression (Lo et al., 2010) and hopelessness (Rodin et al., 2009), whereas high SWB leads to more enjoyment of life and more meaning and peace, even in the midst of fatigue or pain (Puchalski, 2012). A meaning-centered psychotherapy intervention that aimed specifically to address SWB improved cancer patients' psychological well-being, with greater reduction in depression, hopelessness, and desire for hastened death at the ends of their lives (Breitbart et al., 2015).

In addition, from the psychoneuroimmunology perspective, some believed that psycho-spiritual status could affect psychoneuro-immune function and could thus influence the clinical course of advanced cancer (Green McDonald et al., 2013). For example, one preliminary study suggested that spiritual faith can positively influence tumor response to chemotherapy and increase the number of postchemotherapy lymphocytes (Lissoni et al., 2008).

Therefore, it is plausible that spiritual well-being could be associated with survival in advanced cancer patients. Some studies showed that SWB was associated with survival in patients with HIV infection and congestive heart failure. In a cancer care setting, one study showed an association between lack of religious denomination and higher mortality in breast cancer patients; however, that study did not measure spirituality (Van Ness et al., 2003). Studies found that the helpless-hopeless response was related to poorer survival in patients with early-stage breast cancer (Watson et al., 2005) and in laryngeal cancer patients in various stages (Johansson et al., 2011). One study showed that pessimistic patients with head and neck cancer were more likely to die in one year (Allison et al., 2003), but another showed that hope and optimism were not associated with overall or progression-free survival in metastatic colorectal cancer patients (Schofield et al., 2016). Previous studies were limited by their use of different concepts of spirituality and nonstandardized tools to measure SWB, making it difficult to determine the survival benefit of SWB. In addition, to date, no study has investigated its prognostic significance in far advanced cancer. Therefore, in this multicenter cohort study, we examined the association between SWB and survival in far advanced cancer patients using a standardized measurement tool.

Methods

Study setting and population

Korea is a multireligious country that has been traditionally influenced by Confucianism and Buddhism, but also strongly affected by Christianity and Catholicism with Westernization. Currently, Buddhists, Protestants, and Catholics compose the majority of religious population, but spiritual care is not routinely provided in medical settings (Kang et al., 2012).

Patients were eligible for the study if they had been admitted for palliative care for advanced cancer; if they were age ≥ 18 years; if the clinical prediction of survival < 3 months; if they were capable of communication (e.g., not delirious); and if they could provide consent for research participation. They were excluded if they were still on active treatment for disease control.

Study procedure

This was a prospective multicenter study of adult advanced cancer inpatients who were admitted to seven hospital-based palliative care units in Korea from May 2015 through August 2016. The study coordinators in each participating institution approached all eligible patients consecutively, explained the study purpose, and enrolled those who agreed to participate in the study. Written informed consent was obtained. During the survey, most patients were assisted by study coordinator, but patients were allowed to fill in the questionnaire by themselves if they were fit enough.

The survival was recorded beginning with the date each patient was recruited into the study. A total of 130 patients died in the hospital, 61 were discharged, and 13 remained alive at the end of the study; the patients who remained alive at the end of the study and were discharged were censored at that time. All study procedures were approved by the institutional review boards of each institution.

Measures of spiritual well-being: FACIT-sp

Spirituality relates to how people seek meaning, purpose, and hope in life, particularly in the midst of suffering, and how they experience their connectedness to the moment, to their own self, to others, to nature, and to an idea of the significant or sacred. A measurement of spirituality is not standardized, and studies have also used various operational definitions of spirituality, such as a faith score (Lissoni et al., 2008), hope and optimism (Schofield et al., 2016), spiritual seeking (Winkelman et al., 2011), spiritual transformation (Ironson et al., 2016), and spiritual peace (Park et al., 2016).

