

Spirituality Intervention Impact on Spiritual Well-Being, Quality of Life, Sleep Quality, Anxiety, Distress and Suffering In Women With Cancer: Systematic Review and Meta-Analysis

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Abstract

Introduction: The burden of cancer in women has a physical and emotional impact on health. It needed an intervention that responded to the situation. The purpose of this study was to look into how spiritual interventions affected the spiritual well-being, quality of life, sleep, anxiety, distress, and suffering of women with cancer.

Method: A systematic review and meta-analysis were conducted in this study. The articles were searched from six databases including Elicit, Europe PMC, PubMed, Sage Knowledge, and Wiley between 2018 and 2023. The Jadad scale was employed for article quality assessment. Report writing follows the PRISMA 2020 checklist.

Results: Thirteen higher-quality articles were included in the review. Spiritual intervention relative to control was associated with an improvement in spiritual well-being, SMD = 2.00 (95% CI: 0.93-3.07), $p < 0.0003$, $I^2 = 97%$, $p < 0.00001$, quality of life functional scale, SMD = 0.69 (-0.01-1.39), $p = 0.05$, $I^2 = 94%$, $p < 0.00001$, quality of life six single-item scales, WMD = -5.69 (-9.32 to -2.05), $p = 0.002$, $I^2 = 0%$, $p = 0.84$, and anxiety, distress, and suffering, SMD = -0.82 (-1.37 to -0.27), $p = 0.003$, $I^2 = 83%$, $p < 0.0001$. It was not associated with an improvement in quality of life symptoms scales, sleep quality (PSQI), and sleep quality (actigraphy).

Conclusions: Spiritual intervention was effective in improving spiritual well-being, anxiety, distress and suffering, and the quality of life functional scale. It had no impact on raising the quality of life symptoms ratings and had no discernible influence on sleep quality.

Keywords: Anxiety, cancer, quality of life, sleep quality, spiritual intervention, spiritual well-being.

Introduction

The prevalence of cancer is still rising worldwide, particularly among women. According to data from the Global Burden of Disease 2019 study, the top ten malignancies that affect women globally are uterine, cervical, ovarian, and breast cancers. Breast cancer has surpassed lung cancer as the most prevalent cancer in women worldwide [1]. According to World Cancer Research Fund International [2], in 2020, breast cancer was the most prevalent cancer in women globally, making for 25.8% of all newly diagnosed cases. Except for non-melanoma skin cancer, the top three malignancies, accounting for 44.5% of all cancers, are lung, colorectal, and breast cancers. As the fourth most frequent disease in women, cervical cancer accounted for 6.9% of all new cases in 2020.

Physical and emotional health are significantly impacted by the higher rate of cancer in women [2]. Physically, women with cancer experience symptoms including pain, fatigue, weight loss, and changes in appetite. A compromised immune system, nausea, vomiting, and hair loss are some of the adverse consequences of cancer treatment, which includes surgery, chemotherapy, and radiation therapy.

Emotionally, women with cancer frequently suffer from depression, worry, and psychological discomfort. Cancer diagnosis and management can interfere with daily life, relationships, and general well-being. In addition, they also experience fear of recurrent cancers, body image issues, and problems related to fertility and sexuality. Women with cancer are also likely to experience financial burdens due to the cost of treatment, medications, and supportive care. As well as the possibility of experiencing challenges in access to health services, especially in places with insufficient resources [2].

Cancer patients are advised to use both non-pharmacological and pharmaceutical methods to manage their symptoms. Non-pharmacological measures may include life review, relaxation therapy, and general supportive therapy, as well as spirituality interventions or spirituality treatments. In addition to improving coping and resilience, improving relationships, improving well-being and quality of life, and offering emotional support and patient-centered care, spirituality care can also help female cancer patients receive end-of-life care [3]. Incorporating spiritual care into nursing care practices can promote peace, communication, and well-being for the whole body (mind, body, and soul) [3]. Meeting cancer patients' spiritual needs can result in their medical recovery, less suffering, and personal development [4].

Fulfilling spiritual needs in women with cancer requires spiritual intervention. An integrative review revealed that psychosocial-spiritual interventions for Muslims receiving cancer treatment must address psychological distress without the use of psychopharmacological agents, improve quality of life by educating patients about cancer, rely on beliefs for spiritual well-being, and make them feel resigned to religious and spiritual resources: letting go, letting God [5]. It has been demonstrated that supportive therapies and palliative care enhance psychological support, patient and family satisfaction, and symptom control. Additionally, to provide comprehensive and individual-centered treatment that emphasizes the connections between physical, psychological, and spiritual issues, supportive care and palliative care must be initially integrated with oncology [6]. Spiritual well-being is significantly impacted by Islamic-based caring interventions for Muslim women receiving chemotherapy for breast cancer [7]. Additional research demonstrates that spiritual interventions are highly beneficial in improving women with breast cancer's sense of God and lowering their dread and avoidance of death [8].

Spirituality interventions in nursing are closely related to spiritual care in hospitals. Spiritual care in nursing aims to investigate, identify, and address each patient's spiritual needs, especially those of female cancer patients [4]. Every patient has unique spiritual requirements, which might or might not be connected to their preferred religion. This desire may be expressed overtly or covertly by the patient or their family, and they may not even be aware that they are seeking spiritual assistance. Loss of control over one's life, hopelessness, fear of the future, and lack of hope are all examples of spiritual discomfort [4]. By comparing a control group that did not receive the intervention, this systematic review and meta-analysis aimed to better understand the effects of spiritual therapies on spiritual well-being, quality of life, sleep quality, anxiety, distress, and suffering.

Materials And Methods

Research design

The present study is a systematic review and meta-analysis of the literature on spiritual therapy in hospitals, adhering to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) standards [9].

Search strategy

Researchers used databases Elicit, Europe PMC, PubMed, Sage Knowledge (Sage Journals), and Wiley between 2018 and 2023. The following search techniques were used to carry out the investigation: (("Hospice Care"[Mesh]) OR "Spiritual Therapies"[Mesh]) OR (spiritual care[tiab] OR spiritual guidance[tiab] OR spiritual healing[tiab] OR end of life care [tiab]) AND woman AND cancer AND randomized controlled trial, khusus pada basis data PubMed applied Boolean operator AND dan OR and combinations of *title and abstract* [tiab] dan *medical subject heading* [Mesh], or hospice care OR spiritual therapies OR spiritual care OR spiritual guidance OR spiritual healing OR end of life care AND woman AND cancer AND randomized controlled trial, in other databases.

The eligibility criteria in this systematic review used PICOS: P (Participant: female cancer patient), I (Intervention: spiritual and religious intervention), C (Comparison: non-spiritual intervention or usual care),

O (Outcome: quality of life, sleep quality, anxiety, depression, hope, spiritual well-being), S (Study design: randomized controlled trial).

Inclusion and exclusion criteria

Included in the meta-analysis and systematic review were articles that: (1) peer-reviewed articles with original data, (2) in English or Bahasa Indonesia, (3) spiritual care interventions with spiritual outcomes. Articles that did not discuss spiritual intervention and were opinion essays, editorials, comments, conference proceedings, literature, or book reviews were excluded.

Statistical analysis

We conducted a meta-analysis using Review Manager 5.3 (Cochrane Collaboration). We used standardized mean differences (SMD) in estimating effect size from a variety of statistics. Regardless of heterogeneity, the random-effects model was applied to account for variability between studies. Statistical significance in this study was set at < 0.05, and all p-values were two-tailed. The sensitivity analysis leave-one-out method was used to determine the cause of variability and evaluate the statistical robustness. To subjectively evaluate the possibility of publication bias, funnel-plot analysis was used (Fig.1).

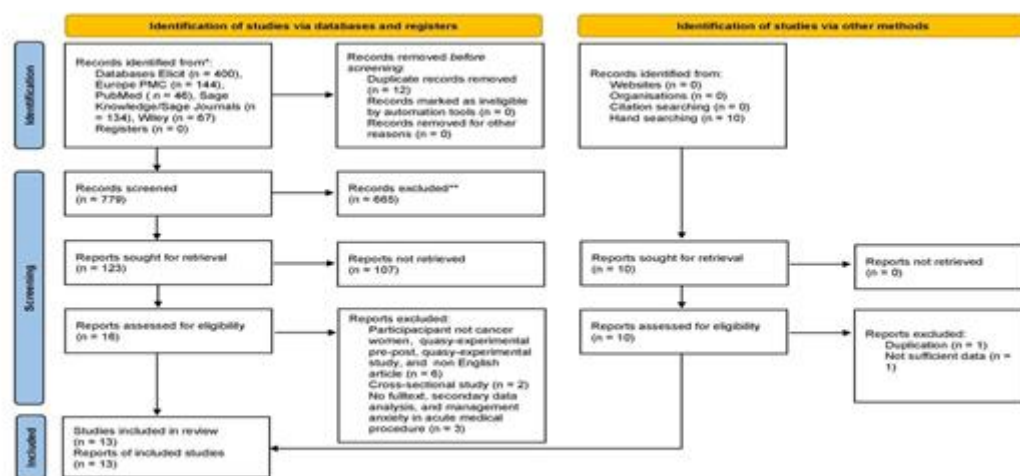


Figure 1. PRISMA flow 2020.

