

# The Effects of Spiritual Interventions in Patients With Cancer: A Meta-Analysis

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**A**lthough cancer survival has improved with technological advancements in diagnosis and treatment for cancer, a cancer diagnosis is still regarded as a life-threatening and stressful event. In addition to the physical burden of cancer, psychological distress such as anxiety, depression, and spiritual crisis have been linked with decreased quality of life (QOL) and, possibly, reduced survival (Carlson, Waller, & Mitchell, 2012; Satin, Linden, & Phillips, 2009). Therefore, maintaining psychological well-being is an important issue within the cancer population.

Spirituality is increasingly recognized as an essential component of health and well-being (Aukst-Margetić, Jakovljević, Margetić, Biscan, & Samija, 2005; Lin & Bauer-Wu, 2003; McClain, Rosenfeld, & Breitbart, 2003; Yanez et al., 2009). Spiritual or religious beliefs may help a person cope by offering a way to grieve impending death, find meaning and purpose, and adjust to otherwise insoluble problems such as the effect his or her death will have on friends and family (McClain et al., 2003; Tarakeshwar et al., 2006), all facilitating renewed hope and peace of mind. Spirituality remains difficult to precisely define, but most agree (Peteet & Balboni, 2013) that it refers to a connection with a larger reality that gives one's life meaning, experienced through a religious tradition or, increasingly in secular Western culture, through meditation, nature, or art (Van Ness, 1996). Therefore, spirituality may or may not be related to religion, whereas religion is regarded as a specific form of spirituality (van Leeuwen, Schep-Akkerman, & van Laarhoven, 2013).

Spiritual concerns are prevalent among patients with cancer, and one study suggested that 78% of patients reported that spirituality was important to coping with the cancer experience (Peteet & Balboni, 2013). Research has shown that spirituality (or spiritual well-being) is related to better QOL (Frost et al., 2012; Krupski et al., 2006; Zavala, Maliski, Kwan, Fink, & Litwin, 2009), lower anxiety and depression (Gaston-Johansson,

**Purpose/Objectives:** To evaluate the effects of a spiritual intervention in patients with cancer.

**Data Sources:** Databases searched included both international electronic databases (MEDLINE® via PubMed, Cochrane Library CENTRAL, EMBASE, and CINAHL®) as well as Korean electronic databases (KMBASE, KOREAMED, RISS, KISS, and NANET) through December 2013.

**Data Synthesis:** A meta-analysis was conducted of 15 studies involving 14 controlled trials (7 randomized and 7 nonrandomized) with 889 patients with cancer. Spiritual interventions were compared with a usual care control group or other psychosocial interventions. The weighted average effect size across studies was  $-0.48$  ( $p = 0.006$ ,  $I^2 = 65\%$ ) for spiritual well-being,  $-0.58$  ( $p = 0.02$ ,  $I^2 = 70\%$ ) for meaning of life,  $-0.87$  ( $p = 0.02$ ,  $I^2 = 87\%$ ) for anxiety, and  $-0.62$  ( $p = 0.001$ ,  $I^2 = 73\%$ ) for depression.

**Conclusions:** The findings showed that spiritual interventions had significant but moderate effects on spiritual well-being, meaning of life, and depression. However, the evidence remains weak because of the mixed study design and substantial heterogeneity.

**Implications for Nursing:** Oncology nurses increasingly recognize the significance of the spiritual domain of care. The current study indicates that facilitating spiritual awareness and needs may be a worthwhile nursing intervention for patients with cancer.

**Key Words:** anxiety; cancer; depression; meta-analysis; spirituality

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Haisfield-Wolfe, Reddick, Goldstein, & Lawal, 2013; Johnson et al., 2011; Kinney, Coxworth, Simonson, & Fanning, 2009; Rawdin, Evans, & Rabow, 2013), and better adjustment to cancer (Li, Rew, & Hwang, 2012; Pearce, Coan, Herndon, Koenig, & Abernethy, 2012).

Although spiritual care may protect against psychological morbidity and enhance QOL, implementing spiritual care in practice is fraught with difficulties and considered a much-neglected area of practice (Highfield, 2000; Noble & Jones, 2010). To facilitate spiritual

nursing practices, evidence from well-designed trials must be used. Unfortunately, most studies on the spiritual aspects of cancer care have used a descriptive study design (Gaston-Johansson et al., 2013; Johnson et al., 2011; Kinney et al., 2009; Krupski et al., 2006; Li et al., 2012; Pearce et al., 2012; Rawdin et al., 2013; Zavala et al., 2009); in addition, results from controlled trials of spirituality-based intervention often are inconsistent. In some studies, spiritual interventions showed a significant improvement in spiritual well-being (Breitbart et al., 2010, 2012; Kristeller, Rhodes, Cripe, & Sheets, 2005); however, others have failed to demonstrate any improvement (Djuric et al., 2009; Kim, Lee, Roh, Yoon, & Lee, 2006). Kristeller et al. (2005) reported that oncologist-assisted spiritual intervention was beneficial for reducing depression among patients with cancer, but spiritual intervention had no effect on depression in other studies (Breitbart et al., 2010, 2012; Djuric et al., 2009; Henry et al., 2010). Several randomized, controlled trials (RCTs) using meaning-of-life interventions demonstrated a mixed result for QOL, spiritual well-being, and anxiety (Breitbart et al., 2010, 2012; Henry et al., 2010). Therefore, these interventions need to be critically analyzed to determine whether they can improve psychological morbidity, spiritual well-being, or QOL.

Several published meta-analyses (Candy et al., 2012; Chida, Steptoe, & Powell, 2009; Kaplar, Wachholtz, & O'Brien, 2004; Oh & Kim, 2012) have evaluated the effects of spiritual interventions. However, most previous reviews did not focus on the cancer population (Candy et al., 2012; Chida et al., 2009; Oh & Kim, 2012). Candy et al. (2012) evaluated five RCTs of spiritual intervention for adults in the terminal phase of a disease, but the results were inconclusive. Chida et al. (2009) reported mortality outcomes regarding spirituality and religiosity among a healthy population and a disease population; however, they did not include any psychological or spiritual outcomes. Oh and Kim (2012) reviewed studies conducted with Korean adults, but they evaluated only the effects of religious intervention. According to Paloutzian and Ellison's (1982) conceptualization of spirituality, spiritual intervention can follow two approaches: religious intervention (i.e., achieving harmony with God) and existential intervention (i.e., finding meaning and purpose in one's life). To the best of the current authors' knowledge, no comprehensive review of spiritual intervention that includes these two approaches for patients with cancer has been conducted.