After a literature review, we selected SWB as the most relevant concept for measuring spirituality, and we chose the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-sp; Peterman et al., 2002) as our measurement tool. It contains two dimensions that reflect the horizontal/existential dimension of spirituality (a feeling of meaning, harmony, peace, and connectedness to the self and others; that is, the basis of the meaning/peace subscale) and a vertical/religious dimension of spirituality (connectedness with a higher power, the basis of the faith subscale (Visser et al., 2010). There are 12 items on the FACIT-sp (eight in the meaning/peace subscale and four in the faith subscale), and each item has a score range of 0–4, making the range for the total score 0–48; higher scores indicate a greater SWB. The Cronbach alpha coefficients for the total scale and the two subscales ranged from 0.81 to 0.88 in the original validation study (Peterman et al., 2002).

We retrieved the Korean translation of the FACIT-sp from the website of the questionnaire developer (<http://www.facit.org/facitorg/questionnaires>). The Korean version has not been officially validated, but it has been used in a domestic study. In that study, Cronbach alpha was 0.751, and SWB correlated negatively with pain ($r = -0.283$), anxiety ($r = -0.613$), and depression ($r = -0.526$, all $p < 0.05$), attesting to the concurrent validity of the FACIT-sp (Lee et al., 2013). The Cronbach alphas in our study population were 0.88 for total score and 0.82 and 0.91 for the meaning/peace and faith subscales, respectively.

For this study, the primary predictor variable was overall SWB, assessed using the total score. In addition, we performed analyses with each of the two subscales separately because the two different domains can have differing effects on survival. Previous studies reported a positive association between meaning/peace scores and QOL, whereas faith scores can even be negatively associated

Table 1. Characteristics of study participants (n = 204)

| Characteristics | n (%) |
|--|-------------------|
| Age, years, mean ± SD | 64.5 ± 13.0 |
| Sex | |
| Male | 105 (51.5) |
| Female | 99 (48.5) |
| Site of primary cancer | |
| Lung | 50 (21.6) |
| Stomach | 26 (11.3) |
| Colon/rectal | 43 (18.6) |
| Ovary/cervical | 15 (6.5) |
| Liver/biliary tract | 30 (13.0) |
| Pancreas | 25 (10.8) |
| Esophagus | 3 (1.3) |
| Head and neck | 4 (1.7) |
| Kidney/bladder | 4 (1.7) |
| Other | 31 (13.4) |
| Survival (days) (median, CI _{95%}) | 19.5 (23.5, 30.6) |
| Palliative Prognostic Score | |
| ≥60 | 103 (51.5) |
| 30–50 | 89 (44.5) |
| 10–20 | 8 (4.0) |
| EORTC QLQ PAL-C15 (possible range: 0–100), mean ± SD | |
| Physical functioning | 33.8 ± 27.9 |
| Emotional functioning | 60.9 ± 30.6 |
| Fatigue | 59.8 ± 27.9 |
| Nausea and vomiting | 30.2 ± 31.9 |
| Pain | 58.1 ± 33.8 |
| Dyspnea | 38.9 ± 37.2 |
| Insomnia | 50.0 ± 36.5 |
| Appetite loss | 52.1 ± 37.6 |
| Constipation | 42.8 ± 36.4 |
| Global QOL | 51.9 ± 29.0 |
| Spiritual well-being | |
| Total scale score (possible range: 0–48), mean (median) ± SD | 25.0 (25) ± 9.4 |
| Meaning/peace subscale (range: 1–32) | 16.1 (17) ± 5.3 |
| Faith subscale (range: 0–16) | 8.9 (10) ± 5.6 |
| Religion | |
| Protestantism | 69 (33.8) |
| Catholicism | 48 (23.5) |
| Buddhism | 42 (20.6) |
| Other | 3 (1.5) |
| None | 42 (20.6) |

CI_{95%}, 95% confidence interval; EORTC QLQ, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire; QOL, quality of life; SD, standard deviation. Spiritual well-being was measured by Functional Assessment of Chronic Illness Therapy-Spiritual well-being.

with QOL (Kang et al., 2012; Zavala et al., 2009). Thus, we hypothesized that association with survival, if any, would emerge in the meaning/peace dimension.

Other measures

We assessed QOL using the Korean version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C15-PAL (Shin et al., 2011), which comprises two multi-item functional scales (physical and emotional functioning), two multi-item symptom scales (fatigue and pain), five single-item symptom scales (nausea/vomiting, dyspnea, insomnia, appetite loss, and constipation), and a question regarding overall QOL (global health status). In addition, we collected sociodemographic (age, gender, religion) and clinical (primary cancer type, prior cancer treatment, and Palliative Performance Scale [PPS] score) (Lau et al., 2006) data as part of the routine initial assessment.