Assessment of methodological quality

The Jadad scale for evaluating the level of quality of randomized controlled trial research publications was used to determine each study's quality [10]. The Jadad scale assesses three components consisting of randomization, blinding, and withdrawal and drop-out, with scores of 2, 2, and 1 respectively (total score of 5). The quality score range is 0-2 (medium) and the score is 3-5 (high).

Extraction and synthesis

All references were entered into EndNote 20 manager software after searching all databases. Initial screening is carried out by removing publications with duplicates, then reading the title and abstract to screen the articles to be retrieved removing articles that were not suitable based on the title and abstract, and obtaining articles that meet the requirements (reports for eligibility) based on inclusion and exclusion criteria. The next stage was to review spiritual intervention articles by reading the full text by two researchers independently. If there is doubt regarding whether the article is included in spiritual intervention or if there is disagreement regarding the article, then a discussion is held to reach a mutual agreement. Next, each article that met the requirements for inclusion in the systematic review was extracted as follows: author (year) and country, participants, type of cancer, number of samples, scale, intervention, religion/culture/tradition, effect size, number of sessions/duration sessions (minutes), follow-up, outcomes, and quality scores (Table 1).

Table I: Study characteristics included in the systematic review and meta-analysis

Author,	Objective	Participan	Scale/	Interven	Religi	Effect	Session	Follo	Results	Quali
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country		t, sample	measureme nt	tion	on/cul ture/ traditi on	size	/session duratio n, minute	w-up		ty score
Afrasiab ifar <i>et al.</i> (2021) [14], Iran	To examine the impact of spiritual- based interventio n on hope and spiritual well-being in patients with cancer.	Cancer patients with chemothera py, T: 74 I: M/F (25/14) C: M/F (17/18)	Snyder's Hope Scale, Paloutzian and Ellison's Spiritual Well-Being Scale (SWBS)	Spiritual interventi on	Islam	Hope dimens ion: factor, strateg y, global hope, MD = 10,5; 10,8; 21,1. Spiritu al well- being dimens ion: religio n health, existen tial health, global spiritu al well- being, MD = 12,3; 10,4; 22,7.	5/30-50, before chemot herapy	-	Significant differences were found in the mean scores between the intervention and control groups on the hope scale (60.9 vs. 39.8) and on the spiritual well-being scale (94.3 vs. 71.6). The hope and spiritual well-being of cancer patients increased.	5
Amini <i>et al.</i> (2020) [16], Iran	To examine the efficacy of spiritual care on anxiety about death among cancer patients.	Gastrointes tinal cancer patients, T: 145 I: M/F (40/33) C: M/F (42/30)	T-DAS	Spiritual care	Islam	Cohen' s d = 0.31	2/30-45, daily for three days	-	The mean scores on anxiety about death in intervention and control group were significantly difference. The effect of short-term spiritual care on anxiety about death showed a small effect.	5
Chaoul <i>et al.</i> (2018) [21], USA	Examined the effects of a Tibetan yoga program (TYP) versus a stretching program (STP) and	Stage I-III breast cancer undergoing chemothera py, TYP = 74 STP = 68 UC = 85	BFI, PSQI, Actigraphy	Tibetan Yoga Program, stretchin g program, usual care	Hindu ism	1 week post interve nction: TYP vs. UC, STP vs. UC, TYP	1/75-90, per week	1 week, 3 mont hs, 6 mont hs	Moderate short-term benefits on sleep quality, with long-term benefits emerging over time for those who practice	5

	usual care (UC) on sleep and fatigue in women with breast cancer undergoing chemotherapy.					vs. STP: BFI = -0,11, 0,05, -0,16 PSQI = -0,18, 0,06, -0,16			TYP at least twice a week.	
Franciosi <i>et al.</i> (2019) [17], Italy	To compare the effect of EPC versus SOC on the QoL of patients with different types of advanced cancers (NSCLC, pancreatic, gastric, and biliary tract) treated at Italian cancer centers.	Patients with different types of advanced cancer (lung, pancreatic, gastric, and biliary tract), EPC: M/F (90) SOC: M/F (87)	FACT-G	Early palliative care	Universal	-	1/every 2 weeks	Every 3 weeks for 24 weeks	EPC did not improve QoL in advanced cancer patients.	5
Greaney <i>et al.</i> (2022) [22], USA	Determine the feasibility of personalized yoga therapy in women receiving treatment for early-stage or locally advanced breast cancer and assess its impact on weight gain.	Women with early or locally advanced breast cancer (stages I-III), T: 29 Yoga: 15 Standard care: 14	FACT-G7, Fatigue Scale (0-4), Mood Scale (0-4)	Yoga therapy	Hinduism	TY: ↓BW 0,14% Kontrol: ↑BW 2,63%	<1, 1-2, 2-3, >3/<30, 30-60, >60, per week	9 months	The weight of women in the yoga therapy group did not change from pre- to post-treatment, indicating their ability to maintain weight, compared to the weight gain seen in the control group.	5
Iani <i>et al.</i> (2020) [18], Italy	Investigating the efficacy of dignity therapy for specific dimensions of spiritual wellbeing, demoralization, and dignity-	Terminally ill patients (mostly patients with cancer), DT: 15 (6/9) SPC: 20 (8/12)	FACIT-Sp, DS-II	Dignity therapy	Universal	-	1/20-60	7-10 days, 15-20 days	There were no significant longitudinal changes in measures of meaning, faith, loss of meaning and purpose, distress and coping	5

	related distress in a sample of terminally ill patients.								ability, existential, psychological and physical distress.	
Jong <i>et al.</i> (2018) [13], Netherlands	To compare the effectiveness of yoga added to standard care (SC) versus SC alone, in women with breast cancer during chemotherapy.	Women with stage I–III breast cancer undergoing neoadjuvant chemotherapy, Dru Yoga: 47, SC: 36	MFI, FQL, EORTC-QLQ-C-30, HADS, IES	Yoga therapy	Hinduism	-	1/75, per week during 12 weeks	12 weeks, 3 months, 6 months	No significant difference was found in general fatigue at T1 (MFI: yoga; 14.6–4.5 vs. SC; 14.2–4.2, $p = 0.987$). Similar findings were observed for other (sub)fatigue scales of the MFI and FQL and the functional domain of EORTC. EORTC symptom scale, women in the yoga group reported significantly less nausea and vomiting compared with SC at T2 ($p = 0.004$), but not at T1 ($p = 0.807$). Depressive symptoms were significantly lower with yoga at T1 (HADS: yoga; 4.7–4.1 vs. SC; 5.1–4.2, $p = 0.031$). More women in the yoga group had experienced adequate relief compared	5

									with SC at T1 (yoga: 51% vs. SC: 19%) and had returned to work at T2 (yoga: 53% vs. SC: 23%).	
Lim <i>et al.</i> (2021) [19], Malaysia	To determine the effect of 5- min mindfulness of love on suffering and the spiritual quality of life of palliative care patients.	Palliative care patients, ML: 30 (6/24) SL: 30 (12/18)	FACIT-Sp12 version 4	5-minute mindfulness of love	Universal	-	1/5	-	The 5- min mindfulness of love could affect the actual state of suffering and the spiritual quality of life of palliative care patients.	5
Maungto ug, Othagan ont and Liehr (2021) [23], Thailand	To examine the changes in comfort when adding ritualized chanting to the palliative care of cancer patients at the end of life.	Thai Buddhist cancer patients, I: 30 (16/14) C: 30 (14/16)	EOLPQ	Ritualized chanting with palliative care	Buddhist	-	2/10	3, 6 weeks	The added ritualized chanting to the palliative care for cancer patients at the end of life can create changes in comfort.	5
Miranda <i>et al.</i> (2020) [11], Brazil	To assess the effect of intercessory prayer on spiritual distress, spiritual coping, psychological morbidity (anxiety and depression) , and salivary amylase during breast cancer radiotherapy.	Breast cancer patients undergoing radiotherapy, I: 16 C: 15	Spiritual Distress Scale, Religious Coping Scale, HADS, salivary amylase	Spiritual care (intercessory prayer)	Christian	Glass's $\Delta = 0.962$	1/60, during radiotherapy	-	Spiritual distress and salivary amylase were significantly different as an effect of intercessory prayer. The effect of intercessory prayer on spiritual distress was shown to a large magnitude.	5
Pasyar <i>et al.</i>	To evaluate	Women with breast	EORTC QLQ-C30	Yoga exercise	Hinduism	-	3/-, per week	4 week	Eight weeks after the	5