To address the limitations of preceding meta-analyses and to update the findings with more recently published studies, the authors conducted a meta-analysis of the effectiveness of spiritual interventions. Because of the small number of RCTs in this topic, quasi-RCT designs were included. The primary aim of the current

study was to evaluate a robust estimate of the effect of spiritual interventions on spiritual and psychological outcomes, including spiritual well-being, meaning of life, anxiety, and depression. A secondary aim was to determine whether the effects of spiritual interventions differed by study design (i.e., RCT versus non-RCT) and intervention characteristics (i.e., type of intervention, intervention format, length of session, and providers of the intervention).

## Methods

The review procedure was guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Liberati et al., 2009). Ethical committee review was not necessary for the literature review because no confidential data were included.

Eligibility criteria followed the PICOS framework (Participants, Interventions, Controls, Outcomes, and Studies). Participants were adults aged 18 years or older who had been diagnosed with cancer of any type (solid or hematologic), at any tumor stage, with any kind of treatment mode, and at any time since diagnosis.

Spiritual interventions were defined as any approach involving two components, religious (i.e., achieving harmony with God) and existential aspects (i.e., finding meaning and purpose in one's life), based on Paloutzian and Ellison's (1982) conceptualization of spirituality. Interventions could be provided in any of multiple formats, including individual, group, telephone, or Internet-based modalities. Studies using pharmacologic interventions were excluded. No treatment (usual care) and active (attention placebo) control conditions were considered.

The primary outcomes were spiritual well-being and meaning of life. The secondary outcome was psychological distress, including anxiety and depression. RCTs and non-RCTs were included. Studies that did not provide enough data (e.g., mean, standard deviation, n value, p value) to allow the calculation of effect sizes were excluded.

## Search Strategy

Studies were identified by searching international electronic databases (MEDLINE® via PubMed, Cochrane Library CENTRAL, EMBASE, and CINAHL®) and Korean electronic databases (KMBASE, KOREAMED, RISS, KISS, and NANET). The searches were inclusive of studies published in English or Korean from the earliest publication date available in each database and updated through December 2013. The main search strategy was (*neoplasm OR cancer*) AND (*spirituality OR spiritual OR religion OR religious OR pastoral OR pray OR mystic OR existential OR transcend*) AND (*controlled clinical trial OR randomized controlled trial*). In addition,

the authors manually searched the reference lists of retrieved publications and reviews.

## Study Selection and Data Extraction

All titles and abstracts retrieved by electronic searching were downloaded to a reference management database, and duplicates were removed. Two authors independently screened studies' citations in accordance with the defined inclusion criteria. Following screening, two authors independently assessed the full text of eligible citations for inclusion. Any disagreement was resolved by consensus between the two, and justification for excluding studies was documented.

A standardized data extraction sheet was developed for the review. Two authors independently performed data extractions based on this sheet after a pilot test on five studies, and differences of opinion were resolved by consensus. Data extracted from the study included authors, year of publication, country of origin, study design, cancer site and stage, sample size, type of intervention, intervention name, intervention format (e.g., group, individual, mixed), providers of the intervention, intervention duration, number of sessions, time per session, outcome variables, and measurements. When studies reported outcomes at more than one follow-up time point, the assessment closest in time to intervention completion was used.

## Assessment of Methodologic Quality

Two authors independently reviewed the studies using an online coding program designed for this project. RCT studies were assessed for methodologic quality using a seven-item scale of the Risk of Bias (RoB), which was developed by the Cochrane Bias Method Group (Higgins & Green, 2008). The RoB Assessment tool for Non-Randomized Studies (RoBANS) was used for non-RCTs (Higgins & Green, 2008). Studies were assessed in relation to the five sources of bias: selection, performance, attrition, detection, and reporting. To be considered sufficient for analysis inclusion, studies had to meet at least four of the seven a priori quality criteria.

## Statistical Analysis

A meta-analysis was conducted with Cochrane Review Manager, version 5.2, and RevMan Analyses software. The between-group standardized mean difference with its accompanying 95% confidence interval (CI) was used as the summary measure of effect. Mean and standard deviations of outcomes were used for computation of standardized mean differences (SMD) (e.g., Cohen's d). A Cohen's d of 0.8 was considered large, 0.5 was considered medium, and 0.2 was considered small (Cohen, 1988).

Inevitably, studies brought together in a meta-analysis will differ. Any kind of variability among studies in a

meta-analysis may be termed heterogeneity and is a consequence of clinical or methodologic diversity, or both, among the studies (Higgins & Green, 2011). Variability in the participants, interventions, and outcomes studied may be described as clinical heterogeneity, and variability in study design and risk of bias may be described as methodologic heterogeneity (Higgins & Green, 2011). In the current review, heterogeneity was examined among study results using the  $I^2$  statistic, which represents the approximate proportion of total