Statistical analysis

We conducted pairwise correlation analyses for the three spiritual variables and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C15-PAL subscales and used Cox proportional hazards regression analyses to calculate the relationship between each SWB variable and survival. The covariates in the multivariate analyses were age, sex, religion, PPS score, and emotional functioning. The PPS score can be a potential confounder because it is related to both spirituality (Peterman et al., 2002) and survival. We also included emotional functioning as a covariate because it was a predictor of survival in our previous study with a similar population even after we adjusted for PPS score (Lee et al., 2014). We constructed Kaplan-Meier curves based on the SWB total score and the two subscale scores, with the use of a predefined cutoff as well as with a median split. The predefined cutoff was based on previous literature, in which a mean score of ≥3.0 (“quite a bit”) as a response for each item was considered to represent a highly spiritual group (McClain et al., 2003). We performed all analyses using SPSS 22 (IBM, Chicago, IL) and considered *p* < 0.05 to be statistically significant.

Table 2. Correlation between spiritual well-being and health-related quality of life

| | Total score | Meaning/peace | Faith |
|------------------------|-------------|---------------|---------|
| Physical functioning | 0.007 | 0.034 | −0.020 |
| Emotional functioning | 0.152* | 0.119 | 0.140* |
| Fatigue | −0.166 | −0.050 | −0.148* |
| Nausea and vomiting | 0.043 | 0.082 | −0.005 |
| Pain | −0.016 | −0.008 | −0.019 |
| Dyspnea | −0.117 | −0.072 | −0.129 |
| Insomnia | 0.000 | 0.074 | −0.068 |
| Appetite loss | −0.158* | −0.069 | −0.200* |
| Constipation | 0.109 | 0.102 | 0.088 |
| Global quality of life | 0.362** | 0.375** | 0.257** |

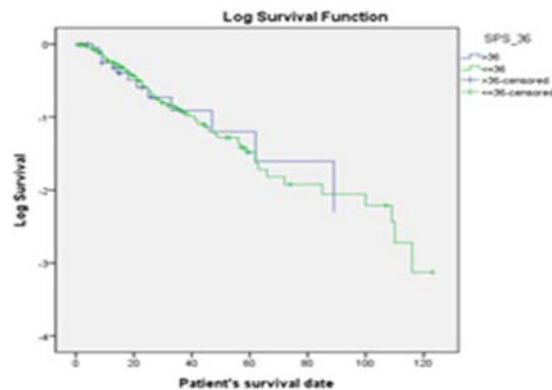
All correlation coefficients were calculated using a pair-wise deletion method. Spiritual well-being was measured by Functional Assessment of Chronic Illness Therapy-Spiritual well-being. **p* < 0.05; ***p* < 0.01.