(2019) [15], Iran	the effects of an 8-week yoga intervention on quality of life and upper extremity edema volume in women with breast cancer-associated lymphedema.	cancer-associated lymphedema, I: 20 C: 20		program				s, 8 weeks	intervention, there was a significant difference observed between groups regarding physical function and emotional quality of life. Trends in changes in physical, role, emotional, and cognitive functioning increased, and on several scales such as fatigue, pain, insomnia, and financial difficulties, scores decreased in the intervention group.	
Querido and Laranjeira (2023) [20], Portugal	To examine the effectiveness of a psychosocial supportive Hope Promotion Program (HPP) in enhancing hope, comfort, and quality of life in Portuguese adult outpatients with advanced and progressive chronic illness.	Advanced and progressive chronic illness, HHP: 12 SPC: 15	HHI, MQoL, HCQ	Hope Promotion Program	Universal	-	3/90-2 h 30 min	15 days, 30 days	The HPP effective intervention to increase hope and improve comfort and quality of life among palliative patients.	5
Rodin <i>et al.</i> (2022) [12], Canada	To examine whether outcomes of the	Patients with advanced cancer, I: 127	FACIT Sp, QUAL-E, ESAS, ESAS SDS, FAMCARE-	Early palliative care	Universal	-	1/20-50	4 months	Early palliative care improved quality of	4

	cluster-randomized trial differed between subgroups according to symptom severity at baseline.	(85/42) C: 102 (56/46)	P16, CARES-MIS						life, satisfaction with care, and clinician-patient interactions only in those with high baseline symptoms.
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Note: T, total; I, intervention group; C, control group; M/F, male/female; MD, mean difference; TYP, Tibetan yoga program; STP, stretching program, UC, usual care; BFI, Brief Fatigue Inventory; PSQI, Pittsburgh Sleep Quality Index; FACT-G7, Functional Assessment of Cancer Therapy-General; T-DAS, Templer's Death Anxiety Scale; BW, body weight; SC, standard care; MFI, Multidimensional Fatigue Inventory; FQL, Fatigue Quality List; EOLPQ, The End of Life Planning Questionnaire; EORTC-QLQ-30, 30-item Quality of Life Questionnaire-C of the European Organization for Research and Treatment of Cancer; HADS, Hospital Anxiety Depression Scale; IES, Impact of Events Scale; EPC, early palliative care; SOC, standard oncologic care; NSCLC, non-small-cell lung cancer; QoL, quality of life; FACT-G, the Functional Assessment of Cancer Therapy-General; FACIT-Sp, the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; DS-II, Demoralizing Scale-II; DT, dignity therapy; SPC, standard palliative care; ML, mindfulness of love; SL, supportive listening; HHI, Herth Hope Index; MQoL, McGill Quality of Life Questionnaire; HCC, Hospice Comfort Questionnaire; QUAL-E, The Quality of Life at the End of Life; ESAS, The Edmonton Symptom Assessment System; ESAS SDS, ESAS Symptom Distress Score; FAMCARE-P16, a 16-item measure of patient satisfaction; CARES-MIS, The Cancer Rehabilitation Evaluation System Medical Interaction Subscale.

Results

Study selection and characteristics

Initially, 791 potentially relevant items were discovered throughout the five databases. Endnote software version 20 was used to eliminate duplication from a total of 779 articles. Following a screening process that involved reading each article's abstract and title one at a time, 16 papers were still evaluated for eligibility. Furthermore, 11 of these articles were excluded for several reasons (participants, not cancer women, quasi-experimental pre-post, quasi-experimental study, and non-English/Bahasa Indonesia article; cross-sectional study; and no full text, secondary data analysis, and management anxiety in acute medical procedures). Finally, eight of the ten articles were found to be included and two articles were added from hand searching on Google Scholar, two articles were excluded for reasons of duplication and insufficient data, therefore a total of 13 articles were found to be included in this systematic review and meta-analysis (Figure 1, Table 1). The number of participants in this included studies were ranged from 9 to 90 and 12 to 87 for each intervention and control group. One study was conducted in Brazil [11], one in Canada [12], one in the Netherlands [13], three in Iran [14-16], two in Italy [17, 18], one in Malaysia [19], one in Portugal [20], and two in the USA [21, 22]. Measurements that were employed including Snyder Hope Scale and SWBS [14], T-DAS [16], BFI, PSQI, and actigraphy [21],

FACT-G [17], FACT-G7, Fatigue Scale, and Mood Scale [22], FACIT-Sp and DS-II [18], MFI, EORTC QLQ-C-30, HADS, and IES [13], FACIT-Sp12 version 4 [19], EOLPQ [23], and Spiritual Distress Scale, Religious Coping Scale, HADS, and salivary scale [11]. The intervention conducted including three studies were applied spiritual intervention/spiritual care [11, 14, 16, 23], four applied yoga [13, 15, 21, 22], one applied Hope Promotion Program [20], two applied early palliative care [12, 17], one applied dignity therapy [18], and one applied mindfulness of love [19]. The number of sessions for intervention of studies were seven with one session [11-13, 17-19, 21], two with two sessions [16, 23], two with three sessions [15, 20], and one with <1, 2-3, and >3 sessions [22]. The follow-up of the studies in between one week to nine months where four of the studies did not explain the follow-up time [11, 14, 16, 19]. All of the included studies have achieved a higher quality of methodology.

Spiritual intervention and outcome

This meta-analysis showed a significant effect of spiritual intervention compared to control on spiritual well-being, SMD = 2.00 (95% CI: 0,93-), $p < 0,0003$, $I^2 = 97\%$, $p < 0.00001$. The improvement in spiritual well-being through spiritual intervention is a favorable outcome (Fig. 2).

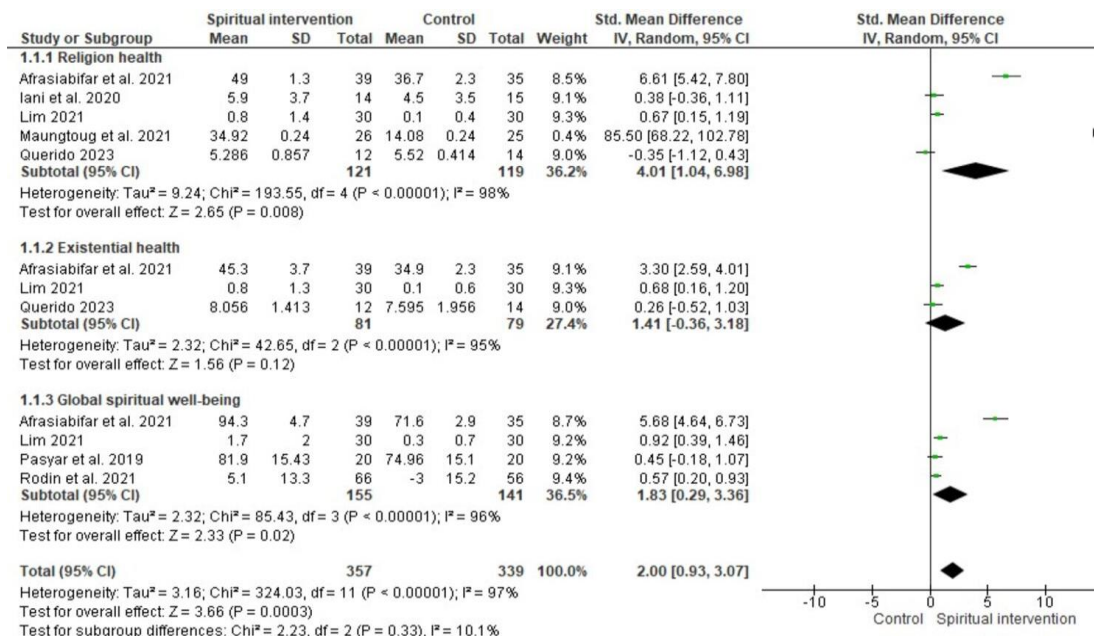


Fig. 2. Forest plot of the effect of spiritual intervention on spiritual well-being in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation

When compared to control, spiritual intervention had a significant impact on quality of life (functional scale), SMD = 0.69 (95% CI: -0.01-1.39), $p = 0.05$, $I^2 = 94%$, $p < 0.00001$. The improvement in quality of life (functional scale) in spiritual intervention is a favorable outcome (Fig. 3).