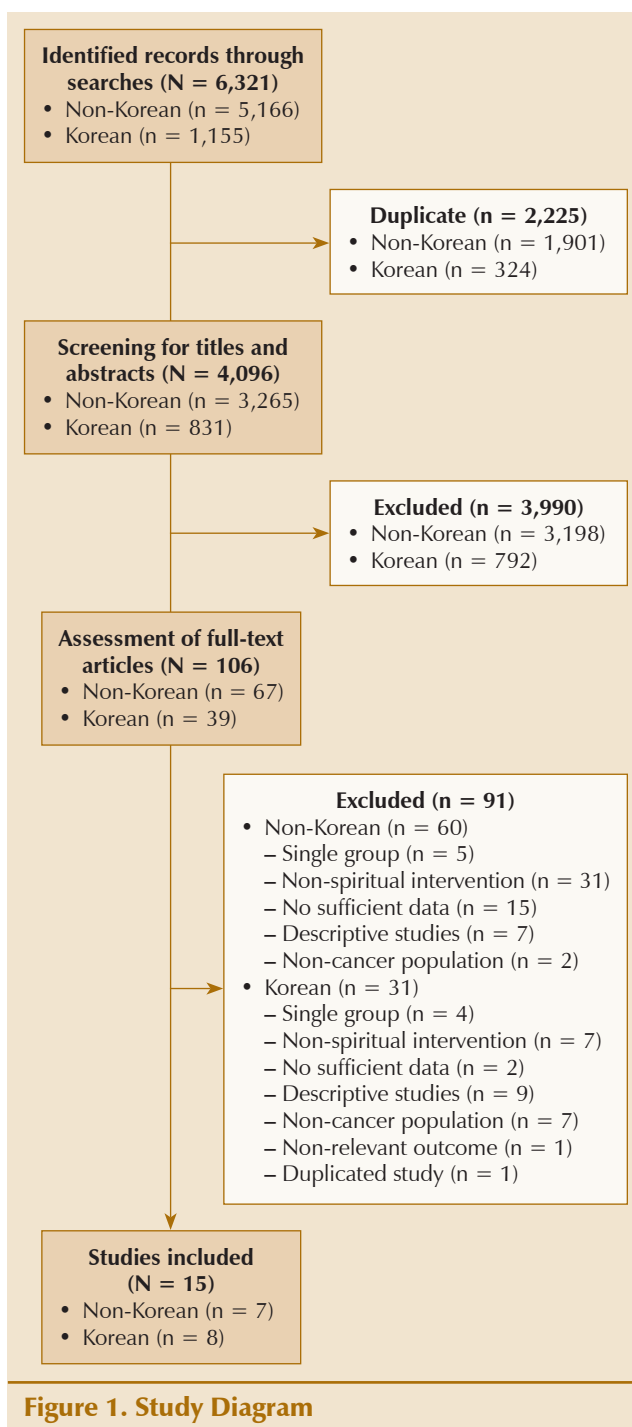


Figure 1. Study Diagram

variability (0%–100%) in point estimate that can be attributed to systematic differences between studies; a larger percentage reflects greater heterogeneity (Sheinfeld Gorin et al., 2012). An  $I^2$  of 25% was considered low, 50% moderate, and 75% high (Higgins, Thompson, Deeks, & Altman, 2003). If statistical heterogeneity did not exist, the authors used a fixed-effect model.  $I^2$  values higher than 50% were considered to have substantial heterogeneity, and the random-effects model was therefore applied to analyze the data (Higgins & Green, 2011). Subsequently, the authors performed subgroup analyses according to study design (e.g., RCT versus non-RCT) and intervention characteristics (e.g., type of intervention, intervention format, length of session, providers of intervention).

To test for publication bias, effect sizes were plotted against their precision (i.e., standard error). The symmetry of these funnel plots was evaluated visually, examining whether the effect sizes of smaller studies were spread symmetrically or were concentrated on the right side of the plot toward larger effect sizes, indicative of a small sample bias.  $P$  values of less than 0.05 were considered statistically significant, and all statistical tests were two-sided.

## Results

### Study Selection

Figure 1 shows the flow diagram of study selection. During the full-text screening process, duplicated reports from the same data set (Yoon, 2004a, 2004b, 2009) were identified. At this point, the authors decided to include each study if it reported results of different variables (Yoon 2004a, 2004b), and to exclude it if duplicated results with the same variables were reported (Yoon, 2009). Finally, a total of 15 publications were included in the present meta-analysis.

### Study Quality and Descriptions

Of the seven RCTs, six provided adequate details on randomization sequence generation; however, only four provided details on allocation concealment. Because of the nature of intervention characteristics, participants and providers of the intervention could not be masked to group allocation in these studies. Only two studies stated that the intervention provider was blind to group allocation. In terms of blinding outcome assessor, four studies were rated as low risk. The risk of attrition bias was rated as low in six studies; four of six studies reported an attrition rate below 20%. In one study, the attrition rate was high, with drop-out rates of 36% in the experimental group and 34% in the control group, but intention-to-treat (ITT) analysis was not performed, so it was evaluated as a high risk of attrition bias for the purpose of the current review. Most

RCT studies reported prespecified expected outcomes of interest, leading to low risk of reporting bias.

Eight non-RCT studies were assessed in relation to selection bias, performance bias, attrition bias, detection bias, and reporting bias by RoBANS. Overall, these studies were rated as low risk for those biases except detection bias. As for detection bias, only three studies used a blinding outcome assessor.

Table 1 summarizes the characteristics of the studies included in the review. Eight studies from Korea, five studies from the United States, and one study each from Canada and Hong Kong were included. Seven studies used an RCT design, and all studies conducted in Korea ( $n = 8$ ) used non-RCT design. The studies comprised 889 participants, and the mean sample size was 59 (range = 23–118). Eleven studies were performed with mixed cancer diagnoses, two with gynecologic cancer, one with breast cancer, and one with melanoma. In addition, 11 were conducted with patients with advanced- or terminal-stage cancer.

### Intervention and Control Conditions

Based on Paloutzian and Ellison's (1982) conceptualization of spirituality, interventions were classified as existential or religious. Of the 15 studies, 10 applied religious interventions, including spiritual nursing care ( $n = 7$ ), spiritual counseling ( $n = 1$ ), oncologist-assisted spiritual intervention ( $n = 1$ ), and spiritually focused meditation ( $n = 1$ ). All seven studies using spiritual nursing care were conducted in Korea. Five studies used existential intervention, specifically meaning-centered psychotherapy ( $n = 2$ ), a meaning-of-life intervention ( $n = 1$ ), a meaning-making intervention ( $n = 1$ ), and a logotherapy-based resilience promotion program ( $n = 1$ ). Individual approach was the most frequent treatment format ( $n = 10$ ), and one study applied combined individual and group approach. Nurses were the most frequent intervention providers ( $n = 10$ ), followed by clinical psychologists ( $n = 4$ ), dietitians ( $n = 1$ ), and oncologists ( $n = 1$ ). Among 15 studies, the number of sessions ranged from 1–12, with a mean of 7 sessions. Intervention duration varied from 2 days to 16 weeks ( $\bar{X} = 6.4$  weeks). Time per session varied from 15–60 minutes ( $\bar{X} = 46.3$  minutes).