Table 3. Relationship between spiritual well-being and survival

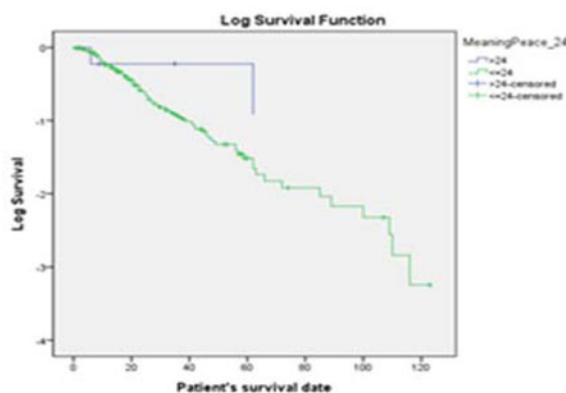
| | Univariate | | Multivariate | |
|----------------------------------|------------|-------------------|--------------|-------------------|
| | HR | CI _{95%} | HR | CI _{95%} |
| Total score | | | | |
| Spiritual well-being (per point) | 0.989 | 0.971–1.007 | 0.981 | 0.957–1.007 |
| Age (per year) | | | 1.003 | 0.987–1.019 |
| Male (reference: female) | | | 1.079 | 0.747–1.558 |
| PPS (reference: ≥ 60) | | | | |
| 30–50 | | | 1.420 | 0.945–2.133 |
| 10–20 | | | 5.614 | 2.562–12.299 |
| Emotional functioning | | | | |
| Religion (reference: none) | | | | |
| Protestantism | | | 1.265 | 0.670–2.392 |
| Catholicism | | | 0.888 | 0.462–1.709 |
| Buddhism | | | 0.839 | 0.452–1.558 |
| Other | | | 2.675 | 0.595–12.028 |
| Meaning/peace subscale | | | | |
| Spiritual well-being (per point) | 0.978 | 0.947–1.010 | 0.969 | 0.932–1.008 |
| Age (per year) | | | 1.003 | 0.987–1.020 |
| Male (reference: female) | | | 1.095 | 0.759–1.582 |
| PPS (reference: ≥ 60) | | | | |
| 30–50 | | | 1.455 | 0.976–2.171 |
| 10–20 | | | 5.545 | 2.536–12.126 |
| Emotional functioning | | | | |
| Religion (reference: none) | | | | |
| Protestantism | | | 1.135 | 0.646–1.996 |
| Catholicism | | | 0.825 | 0.446–1.523 |
| Buddhism | | | 0.784 | 0.431–1.425 |
| Other | | | 2.665 | 0.594–11.957 |
| Faith subscale | | | | |
| Spiritual well-being (per point) | 0.988 | 0.957–1.019 | 0.981 | 0.938–1.026 |
| Age (per year) | | | 1.003 | 0.987–1.020 |
| Male (reference: female) | | | 1.078 | 0.747–1.558 |
| PPS (reference: ≥ 60) | | | | |
| 30–50 | | | 1.451 | 0.969–2.172 |
| 10–20 | | | 5.441 | 2.489–11.892 |
| Emotional functioning | | | | |
| Religion (reference: none) | | | | |
| Protestantism | | | 1.157 | 0.593–2.256 |
| Catholicism | | | 0.809 | 0.416–1.574 |
| Buddhism | | | 0.803 | 0.425–1.517 |
| Other | | | 2.426 | 0.545–10.806 |

CI_{95%}, 95% confidence interval; HR, hazard ratio; PPS, Palliative Performance Scale. Spiritual well-being was measured by Functional Assessment of Chronic Illness Therapy-Spiritual well-being.

A. Total score (>36 vs. ≤36)



B. Meaning/Peace (>24 vs. ≤24)



C. Faith (>12 vs. ≤12)

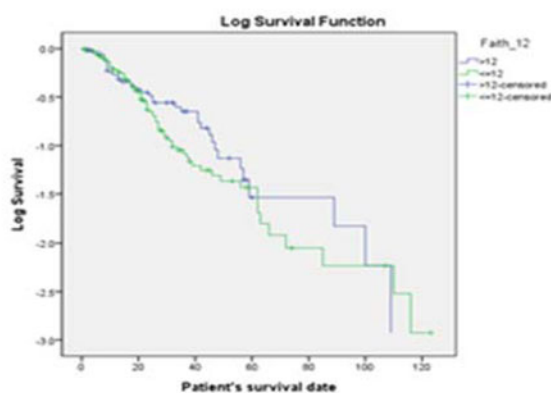


Fig. 1. Survival curves according to the groups of high and low spiritual well-being; groups were split at the predefined cutoff. Survival time (27.0 [CI_{95%} = 22.09, 31.90] vs. 25.0 [CI_{95%} = 6.22, 43.78] days) was not significantly different between the higher SPS group (SPS >36, n = 24) and the lower SPS group (SPS ≤, n = 179; p = 0.795). Survival time (62.0 [CI_{95%} = 0.50, 143.40] vs. 26.0 [CI_{95%} = 21.66, 30.33] days) was not significantly different between the higher M/P group (M/P >24, n = 5) and the lower M/P group (M/P ≤24, n = 198; p = .081), either. Survival time (41.0 [CI_{95%} = 22.81, 59.19] vs. 26.0 [CI_{95%} = 22.91, 29.09] days; p = 0.340) was not significantly different between the higher faith group (faith >12, n = 70) and the lower faith group (faith ≤12, n = 134). A p value was obtained by log-rank test. Data were split at predefined cutoff according to a preceding literature. CI_{95%}, 95% confidence interval; faith, faith subscale; M/P, meaning/peace subscale; SPS, total score of spiritual well-being. Spiritual well-being was measured by the Functional Assessment of Chronic Illness Therapy-Spiritual well-being.