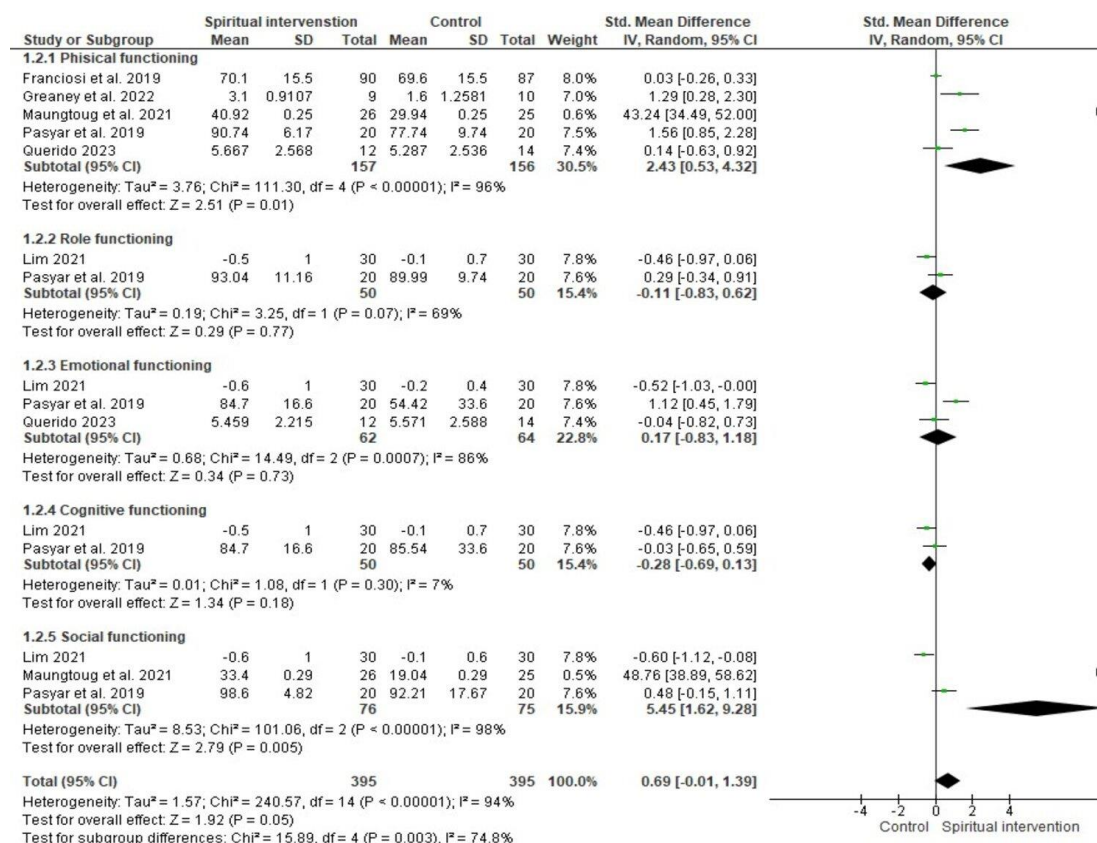


Fig. 3. Forest plot of the effect of spiritual intervention on quality of life (functional scale) in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation.

There was a non-significant effect of spiritual intervention compared to control for quality of life (symptoms scale), SMD = -0.14 (95% CI: -0.42-21 to 0.15), $p = 0.34$, $p = 0.05$, $I^2 = 47%$, $p = 0.08$. The improvement in quality of life (symptoms scale) in spiritual intervention is a favorable outcome (Fig. 4).

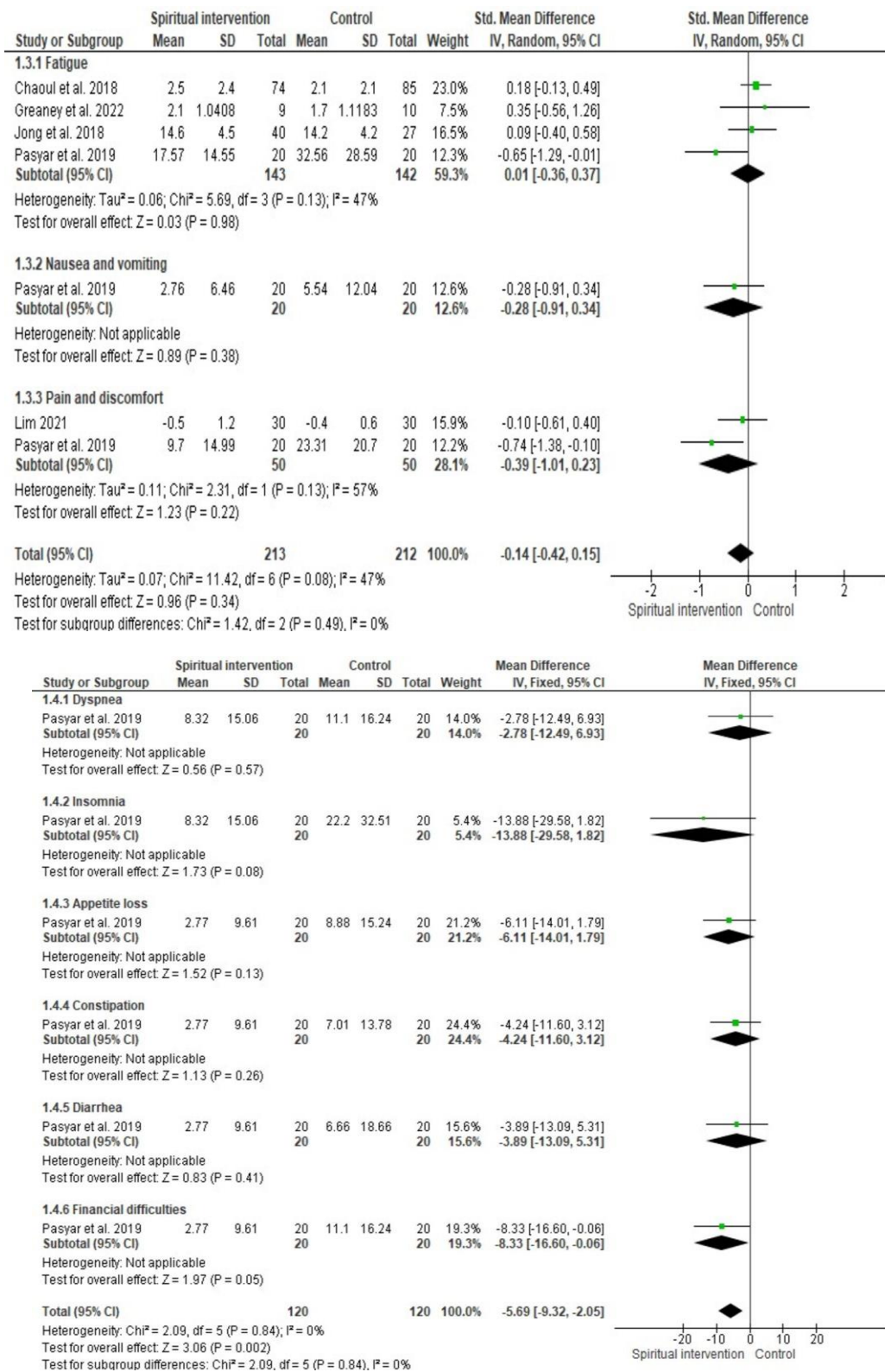


Fig. 4. Forest plot of the effect of spiritual intervention on quality of life (symptoms scale) in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation

When compared to standard care, spiritual intervention had a significant impact on quality of life (measured by six single-item scales), WMD = -5.69 (95% CI: -9.32 to -2.05), $p = 0.002$, $I^2 = 0\%$, $p = 0.84$. The improvement in quality of life (six single item scales) in spiritual intervention is a favorable outcome (Fig. 5).