Almost all studies had one control condition ( $n = 14$ ); however, an additional comparison (i.e., secular meditation) was included in one study. Usual-care control groups were most common ( $n = 12$ ). Other control groups included counseling for weight loss ( $n = 1$ ), therapeutic massage ( $n = 1$ ), and supportive group psychotherapy ( $n = 1$ ).

### Outcome Measures

As the primary outcome, spiritual well-being was evaluated in eight studies. This was measured using



**Table 1. Descriptive Summary of Included Studies**

Study	Design	Intervention	Outcome	Measurement
<b>Non-Korean</b>				
Breitbart et al., 2012 (USA)	RCT of patients with mixed cancer types at advanced stage with experimental (n = 64) and control (n = 56) groups	<b>Type:</b> Existential/individual meaning-centered psychotherapy <b>Format:</b> Individual <b>Providers:</b> Clinical psychologist <b>Sessions:</b> Seven sessions over seven weeks, 60 minutes each	Spiritual well-being, QOL, anxiety, depression, hopelessness, symptom burden, symptom-related distress	FACIT-SWB, MQOL, HADS, BHS, MSAS
Cole et al., 2012 (USA)	RCT of patients with terminal melanoma with experimental (n = 29) and control (n = 27) groups	<b>Type:</b> Religious/spiritual-focused meditation <b>Format:</b> Group <b>Providers:</b> Clinical psychologist <b>Sessions:</b> Five sessions over four months, 60 minutes each	Existential well-being, depression	MQOL, CES-D
Mok et al., 2012 (Hong Kong)	RCT of mixed cancer types at advanced stage with experimental (n = 44) and control (n = 40) groups	<b>Type:</b> Existential/meaning-of-life intervention <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Two sessions over two days, 15–60 minutes each	QOL, existential distress	QOLC-E, single-item QOL scale
Breitbart et al., 2010 (USA)	RCT of mixed cancer types at advanced stage with experimental (n = 49) and control (n = 41) groups	<b>Type:</b> Existential/meaning-centered group psychotherapy <b>Format:</b> Group <b>Providers:</b> Psychiatrist or clinical psychologist <b>Sessions:</b> Eight sessions over eight weeks	Spiritual well-being, sense of meaning, depression, anxiety	FACIT-SWB, BHS, SAHD, LOT, HADS
Henry et al., 2010 (Canada)	RCT of patients with advanced ovarian cancer with experimental (n = 12) and control (n = 12) groups	<b>Type:</b> Existential/meaning-making intervention <b>Format:</b> Individual <b>Providers:</b> Clinical psychologist <b>Sessions:</b> One to four sessions, 30–90 minutes each	Existential well-being, overall QOL, anxiety, depression, self-efficacy	FACIT-Sp-12 meaning subscale, MQOL existential subscale, HADS, GSES
Djuric et al., 2009 (USA)	RCT of patients with stages I–III breast cancer with experimental (n = 12) and control (n = 12) groups	<b>Type:</b> Religious/spiritual counseling plus counseling for weight loss <b>Format:</b> Individual <b>Providers:</b> Dietitian <b>Sessions:</b> Eleven sessions over 12 weeks, 26 minutes each	Spiritual well-being, depression	FACIT-Sp, CES-D
Kristeller et al., 2005 (USA)	RCT of patients with mixed cancers with experimental (n = 54) and control (n = 64) groups	<b>Type:</b> Religious/oncologist-assisted spiritual intervention <b>Format:</b> Individual <b>Providers:</b> Oncologist <b>Sessions:</b> One to two sessions over two weeks, 60 minutes each	Spiritual well-being, QOL, depression	FACIT-Sp, FACT-G, BSID
<b>Korean</b>				
Koo, 2008	Non-RCT of patients with stages II–IV gynecologic cancer with experimental (n = 23) and control (n = 24) groups	<b>Type:</b> Existential/logotherapy-based resilience promotion program <b>Format:</b> Individual plus group <b>Providers:</b> Nurse <b>Sessions:</b> Three sessions, 30 minutes of individual and 60 minutes as group	Resilience, meaning of life/ hope, psychosocial distress, symptom distress, QOL	Resilience scale, PIL, Nowotny's hope scale, QSC-R23, Symptom Distress Scale, FACT-G

(Continued on the next page)

BHS—Beck Hopelessness Scale; BPI—Brief Pain Inventory; BPI-K—Korean version of the Brief Pain Inventory; BSID—Brief Symptom Inventory Depression subscale; CES-D—Center for Epidemiological Studies—Depression scale; FACT-G—Functional Assessment of Cancer Therapy—General; FACIT-Sp-12—Functional Assessment of Chronic Illness Therapy—Spirituality-12; FACIT-SWB—Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being Scale; GSES—General Self-Efficacy Scale; HADS—Hospital Anxiety and Depression Scale; LOT—Life Orientation Test; MQOL—McGill Quality of Life Questionnaire; MSAS—Memorial Symptom Assessment Scale; PIL—Purpose in Life; QOL—quality of life; QOLC-E—Quality of Life Concerns in the End of Life; QSC-R23—Questionnaire on Stress in Cancer Patients Revised, version 23; RCT—randomized, controlled trial; SAHD—Schedule of Attitudes Toward Hastened Death; SCL-90R—Symptom Checklist-90 revised; STAI—State-Trait Anxiety Inventory; WHOQOL—World Health Organization Quality of Life scale