Results

Study participants

We enrolled a total of 204 patients in the study. Their mean age was 65.5 ± 13.0 years, and just under half (48.5%) were women. The most common primary cancers were lung (21.6%), colorectal (18.6%), and liver/biliary tract (13.0%). Approximately half (51.5%) of participants had good performance status (PPS ≥ 60) at enrollment. A total of 130 (63.7%) patients died during the study period, and median survival was 19.5 days (95% confidence interval [CI_{95%}] = 23.5, 30.6). The mean SWB total score was 25.0 (Table 1).

Correlation between SWB and QOL

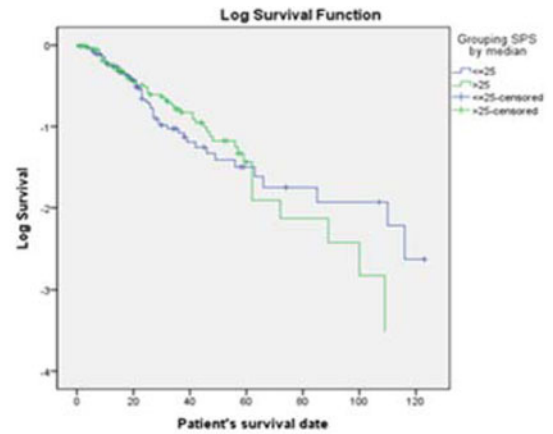
SWB and its two subscales did not correlate with physical functioning, and total score and faith correlated weakly with emotional functioning. Correlations were moderate (r > 0.35 for

each) between global quality of life and SWB and between QOL and meaning/peace, whereas the correlation with faith was weaker (r = 0.257; Table 2).

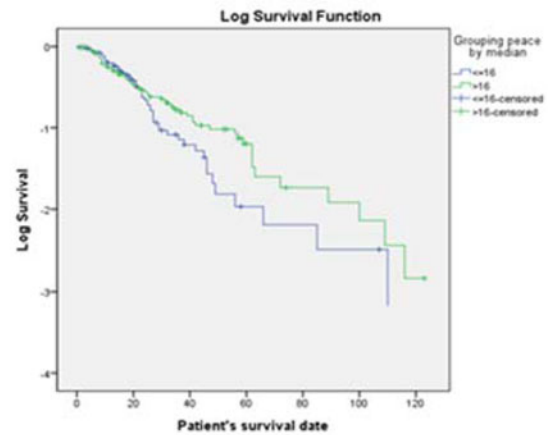
Survival by SWB

Neither total SWB nor the subscale scores were associated with survival in both univariate and multivariate analyses: total FACIT-sp score was not related to survival time (hazard ratio [HR] = 0.981, CI_{95%} = 0.957, 1.007) and neither were the scores for the two subscales: meaning/peace, HR = 0.969, CI_{95%} = 0.932, 1.008; and faith, HR = 0.981, CI_{95%} = 0.938, 1.026. Among all variables, only PPS score was consistently associated with survival (Table 3). There were no significant differences between the survival of patients with a low and a high SWB when patients were split up at the predefined cutoff (Figure 1) or median (Figure 2) for all three spirituality variables.