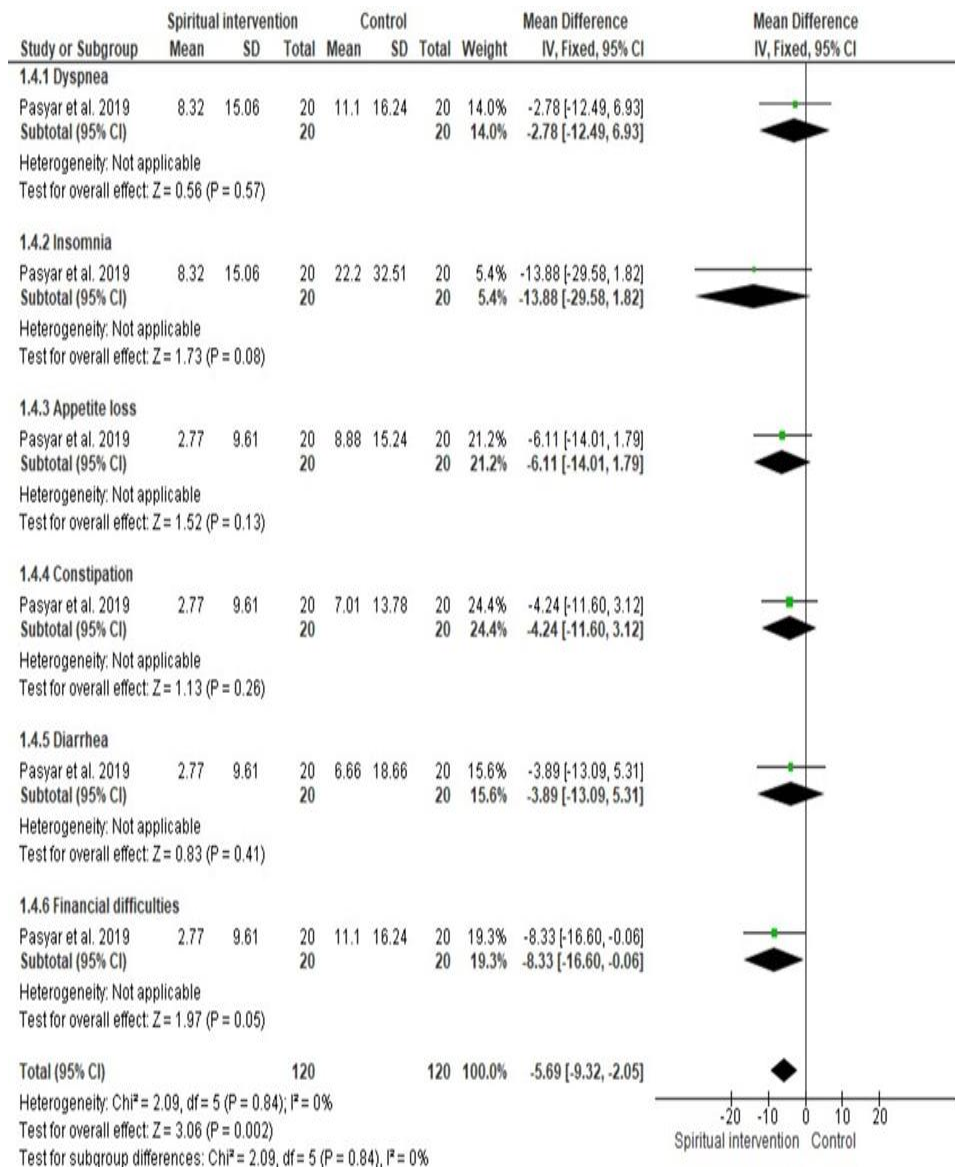


Fig. 5: Forest plot of the effect of spiritual intervention on quality of life (six single item scales) in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation.

There was a non-significant effect of spiritual intervention compared to control for the sleep quality (PSQI), WMD = 0.20 (95% CI: -0.06 to 0.46), $p = 0.14$, $p = 0.002$, $I^2 = 0\%$, $p = 1.00$. The improvement in sleep quality (PSQI) in the spiritual intervention is a favorable outcome (Fig. 6).

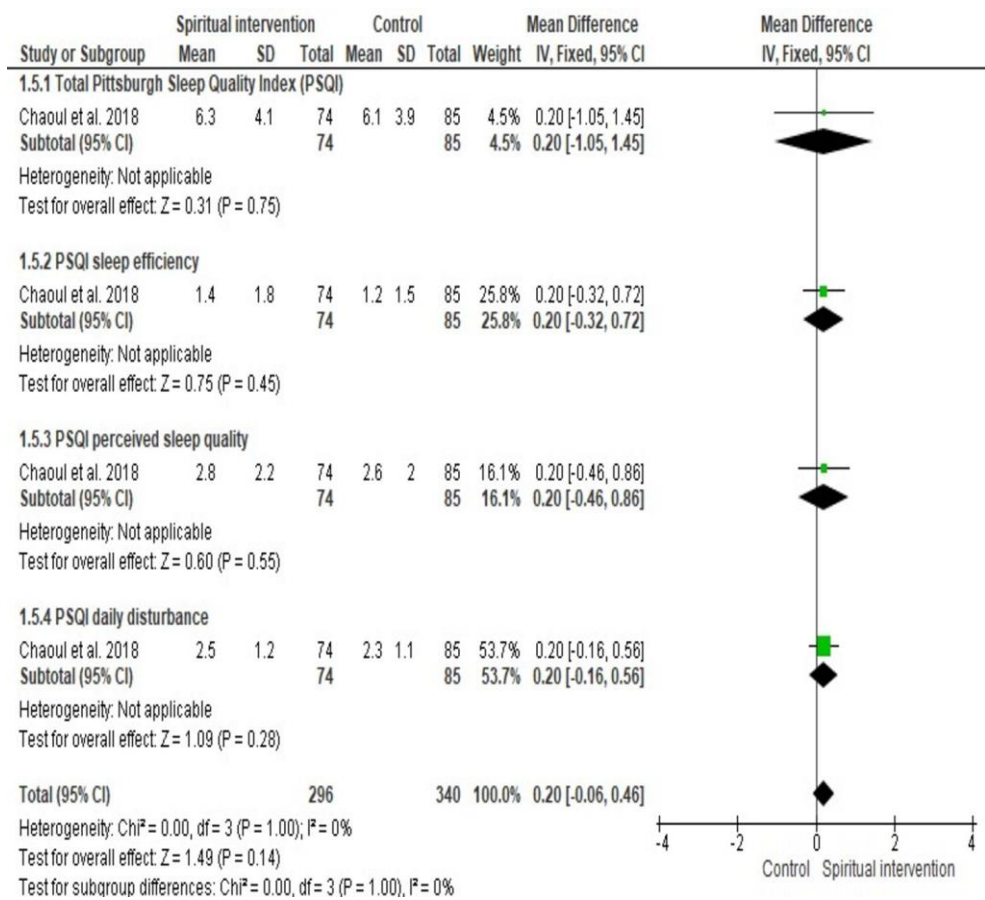
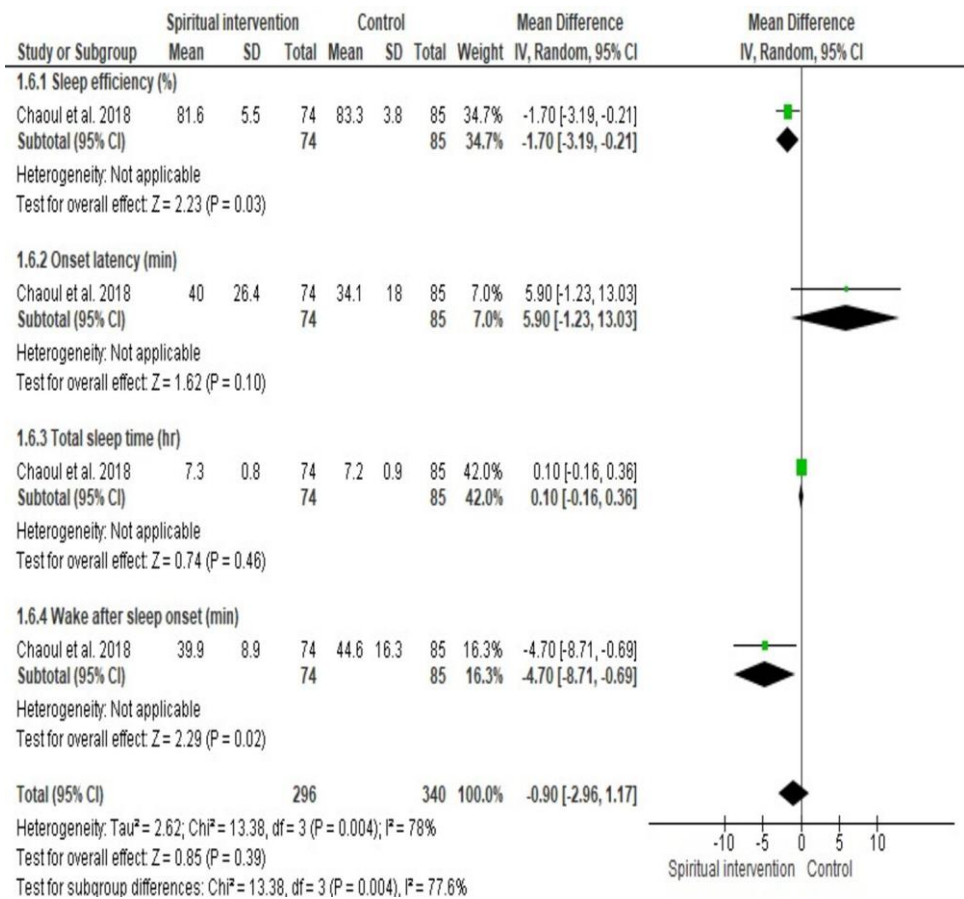