**Table 1. Descriptive Summary of Included Studies (Continued)**

Study	Design	Intervention	Outcome	Measurement
<b>Korean (continued)</b>				
Kim et al., 2006	Non-RCT of patients with stages II–IV cancers with experimental (n = 11) and control (n = 12) groups	<b>Type:</b> Religious/spirituality intervention <b>Format:</b> Group <b>Providers:</b> Nurse <b>Sessions:</b> Six sessions over six weeks, 60 minutes each	Spirituality	WHOQOL spiritual subscale
Chung, 2005	Non-RCT of patients with terminal cancers with experimental (n = 20) and control (n = 20) groups	<b>Type:</b> Religious/spirituality intervention <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Six to nine sessions over three weeks, 30–40 minutes each	Spiritual well-being, depression, anxiety, pain	Paloutzian and Ellison's spiritual well-being, SCL-90R, BPI
Kim & Song, 2004	Non-RCT of patients with terminal cancers with experimental (n = 31) and control (n = 31) groups	<b>Type:</b> Religious/spiritual nursing intervention <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Twelve sessions over four weeks, 60 minutes each	Spiritual well-being	Paloutzian and Ellison's spiritual well-being, Zung's Depression Inventory
Yoon, 2004a	Non-RCT of patients with terminal cancers with experimental (n = 20) and control (n = 21) groups	<b>Type:</b> Religious/spiritual nursing program <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Twelve sessions over four weeks, 45 minutes each	Spiritual well-being, anxiety, pain	Paloutzian and Ellison's spiritual well-being, STAI/BPI
Yoon, 2004b	Non-RCT of patients with terminal cancers with experimental (n = 20) and control (n = 21) groups	<b>Type:</b> Religious/spiritual nursing program <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Twelve sessions over four weeks, 45 minutes each	Meaning of life, spiritual distress	Crumbaugh's scale, Kim's spiritual distress
Yoon, 2001	Non-RCT of patients with terminal cancers with experimental (n = 37) and control (n = 30) groups	<b>Type:</b> Religious/spiritual nursing intervention <b>Format:</b> Unclear <b>Providers:</b> Nurse <b>Sessions:</b> Nine sessions over three weeks, 30 minutes each	Anxiety, pain	STAI, BPI-K
Kim, 1988	Non-RCT of patients with terminal cancers with experimental (n = 26) and control (n = 26) groups	<b>Type:</b> Religious/spiritual nursing care <b>Format:</b> Individual <b>Providers:</b> Nurse <b>Sessions:</b> Six sessions over three weeks, 30 minutes each	Depression, pain	Zung's Depression Inventory, graphic rating scale

BHS—Beck Hopelessness Scale; BPI—Brief Pain Inventory; BPI-K—Korean version of the Brief Pain Inventory; BSID—Brief Symptom Inventory Depression subscale; CES-D—Center for Epidemiological Studies–Depression scale; FACT-G—Functional Assessment of Cancer Therapy–General; FACIT-Sp-12—Functional Assessment of Chronic Illness Therapy–Spirituality-12; FACIT-SWB—Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being Scale; GSES—General Self-Efficacy Scale; HADS—Hospital Anxiety and Depression Scale; LOT—Life Orientation Test; MQOL—McGill Quality of Life Questionnaire; MSAS—Memorial Symptom Assessment Scale; PIL—Purpose in Life; QOL—quality of life; QOLC-E—Quality of Life Concerns in the End of Life; QSC-R23—Questionnaire on Stress in Cancer Patients Revised, version 23; RCT—randomized, controlled trial; SAHD—Schedule of Attitudes Toward Hastened Death; SCL-90R—Symptom Checklist-90 revised; STAI—State-Trait Anxiety Inventory; WHOQOL—World Health Organization Quality of Life scale

Paloutzian and Ellison's (1982) conceptualization of spiritual well-being (n = 3), the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being (FACIT-SWB) scale (n = 2), FACIT-Spiritual (FACIT-Sp) subscale (n = 2), and the World Health Organization Quality of Life (WHOQOL) spiritual subscale (n = 1). As another primary outcome, meaning of life was

evaluated in six studies using the FACIT-Sp meaning subscale (n = 1), the Quality of Life Concerns in the End of Life (QOLC-E) scale (n = 1), the Purpose in Life (PIL) scale (n = 1), the Life Orientation Test (LOT) scale (n = 1), Crumbaugh's scale (n = 1), and the existential subscale from the McGill Quality of Life (MQOL) questionnaire (n = 1).

## Knowledge Translation

Spiritual interventions for patients with cancer can have beneficial effects on spiritual well-being, meaning of life, and depression.

Spiritual interventions provided by a nurse with an individual approach and in more than seven sessions may be effective in improving spiritual or psychological outcomes.

The current evidence remains weak because of mixed study designs and substantial heterogeneity.

Depression ( $n = 9$ ) was the secondary outcome for the current review and was measured using the Hospital Anxiety and Depression Scale (HADS) ( $n = 3$ ), Zung's Depression Inventory ( $n = 2$ ), the Center for Epidemiological Studies–Depression (CES-D) scale ( $n = 2$ ), Symptom Checklist–90 revised (SCL-90R) ( $n = 1$ ), and Brief Symptom Inventory Depression (BSID) subscale ( $n = 1$ ). To measure anxiety, HADS ( $n = 3$ ), SCL-90R ( $n = 1$ ), and the State-Trait Anxiety Inventory (STAI) ( $n = 2$ ) were used.

### Meta-Analysis and Subgroup Analyses

Effect sizes according to four outcome variables are shown in Table 2. Although a large amount of heterogeneity existed ( $I^2$  range = 65%–87%), the current meta-analysis showed significant treatment effects on all study outcomes. The weighted average effect size for spiritual well-being ( $n = 8$ ) was  $-0.48$  (95% CI  $[-0.82, -0.14]$ ,  $p = 0.006$ ,  $I^2 = 65\%$ ), indicating a moderate effect size. In addition, a significant moderate effect on meaning of life ( $n = 6$ ) was observed ( $d = -0.58$ , 95% CI  $[-1.05, -0.11]$ ,  $p = 0.02$ ,  $I^2 = 70\%$ ). Regarding anxiety ( $n = 6$ ), a significant large effect was observed ( $d = -0.87$ , 95% CI  $[-1.59, -0.16]$ ,  $p = 0.02$ ,  $I^2 = 87\%$ ). The weighted average effect size for depression ( $n = 9$ ) was moderate ( $d = -0.62$ , 95% CI  $[-1, -0.25]$ ,  $p = 0.001$ ,  $I^2 = 73\%$ ).

Funnel plots corresponding to the four outcomes were generated to assess the potential for publication bias (see Figure 2). Looking at publication bias, no evidence of funnel plot asymmetry existed for anxiety and depression, whereas funnel plots of spiritual well-being and meaning of life showed a slight uneven distribution.