A. Total score (>25 vs. ≤ 25)



B. Meaning/Peace (>16 vs. ≤ 16)



C. Faith (>9 vs. ≤ 9)

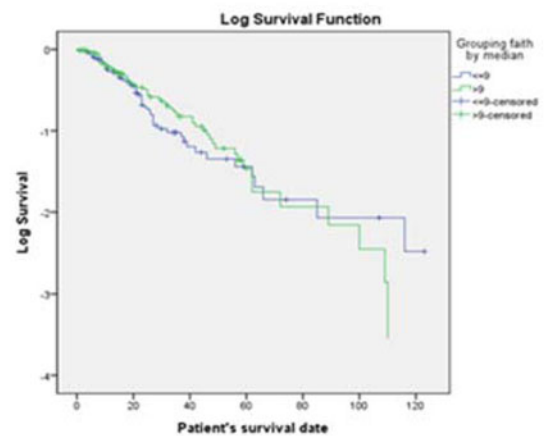


Fig. 2. Survival curves according to the groups of high and low spiritual well-being; groups were split at median. Survival time (33.0 [$CI_{95\%} = 21.95, 44.05$] days vs. 25.0 [$CI_{95\%} = 21.99, 28.01$]) was not significantly different between the higher SPS group (SPS >25 , $n = 101$) and the lower SPS group (SPS ≤ 25 , $n = 103$; $p = 0.669$). Survival time (32.0 [$CI_{95\%} = 20.47, 43.53$] days vs. 25.0 [$CI_{95\%} = 22.15, 27.85$]) was not significantly different between the higher M/P group (M/P >16 , $n = 109$) and the lower M/P group (M/P ≤ 16 , $n = 95$; $p = 0.188$), either. Survival time (33.0 [$95\% CI_{95\%} = 23.71, 42.29$] vs 24.0 [$CI_{95\%} = 20.51, 27.49$] days; $p = 0.480$) was not significantly different between the higher faith group (faith >9 , $n = 103$) and the lower faith group (faith ≤ 9 , $n = 101$). A p value was obtained by log-rank test. Data were split at median. $CI_{95\%}$, 95% confidence interval; faith, faith subscale; M/P, meaning/peace subscale; SPS, total score of spiritual well-being. Spiritual well-being was measured by the Functional Assessment of Chronic Illness Therapy-Spiritual well-being.

Discussion

Patients with advanced cancer inevitably face deep existential challenges and have substantial spiritual concerns, including issues of identity, meaning and purpose, hope, and control (Rabow & Knish, 2015). Spirituality affects how a patient copes with the cancer experience by reducing the detrimental effects of stress. Spirituality can also give people a sense of purpose and an optimistic world view and provide meaning to difficult life circumstances and a subjective sense of control over events (Koenig, 2012). Most patients with advanced illness hold spirituality as an important dimension in their lives (Holland et al., 1999) and adopt prayer and other spiritual practice as

“complementary therapy” (Hsiao et al., 2008), often with the hope that this will improve survival (Watson et al., 1999). Although spiritual interventions may not affect survival, they could potentially improve SWB, which is important in its own right.

Religion and spirituality have been known to influence survival through several mechanisms, but this does not appear to apply in far advanced cancer patients. First, religion and spirituality were reported to affect survival via behavioral factors (e.g., avoiding tobacco and alcohol) and psychosocial factors (e.g., stress-buffering effects and social support) (Koenig, 2012). However, it is likely that life expectancy in the far advanced cancer patients in our study was too short for us to find any beneficial effect of

SWB on survival. Previous studies that showed benefits used patients in varying stages of cancer, and the populations had longer mean survival times (Allison et al., 2003; Johansson et al., 2011; Van Ness et al., 2003). Our results also contrast with findings that showed beneficial effects of religion and spirituality in other disease settings, such as following hematopoietic stem cell transplantation (Pereira et al., 2010) and in end-stage renal disease (Spinale et al., 2008), HIV infection (Ironson et al., 2016), and congestive heart failure (Park et al., 2016; Woradet et al., 201), all of which are characterized by longer survival than our study population of far advanced cancer patients.

Second, SWB is more closely related to psychological than physical well-being (Frost et al., 2013), and any positive influence of SWB on QOL would be predominantly psychological. However, psychological well-being itself is not sufficient to affect survival, and this can explain our study findings. Indeed, even though a few studies suggested that the social and emotional domains of QOL also predict survival (Carey et al., 2008; Lee et al., 2014), most studies showed that only the physical and functional domains are significantly associated with survival time (Fielding & Wong, 2007; Luoma et al., 2003; Steel et al., 2014; Viganò et al., 2004; Woradet et al., 2016). That is, any link between SWB and survival should be weak.