Fig. 6: Forest plot of the effect of spiritual intervention on sleep quality (PSQI) in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation

There was a non-significant effect of spiritual intervention compared to control for the sleep quality (actigraphy), WMD = -0.90 (95% CI: -2.96 to 1.17), $p = 0.39$, $I^2 = 78%$, $p = 0,004$. A reduction in sleep quality (actigraphy) in the spiritual intervention is a favorable outcome (Fig. 7).

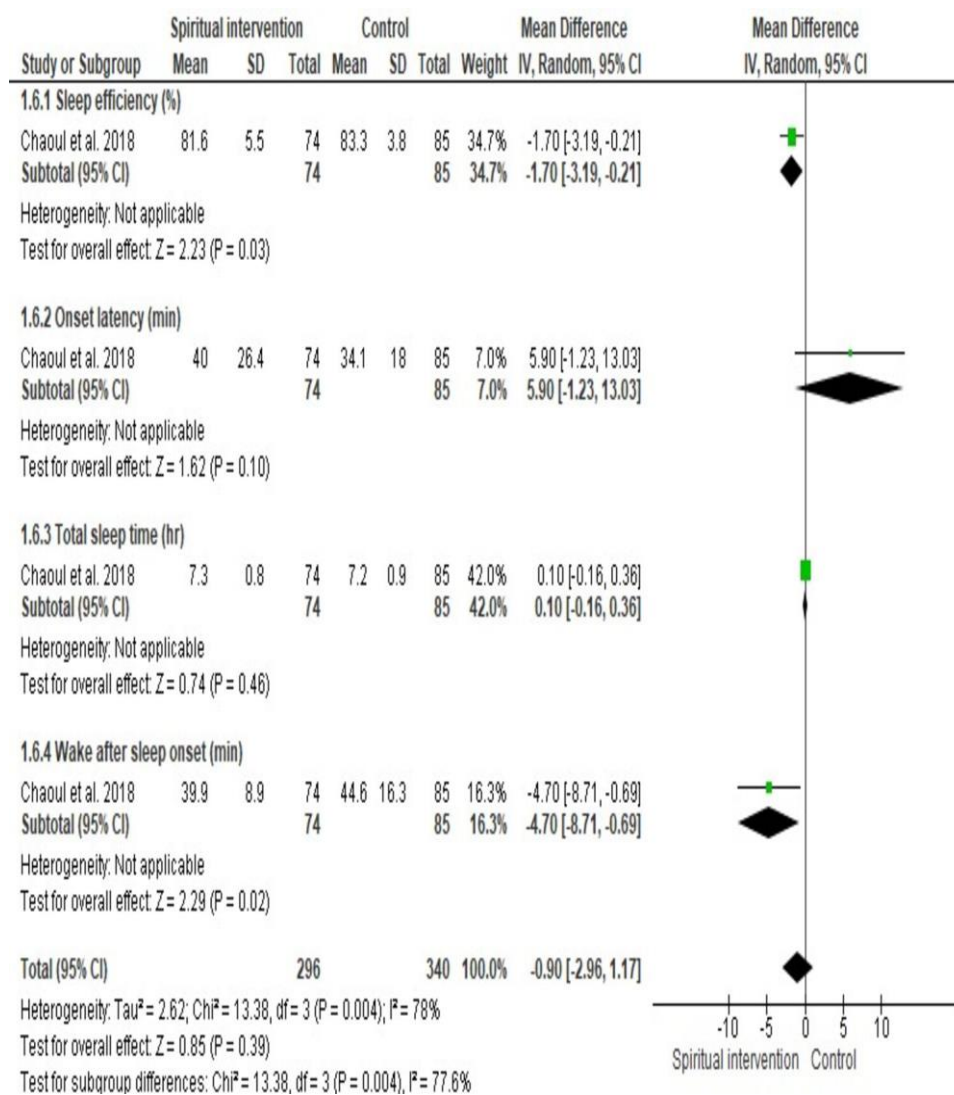


Fig. 7: Forest plot of the effect of spiritual intervention on the sleep quality (actigraphy) in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation

Spiritual intervention had a significant impact on anxiety, distress, and suffering when compared to control, SMD = -0.82 (95% CI: -1.37 to -0.27), $p = 0.003$, $I^2 = 83%$, $p < 0,0001$. A reduction in anxiety, distress, and suffering in the spiritual intervention is a favorable outcome (Fig. 8).

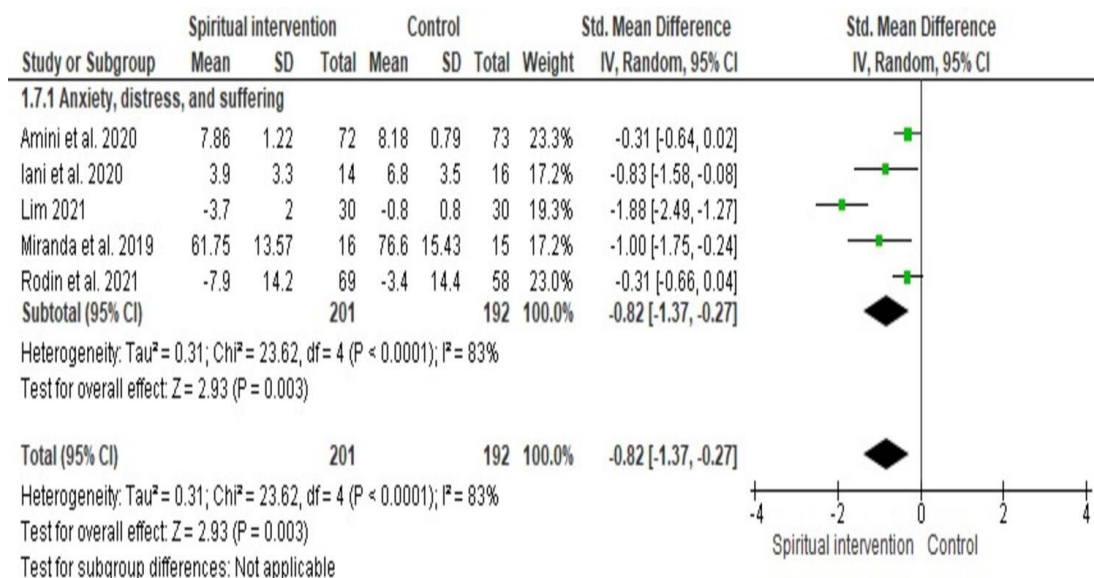


Fig. 8: Forest plot of the effect of spiritual intervention on anxiety, distress, and suffering in women with cancer. IV, inverse variance; CI, confidence interval; SD, standard deviation

The sensitivity analysis showed the robustness effect estimate, removed Querido, Laranjeira [20] study did not change heterogeneity, however, it can improve the significant effect of spiritual intervention on religious health, SMD = 6.45 (2.38-10.51), $p = 0.008$, $I^2 = 98\%$, $p < 0.00001$ and improved but not significant effect on existential health, SMD = 1.98 (-0.59-4.55), $p = 0.13$, $I^2 = 97\%$, $p < 0.00001$. Likewise, the removal Querido, Laranjeira [20] study did not change heterogeneity, but it can improve the estimated effect of the spiritual intervention on overall spiritual well-being, SMD = 2.49 (1.25-3.73), $p < 0.00001$, $I^2 = 97\%$, $p < 0.00001$. Removed Pasyar et al. [15] study can reduce heterogeneity and improved but not significant effect of spiritual intervention on fatigue, SMD = 0.17 (-0.09-0.42), $p = 0.19$, $I^2 = 0\%$, $p = 0.88$. It reduced heterogeneity, but it also reduced the overall estimated effect of the spiritual intervention on quality of life (symptoms scales), SMD = -0.06 (-0.33-0.22), $p = 0.68$, $I^2 = 37\%$, $p = 0.16$.