When studies were grouped by study design, significant large effects on spiritual well-being ( $d = -0.78$ , 95% CI  $[-1.3, -0.27]$ ,  $I^2 = 59\%$ ), anxiety ( $d = -1.23$ , 95% CI  $[-1.76, -0.7]$ ,  $I^2 = 24\%$ ), and depression ( $d = -1.36$ , 95% CI  $[-1.84, -0.88]$ ,  $I^2 = 45\%$ ) were found in non-RCT studies. However, some heterogeneity existed. Meta-analyses of studies with RCT design showed significant small effects on

spiritual well-being ( $d = -0.18$ , 95% CI  $[-0.42, 0.06]$ ,  $I^2 = 0\%$ ) and meaning of life ( $d = -0.35$ , 95% CI  $[-0.67, -0.03]$ ,  $I^2 = 0\%$ ). In the subgroup analysis by intervention type, existential intervention yielded significant moderate effects on meaning of life ( $d = -0.59$ , 95% CI  $[-0.87, -0.31]$ ,  $I^2 = 0\%$ ) and significant small effect on anxiety ( $d = -0.35$ , 95% CI  $[-0.67, -0.03]$ ,  $I^2 = 0\%$ ). In contrast, studies that applied religious intervention demonstrated a significant moderate-to-large effect on spiritual well-being ( $d = -0.54$ , 95% CI  $[-1, -0.08]$ ,  $I^2 = 71\%$ ) and depression ( $d = -0.79$ , 95% CI  $[-1.33, -0.25]$ ,  $I^2 = 79\%$ ). However, this subgroup is substantially heterogeneous. In the subgroup analyses by intervention format, individual approach showed significant moderate-to-large effects on spiritual well-being ( $d = -0.54$ , 95% CI  $[-0.96, -0.12]$ ,  $I^2 = 72\%$ ) and depression ( $d = -0.76$ , 95% CI  $[-1.2, -0.33]$ ,  $I^2 = 75\%$ ); however, a high level of heterogeneity also existed. The group therapy approach revealed only significant effects on meaning of life ( $d = -0.72$ , 95% CI  $[-1.22, -0.21]$ ,  $I^2 = 32\%$ ). When the authors grouped studies by session length, studies involving a brief intervention (fewer than seven sessions) showed only a significant effect on depression ( $d = -0.5$ , 95% CI  $[-0.96, -0.04]$ ,  $I^2 = 57\%$ ); however, studies involving more than seven sessions demonstrated significant moderate-to-large effects on all study outcomes ( $d$  range =  $-0.65$  to  $-1.01$ ) except meaning of life, although there was substantial heterogeneity ( $I^2$  range = 59%–90%). In the subgroup analyses of intervention providers (nurses versus others), interventions provided by nurses showed significant large effects on all outcomes ( $d$  range =  $-0.78$  to  $-1.48$ ) except anxiety, and this subgroup was generally homogeneous ( $I^2$  range = 24%–59%). In contrast, interventions provided by other professionals (e.g., clinical psychologist, psychiatrist) only demonstrated a significant small effect on anxiety ( $d = -0.35$ , 95% CI  $[-0.67, -0.03]$ ,  $I^2 = 0\%$ ).

### Discussion

Although oncology nurses increasingly recognize the significance of the spiritual domain of care (van Leeuwen et al., 2013), few comprehensive systematic reviews or meta-analyses of its effectiveness are available. In response to this need, the authors performed a meta-analysis regarding effects of spiritual intervention for patients with cancer. Overall, this study found evidence that spiritual interventions for patients with cancer can have beneficial effects on spiritual or psychological outcomes. The current meta-analysis was conducted with a mixed group of study designs. Therefore, caution should be taken when interpreting these results because the effect size needs to be identified separately for RCT and non-RCT studies.

**Table 2. Effect Sizes of Spiritual Interventions**

Study	Experimental Group			Control Group			Weight	Std $\bar{X}$ Difference IV, Random, 95% CI
	$\bar{X}$	SD	Total	$\bar{X}$	SD	Total	%	
Spiritual well-being								
Breitbart et al., 2010	-0.47	0.65	37	-0.08	0.6	18	12.9	-0.61 [-1.18, -0.03]
Breitbart et al., 2012	-0.48	1	40	-0.05	6.05	37	15.1	-0.1 [-0.55, 0.35]
Chung, 2005	-0.51	0.82	20	0.28	0.9	20	11.6	-0.9 [-1.55, -0.25]
Djuric et al., 2009	0.2	2.2	12	0.7	4.3	12	9.6	-0.14 [-0.94, 0.66]
Kim et al., 2006	0.95	7.27	11	-0.125	6.69	12	9.4	0.15 [-0.67, 0.97]
Kim & Song, 2004	-6.35	9.24	31	1.62	7.63	31	13.7	-0.93 [-1.45, -0.4]
Kristeller et al., 2005	-2.4	8.03	54	-1.8	7.81	64	16.5	-0.08 [-0.44, 0.29]
Yoon, 2004a	-13.2	12.85	20	-0.1	6.66	21	11.3	-1.26 [-1.94, -0.59]
Subtotal (95% CI)	-	-	225	-	-	215	100	-0.48 [0.082, -0.14]
Heterogeneity: tau <sup>2</sup> = 0.15, $\chi^2$ = 19.8, df = 7 (p = 0.0006), I <sup>2</sup> = 65%. Test for overall effect: Z = 2.76 (p = 0.006)								
Meaning of life								
Breitbart et al., 2010	-0.51	0.7	37	-0.18	0.68	18	17.9	-0.47 [-1.04, 0.1]
Cole et al., 2012	0.64	1.41	13	-0.04	1.24	14	14.7	0.5 [-0.27, 1.27]
Henry et al., 2010	-2	7.03	12	1.1	7.97	12	14.1	-0.4 [-1.21, 0.41]
Koo, 2007	-0.36	0.42	23	0.12	0.53	24	17.3	-0.98 [-1.59, -0.38]
Mok et al., 2012	-2.1	2.55	44	-0.7	2.91	40	20.2	-0.51 [-0.94, -0.07]
Yoon, 2004a	-16.28	16.98	20	6.72	12.27	21	15.7	-1.53 [-2.23, -0.82]
Subtotal (95% CI)	-	-	149	-	-	129	100	-0.58 [-1.05, -0.11]
Heterogeneity: tau <sup>2</sup> = 0.23, $\chi^2$ = 16.66, df = 5 (p = 0.0005), I <sup>2</sup> = 70%. Test for overall effect: Z = 2.43 (p = 0.02)								
Anxiety								
Breitbart et al., 2010	-0.13	0.47	37	0.05	0.41	18	17.3	-0.39 [-0.96, 0.18]
Breitbart et al., 2012	-0.15	0.53	40	0.05	0.53	37	18	-0.37 [-0.82, 0.08]
Chung, 2005	-0.12	0.49	20	-0.07	0.64	20	17	-0.09 [-0.71, 0.53]
Henry et al., 2010	-1.7	4.55	12	-0.8	4.26	12	15.6	-0.2 [-1, 0.61]
Yoon, 2001	-14.46	13.25	37	3.47	12.32	30	17.5	-1.38 [-1.92, -0.84]
Yoon, 2004a	-29.75	13.17	20	7.47	10.23	21	14.6	-3.11 [-4.04, -2.17]
Subtotal (95% CI)	-	-	166	-	-	138	100	-0.87 [-1.59, -0.16]
Heterogeneity: tau <sup>2</sup> = 0.68, $\chi^2$ = 39, df = 5 (p = 0.00001), I <sup>2</sup> = 87%. Test for overall effect: Z = 2.41 (p = 0.02)								
Depression								
Breitbart et al., 2010	0.62	6.58	37	1.72	6.4	18	11.7	-0.17 [-0.73, 0.4]
Breitbart et al., 2012	-0.11	0.53	40	0.12	0.43	37	12.9	-0.47 [-0.92, -0.02]
Chung, 2005	-0.4	0.57	20	0.28	0.69	20	10.6	-1.05 [-1.72, -0.39]
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CI—confidence interval; Std—standardized