Last, spirituality was reported to potentially influence medical decision-making (Silvestri et al., 2003), which in turn can affect survival. Unmet spiritual needs could lead to more aggressive medical intervention at the end of life and less use of hospice services (Balboni et al., 2011, 2013). Hopelessness predicts a desire for hastened death in advanced cancer patients (Rodin et al., 2009), but the very short survival times in the far advanced cancer patients in our study may have allowed limited opportunities to make medical decisions.

In this study, neither FACIT-sp subscale score was significantly related to patient survival. The relationship between the meaning/peace score and survival was more significant ($HR = 0.969$, $CI_{95\%} = 0.932, 1.008$) than that between the faith score and survival ($HR = 0.981$, $CI_{95\%} = 0.938, 1.026$), but neither HR was statistically significant. Authors of previous studies observed that the meaning/peace score correlated more strongly with health-related QOL (HRQOL) than did the faith score (Bai & Lazenby, 2015; Peterman et al., 2002; Zavala et al., 2009). Therefore, we initially expected a positive relationship between meaning/peace and survival; however, our result showed a null relationship. This could have been because we used too few study subjects, 204, to detect any meaningful relationships. Additional studies are warranted to investigate the potentially different roles of different spirituality domains in the survival of advanced cancer patients.

One notable finding was the relatively weak correlation between SWB and HRQOL in our study. Correlations with global quality of life were at most moderate for total FACIT-sp score and each subscale score, the correlations with emotional functioning were only weak, there were none with physical functioning, and these correlations all were weaker than those found in previous studies, including the original FACIT-sp validation study (Peterman et al., 2002) and a recent systematic review of 36 studies (Bai & Lazenby, 2015). However, in studies limited to patients with far advanced cancer, correlations between SWB and HRQOL have been weaker (Daugherty et al., 2005) or not significant (Kruse et al., 2007). Further study is warranted to investigate how the correlations between SWB and HRQOL differ by cancer stage and performance status.

Although our results indicated no relationship between spirituality and survival, this does not undo the necessity to give spirituality a place among the aspects of QOL and in clinical care. Most patients with advanced cancer struggle with their spiritual needs and want their medical teams to address these needs as part of comprehensive cancer care (El Nawawi et al., 2012; Winkelman et al., 2011). As evidenced by the absence of or very weak correlations with physical and emotional functioning and only moderate correlation with overall QOL in our study, SWB is a different construct from physical or psychological well-being but it is an important aspect of QOL. Integrating spirituality as an essential element of person-centered care was suggested to result in better QOL outcomes across the trajectory of cancer care (Puchalski, 2012), although not survival. However, the routine provision of spiritual care in the medical setting remains rare (Kang et al., 2012; Peteet & Balboni, 2013).

There are several limitations to be mentioned. First, our assessment of spirituality was limited to one instrument only, the FACIT-sp. Although we selected this standardized, well-validated tool based on a literature review of theoretical and psychological properties, spirituality is still not a well-defined concept, and thus the use of other instruments might have shown different results. Second, our study was conducted in Korea, which is a multireligious country with a unique historical background. The FACIT-sp scores differed by religious orientation (unpublished data), and the accuracy of the FACIT-sp with such a heterogeneous sample is unknown. In addition, spirituality is greatly influenced by cultures and religious tradition (Winkelman et al., 2011), the generalizability of our findings should be tested in other settings. However, given that most studies were performed in Western countries, our study is needed as a supplement to the current literature. Finally, the advanced cancer patients in our study had shorter survival times and poorer performance. This could have been because of the late referral to palliative care services in Korea (Baek et al., 2011). The mean SWB score in our study population was lower than that in other studies, which can be explained by our patients' poorer physical conditions, and studies are needed with patients who are in better condition and have longer survival times. Finally, a number of institutions failed to collect information on the non-participants, and thus we could not calculate an exact consent rate. Overall, however, study investigators conservatively estimated the rate to be over 70%.

In conclusion, SWB, measured with a well-validated tool, was not associated with survival in a population of advanced cancer inpatients in Korea. Plausible mechanisms merit further investigation.

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