Sub-group analysis

Sub-group analysis has shown a significant effect of spiritual intervention compared to control on religious health, SMD = 4.01 (95% CI: 1.04 to 6.98), $p < 0,008$, $I^2 = 98\%$, $p < 0.00001$. There was a non-significant effect of spiritual intervention compared to control on existential health, SMD = 1.41 (95% CI: -0.36 to 3.18), $p = 0.12$, $I^2 = 95\%$, $p < 0.00001$. There was a significant effect of spiritual intervention compared to control on global spiritual well-being, SMD = 1.83 (95% CI: 0.29 to 3.36), $p = 0.0003$, $I^2 = 97\%$, $p < 0.00001$ (Fig. 2).

When compared to control, spiritual intervention had significant effects on physical functioning, SMD = 2.43 (95% CI: 0.53 to 4.32), $p = 0.01$, $I^2 = 96\%$, $p < 0.00001$. There was a non-significant effect of spiritual intervention compared to control on role functioning, SMD = -0.11 (95% CI: 0.83 to 0.62), $p = 0.77$, $I^2 = 69\%$, $p = 0.77$. There was a non-significant effect of spiritual intervention compared to control on emotional functioning, SMD = 0.17 (95% CI: -0.83 to 1.18), $p = 0.73$, $I^2 = 86\%$, $p = 0.0007$. There was a non-significant effect of spiritual intervention compared to control on cognitive functioning, SMD = -0.28 (95% CI: -0.69 to 0.13), $p = 0.18$, $I^2 = 7\%$, $p = 0.30$. When compared to control, spiritual intervention had a significant impact on social functioning, SMD = 5.45 (95% CI: 1.62 to 9.28), $p = 0.005$, $I^2 = 98\%$, $p < 0.00001$ (Fig. 3).

There was a non-significant effect of spiritual intervention compared to control on fatigue, nausea and vomiting, and pain and discomfort, $p > 0.05$ for all sub-group analyses (Fig. 4). There was a non-significant

effect of spiritual intervention compared to control on dyspnea, insomnia, appetite loss, and constipation, $p > 0.05$ for all sub-group analyses; however, spiritual intervention had a greater impact on financial difficulties than control., WMD = -8.33 (95% CI: -9.32 to -2.05), $p = 0.05$ (Fig. 5).

There was a non-significant effect of spiritual intervention compared to control on total Pittsburgh Sleep Quality Index (PSQI), PSQI sleep efficiency, PSQI perceived sleep quality, and PSQI daily disturbance, $p > 0.05$ for all sub-group analyses (Fig. 6). There was a non-significant effect of spiritual intervention compared to control on onset latency and total sleep time, $p > 0.05$ for all sub-group analyses; however, spiritual intervention significantly improved sleep efficiency as compared to control., WMD = -1.70 (95% CI: -3.19 to -0.21), $p = 0.03$ and wake after sleep onset, WMD = -4.70 (95% CI: -8.71 to -0.69), $p = 0.02$ (Fig. 7).

Publication bias

Publication bias can be seen from the appearance of the funnel plot (Fig. 1-15, not shown in the report and may be requested if necessary by the author). Funnel plot analysis qualitatively showed an asymmetrical funnel plot for the effect of spiritual interventions on spiritual well-being in women with cancer (Fig. 9). It indicated a publication bias due to heterogeneity in the effect of spiritual intervention on spiritual well-being. The funnel plot showed an asymmetrical funnel plot for the effect of spiritual intervention on quality of life (functional scale) in women with cancer (Fig. 10). It indicated a publication bias due to heterogeneity in the effect of spiritual intervention on quality of life (functional scale). The funnel plot showed an asymmetrical funnel plot for the effect of spiritual intervention on quality of life (symptoms scales) in women with cancer (Fig. 11). It indicated a publication bias due to heterogeneity in the effect of spiritual intervention on quality of life (symptoms scales). The funnel plot showed an asymmetrical funnel plot for the effect of spiritual intervention on quality of life (six single-item scales) in women with cancer (Fig. 12). Heterogeneity in the impact of spiritual intervention on quality of life (six single items) suggested publication bias. The influence of spiritual intervention on sleep quality (PSQI) in women with cancer was depicted using a symmetrical funnel plot (Fig. 13). The funnel plot showed a symmetrical funnel plot for the effect of spiritual intervention on sleep quality (actigraphy) in women with cancer (Fig. 14). The funnel plot showed an asymmetrical funnel plot for the effect of spiritual intervention on anxiety, distress, and suffering in women with cancer (Fig. 15). It revealed a publication bias since the effects of spiritual intervention on pain, anxiety, and distress varied.

Discussion

Investigating the effects of spiritual therapies on enhancing the quality of life, sleep, spiritual well-being, anxiety, distress, and suffering in comparison to a control group that did not receive the intervention was the aim of this systematic review and meta-analysis. Spiritual intervention in this review included but was not limited to mindfulness, spiritual counseling, spiritual therapy, and spiritual care [24]. Spirituality intervention practices in nursing take various forms and are not single, they are intervention practices to foster self-transcendence including prayer and spiritual activities, meditation (dhikr), mindfulness meditation (dhikr and deep focus prayers), expressive writing, telling stories about oneself (personal narrative), reminiscing about life (life review), and nurse-patient interactions [7]. Yoga, a 5,000-year-old Indian-rooted tradition, is of spiritual intervention intended to grow a self-transforming spiritual discipline with the cultivation of awareness and relaxation along with moral discipline, self-restraint/self-control, the posture of meditation and health, breath control, sensory inhibition (consciousness internalization), concentration (mental focusing), meditation, and ecstasy to inwardly looking of contemplation to achieve enlightenment or spiritual autonomy [25].

The spiritual intervention has been proven to improve spiritual well-being by increasing the deep concentrate prayer (khusu') level of cancer patients. All participants engaged in deep concentration prayer, or khusu, to a high degree; they were categorized as high (52.83%), medium-high (28.30%), and extremely high (18.87%) [7]. Qualitatively, Komariah et al. [7] found that cancer patients reported a calm mind and greater meaning in life after the spiritual intervention of an Islamic-based caring program. Despite performing regular prayers and dhikr, qualitative data shows that patients feel anxious, worried about illness,

and unsure about the future before performing the deep-focus prayers. According to the study's narrative findings, cancer patients believed that the program could offer additional advantages like improved health, a sense of calm, a closer relationship with God, a renewed enthusiasm for life, and a sense of meaning. The results of this review showed that spiritual interventions compared to controls have a significant effect on spiritual well-being. These results support previous research before 2018, which showed that spiritual therapies significantly improved spiritual well-being when compared to a control group that received alternative psychological interventions or routine care [26]. Spiritual intervention has been proven to improve spiritual well-being and significant differences were found between the intervention and control groups in patients with gynecological cancer [27]. A review from Chen et al. [28] also found that spiritual care has the potential to improve the quality of life and spiritual well-being of patients with terminal illnesses, including cancer patients. Religious and spiritual interventions have a major impact on the quality of life/spiritual well-being of cancer patients [29]. Spiritual well-being was associated with the quality of life in patients with cancer [30-33]. Some physical factors positively or negatively associated with spiritual well-being including pain significantly predict lower spiritual well-being and social functioning and financial impact can significantly predict an increase in spiritual well-being [34]. Symptom severity can significantly predict the lower spiritual well-being of terminally ill cancer patients [35].

Nuraini et al. [36] concluded that palliative care that focuses on spirituality is important for breast cancer patients, it can increase the comfort of breast cancer patients by reducing anxiety and depression. Similar results also proved that spiritual nursing interventions improve spiritual well-being and reduce anxiety in elderly patients with cancer who are hospitalized [37]. A study by Mehr et al. [8] in Iran found that spiritual interventions could greatly improve a group of breast cancer patients' views of God, decrease their dread, and boost their avoidance of dying. A positive relationship between the patient and God is fostered by this notion of creator and creation. Focusing attention on kindness and forgiveness, as well as efforts to do good deeds in this universe and the reality of human survival in other universes will reduce death anxiety. This is a transformation from potential perfection to active perfection.