Note. Test for subgroup differences:  $\chi^2 = 1.04$ ,  $df = 3$  ( $p = 0.79$ ),  $I^2 = 0\%$



**Table 2. Effect Sizes of Spiritual Interventions (Continued)**

Study	Experimental Group			Control Group			Weight	Std $\bar{X}$ Difference IV, Random, 95% CI
	$\bar{X}$	SD	Total	$\bar{X}$	SD	Total	%	
Depression ( <i>continued</i> )								
Cole et al., 2012	0.04	0.57	13	0.06	0.5	14	9.7	−0.04 [−0.79, 0.72]
Djuric et al., 2009	−1	7	12	−0.3	9	12	9.3	−0.08 [−0.88, 0.72]
Henry et al., 2010	−0.2	3.74	12	0.6	4.27	12	9.2	−0.19 [−0.99, 0.61]
Kim, 1988	−3.27	3.96	26	1.62	4.31	26	11.4	−1.16 [−1.76, −0.57]
Kim & Song, 2004	−3.55	5.65	31	7.13	5.87	31	11.3	−1.83 [−2.43, −1.23]
Kristeller et al., 2005	−2.74	4.43	54	−0.79	4.31	64	13.8	−0.44 [0.81, −0.08]
Subtotal (95% CI)	−	−	245	−	−	234	100	−0.62 [−1, −0.25]
Heterogeneity: tau <sup>2</sup> = 0.23; $\chi^2$ = 29.47, df = 8 (p = 0.0003), I <sup>2</sup> = 73%. Test for overall effect: Z = 3.24 (p = 0.001)								
CI—confidence interval; Std—standardized								
Note. Test for subgroup differences: $\chi^2$ = 1.04, df = 3 (p = 0.79), I <sup>2</sup> = 0%								

Significant moderate effects were found for primary outcomes (spiritual well-being,  $d = -0.48$  and meaning of life,  $d = -0.58$ ). This result is meaningful because previous results from two meta-analyses (Candy et al., 2012; Kaplar et al., 2004) were controversial for spiritual outcomes. According to subgroup analysis by intervention type, existential intervention had a significant moderate effect on meaning of life ( $d = -0.59$ ), and religious intervention had a significant moderate effect on spiritual well-being ( $d = -0.54$ ). This indicates that the developed contents of the intervention were valid because existential interventions used a meaning-making intervention (Henry et al., 2010; Mok, Lau, Lai, & Ching, 2012), logotherapy (Koo, 2008), or meaning-centered psychotherapy (Breitbart et al., 2012), whereas religious interventions applied spiritual counseling (Cole et al., 2012; Djuric et al., 2009) or a spiritual nursing program (Chung, 2005; Kim, 1988; Kim et al., 2006; Kim & Song, 2004; Yoon, 2001, 2004a, 2004b) using a Bible, prayers, or hymns. No discrepancy existed in the results of primary outcomes according to study design.

Findings of secondary outcomes seem to be noteworthy. Spiritual interventions produced significant large effects on anxiety ( $d = -0.87$ ) and moderate effects on depression ( $d = -0.62$ ). These effect sizes were greater than those of other meta-analyses that evaluated efficacy of other psychosocial interventions (Faller et al., 2013; Kaplar et al., 2004; Meyer & Mark, 1995; Sheard & Maguire, 1999). However, attention should be paid to the results of the subgroup analysis by study design. This meta-analysis revealed different results between RCT and non-RCT design. The effect sizes for both

outcomes were significantly large in non-RCT studies ( $d = -1.23$  and  $-1.36$ , respectively); however, they were not significant in RCT studies. Unfortunately, the authors cannot conclude that spiritual intervention has an important effect on anxiety or depression. All non-RCT studies were Korean studies, and most (75%) were conducted in patients with terminal cancer. These studies used nonequivalent control group pretest or post-test design because settings were mostly ward-based, which could cause diffusion effects and ethical problems. To overcome the faults of nonrandomization in this setting, this methodologic challenge should be addressed.

In subgroup analyses according to other intervention characteristics (format, session length, and providers), heterogeneity was still small to substantial. In the current article, the authors discuss only results that showed levels of  $I^2$  less than or equal to 75%. As for intervention format, the individual approach showed significant effects on spiritual well-being and depression. Because most spiritual interventions were conducted with patients with advanced cancer, a group format could lead to substantial attrition (Breitbart et al., 2012). An individual approach has the strength of reducing attrition and missed sessions. A longer session was significantly associated with better spiritual well-being, consistent with a meta-analysis of psycho-oncologic interventions (Faller et al., 2013). Faller et al. (2013) found that longer treatment duration was associated with sustained effects on depression and anxiety. Although measuring the sustained effects of a spiritual intervention may be difficult because participants were generally in serious condition or a terminal stage, additional meta-analysis—including sustained effect—is required.

## Limitations

This review has several limitations. First, the heterogeneity of the research designs makes meta-analytic techniques barely applicable to provide a summarized measure of the effects of the interventions. Nonrandomized studies typically are at risk for selection bias, but the effect sizes were generally large for the non-RCT studies in this review. Therefore, the conclusion that spiritual intervention has good efficacy must be interpreted with caution. Second, the authors included domestic unpublished research (i.e., doctoral dissertations), but international grey literature was not retrieved because of a lack of time and information about international local databases. Higgins and Green (2008) provide useful information about international grey literature databases and local searching databases by country. Third, most spiritual interventions were conducted with patients with advanced cancer, but the results may be quite different for patients with early-stage cancer or for disease-free cancer survivors.

Finally, funnel plot asymmetry, which may indicate publication bias, was observed for spiritual well-being and meaning of life.

## Implications for Nursing

Oncology nurses increasingly recognize the significance of the spiritual domain of care. This study indicates that facilitating spiritual awareness and needs may be a worthwhile nursing intervention for patients with cancer. To reach more rigorous consensus, more RCT considerations with various methodologic challenges should be performed. For example, studies evaluating other important outcomes (e.g., symptom burden, QOL, hope, resilience), studies testing sustained effects of spiritual intervention, or studies conducted among various populations (including cancer survivors with early-stage as well as terminal cancer) are required. Interestingly, the subgroup analysis of intervention providers in the current review suggested that nurses may be the best providers of spiritual

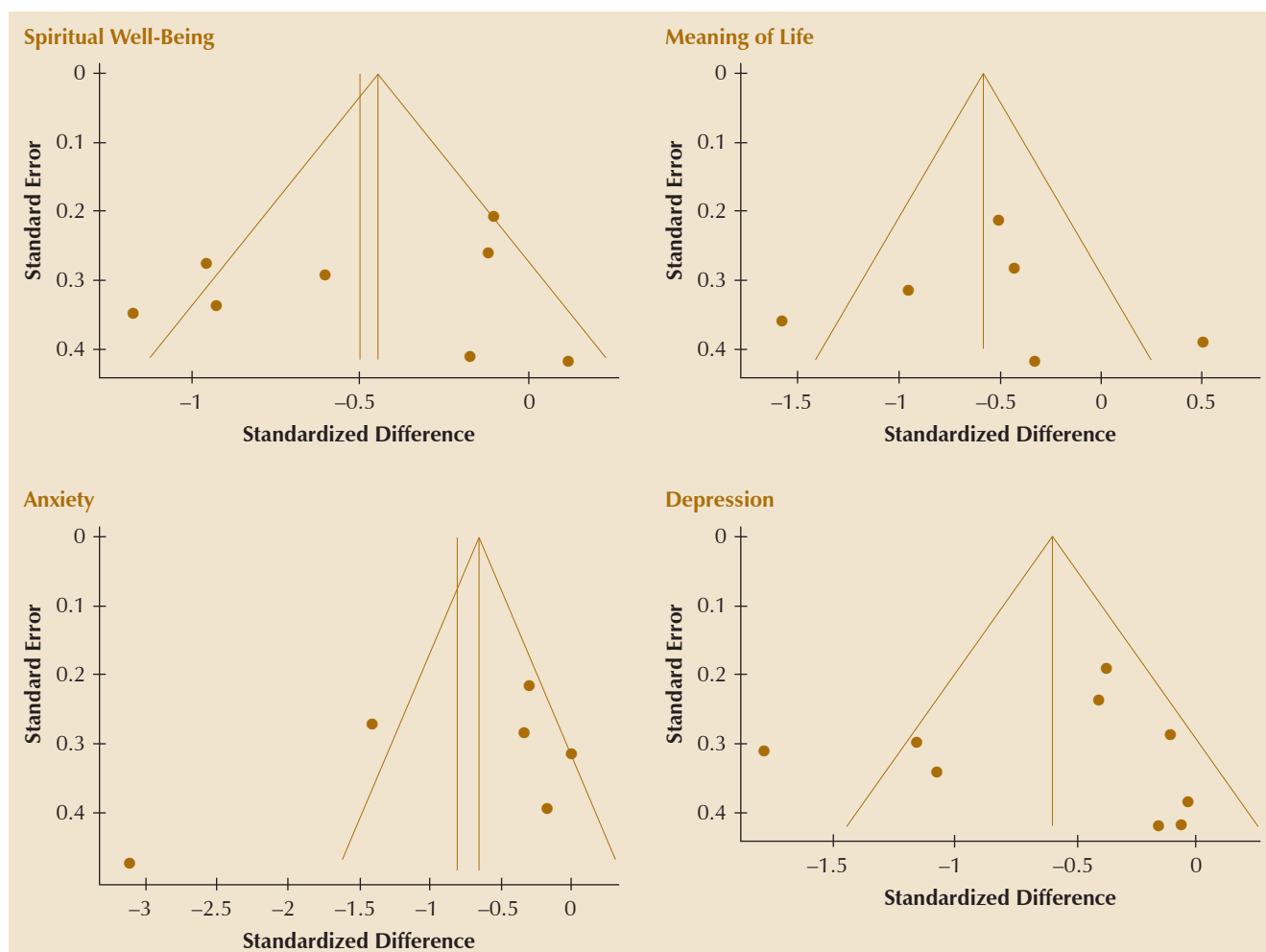


Figure 2. Funnel Plot of Effect Sizes by Standard Errors for Four Outcomes

interventions because interventions provided by nurses showed significant large effects on all outcomes except anxiety. That finding supports expert opinion that nurses may already possess the necessary proficiencies—engagement in assessment, problem solving, critical thinking, caring, and communication—to succeed in spiritual care (Highfield, 1992; Taylor & Mamier, 2005).

## Conclusion

The authors' findings showed that spiritual interventions had significant moderate effects on spiritual well-being, meaning of life, and depression. However, the evidence remains weak because of mixed study design and substantial heterogeneity. Therefore, meth-

odologically rigorous trials are needed in spiritual nursing practice. To integrate spiritual care in nursing, nurses should recognize the importance and beneficial impact of spiritual care. Evidence-based spiritual care training holds promise to advance nurses' competency in spiritual care and to improve patients' spiritual and psychological well-being.

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