Spiritual well-being in advanced cancer patients was classified by Rose et al. [38] as high-stable, moderately improving, and low-worsening. The high-stable group, who were older and had more formal education, had the least need for extra coping assistance at the start of the treatment period or over time. However, to help with coping and adaptability over time, the low-worsening group needs continuous access and follow-up care. The moderate-improving group compared with the younger and less educated high-stable group initially showed an increase in distress and then decreased to previous levels. Canada et al. [39], referring to the classification from Rose et al. [38], classify spiritual well-being into low-stable, declining, moderate-stable, and high-stable. Highlighted the three domains of spiritual well-being (meaning, peace, and faith). Women with cancer who reported greater optimism and substantial social support were more likely to be in the declining group in the meaning domain, whereas those who had more symptoms at baseline were less likely to be in the declining group [39]. These traits were associated with a higher likelihood of belonging to the high-stable group (as opposed to the moderate-stable group). Older people in the peace domain were more likely to be categorized as high-stable than moderate-stable because they were more hopeful, had more comorbidity at baseline, and had higher levels of social support. Symptoms and mental health issues were more common among participants in the low-stable group. The low-stable group included slightly more women, older adults, and those with high levels of optimism and social support. Women in the declining group were less likely to have had greater symptoms at baseline [39]. Women, the elderly, people with high levels of optimism, and people with social support were more likely to be in the high-stable group than the moderate-stable group in the faith domain. College-educated survivors and those with more advanced cancer were included in the low-stable group. People who have more advanced cancer, more optimism, and more social support are more likely to belong to the falling group. Women who had higher baseline symptoms also related to the declining group [39].

In comparison to control, the spiritual intervention was linked to a notable improvement in quality of life, according to the current meta-analysis (by a mean of 0.69 SD). Spirituality is one aspect or internal resource designed to help individuals cope with life's major stresses, such as breast cancer [40]. The meaning and peace of spiritual well-being positively predicted a higher quality of life. However, faith negatively predicted physical and emotional well-being but positively predicted higher functional well-being [41].

Advanced cancer is associated with the lowest faith and meaning scores, while cancer survivors have the greatest faith scores [42]. Mindfulness and a sense of security were the aspects of spirituality that significantly correlated with the quality of life domains, according to a study conducted in the Philippines to assess the relationship between spirituality and quality of life among patients enrolled in outpatient chemotherapy clinics. These aspects were also found to be positively correlated with social status and emotional well-being [43]. Additionally, this meta-analysis discovered that, in comparison to control, the spiritual intervention did not significantly enhance quality of life (fatigue, nausea and vomiting, and pain and discomfort) (by a mean of 0.14 *SD*). It was anticipated that patients who have pain, nausea, and vomiting clusters as well as psychological symptoms will have worse mean quality of life scores [44]. A lower quality of life is also predicted by the intensity of psychological symptom clusters. The main symptoms of this cluster were anxiety, tension, and sadness, which clustered somewhat with insomnia and concentration [45].

In comparison to control, spiritual intervention was linked to a significant improvement in the quality of life symptoms scale (dyspnea, sleeplessness, appetite loss, constipation, diarrhea, and financial troubles) (by a mean of 5.69 *SD*). The findings of this meta-analysis support earlier research that found spiritual intervention can prevent depression in cancer patients receiving chemotherapy by reducing a number of symptoms, such as dyspnea, insomnia, appetite loss, and financial difficulties. These symptoms showed a substantial correlation with depression, but not with diarrhea, constipation, or nausea and vomiting [46]. Depression, anxiety, and self-care were the three biggest problems that cancer patients had to deal with [47, 48].

There was a non-significant effect of spiritual intervention compared to control for sleep quality, both in PSQI and actigraphy measurement. The spiritual intervention had a positive effect on sleep quality (both PSQI and actigraphy), even though its effect on sleep quality was not statistically significant. Accordingly, compared to controls, the outcomes of two earlier reviews and meta-analyses demonstrated that interventional yoga helped women overcome their sleep issues [49, 50]. Participants who did not have breast cancer or who were not perimenopausal or postmenopausal demonstrated higher benefits [49]. Baseline sleep efficiency and the quality of sleep in women with cancer may be connected. One study proved that women with low baseline sleep efficiency, who participated in a Tibetan yoga program, showed the same sleep quality and depression as controls with high sleep efficiency [51]. The non-significance of spiritual intervention in this study is likely because it was limited to involving one RCT study [21], where the presentation of the analysis was intended to provide a graphical picture [52].

Spiritual intervention had a significant impact on anxiety, distress, and suffering when compared to control. Spiritual intervention was associated with a significant decrease in anxiety, distress, and suffering (by a mean of 0.82 *SD*). Consistent with the findings of this analysis, other studies have demonstrated that spiritual therapies can help cancer patients experience less anxiety and sadness [53, 54]. Spiritual interventions are effective in improving mental health [55], especially can reducing anxiety [56]. Most physical problems in breast cancer patients are related to depression, anxiety, and distress [57]. Anxiety in women with breast cancer is included in the cluster of psychological symptoms along with other symptoms including tension, sadness, concentration, and insomnia [45]. Women experiencing psychosocial symptoms of breast cancer have a lower quality of life [44]. Therefore, spiritual care is needed to prevent emotional and psychological disorders including anxiety, distress, and suffering [58]. How the mechanism of spiritual intervention can lower depression, anxiety, and distress is unclear, but it is likely to be related to an improvement or stabilization of neuroendocrine-immune activity [59].

The idea of spirituality is universal and applicable to everyone; each person's individuality is crucial. Spirituality can exist without official religious affiliation, and one can grow more spiritually conscious when they are in need [60]. According to the science of nursing, spirituality is seen as a way to find meaning, hope, and purpose in a world full of uncertainty. In situations where a person feels vulnerable, such as when facing an illness or crisis, such as a female patient with cancer in this context, as a patient or nurse [61].

There are still relatively few and infrequent spirituality interventions available for female cancer patients or cancer patients in general, as evidenced by the results of this study, which found only one article related to Islamic spirituality interventions, the other is a yoga spirituality intervention from more Hindu religious

traditions. Islamic spirituality interventions are limited in their application because it is likely to be true that religion and spirituality are still often considered as measures of social support, rather than as guidance or intervention in spirituality [62].

The results of this review show that the research duration was carried out between 1 to 4 weeks with a follow-up of 3 to 12 months. Spirituality interventions carried out in a very, very short time can lead to suboptimal and insignificant results. A study by Amini et al. [16] in Iran proved that the spiritual treatment program given over 3 days did not affect moderate anxiety and death in cancer patients in Iran. One study used an existential intervention [63], which is an intervention that can help meet the spiritual needs of patients, proving that the effect size of post-treatment (immediate) does not differ significantly on improved spiritual well-being, depression, and anxiety. Short-term follow-up effect size (3 months) after treatment shows a moderate effect size on self-efficacy ($g = 0,72$) and a small effect size on spiritual well-being ($g = 0,04$), depression ($g = 0,06$), anxiety ($g = -0,05$), existential well-being ($g = 0,27$), quality of life ($g = 0,18$), hope ($g = 0,39$), pain ($g = 0,29$), physical well-being ($g = -0,02$), and the desire to die quickly ($g = -0,05$). Follow-up of 6 months or more (medium term) suggests the intervention can increase hope with moderate effects ($g = 0,25$). Meanwhile, long-term follow-ups show a small and insignificant effect size. So it can be concluded that the follow-up effect on spiritual actions should be carried out up to an intermediate period of time (6 months or more).

Strengths and limitations

One key strength of this study is its comprehensive and rigorous approach to the literature search and synthesis of the randomized controlled studies. We conducted a thorough search of multiple databases to identify relevant studies, and we used established systematic review and meta-analysis methods to synthesize the evidence. Another strength is the focus on a specific patient population, women with cancer, which allows for a more targeted examination of the effects of spirituality interventions in this group.

However, the study has some potential limitations. First, the included studies have varied considerably in intervention approaches, populations, and outcome measures, as reflected in the greater heterogeneity, which could make it challenging to draw definitive conclusions. Second, this study has a risk of having language bias, where English-language research articles were more likely to be searched, which could bring it into an oversampling of statistically significant studies; availability bias because the authors only select easily accessible research articles sourced from available databases including Elicit, Europe PMC, PubMed, Sage Knowledge, and Wiley. This has the potential to not find articles that meet the requirements for research inclusion in other important databases. The results may also have limited generalizability because the trial was limited to women with cancer. Examining how spirituality interventions affect a wider spectrum of cancer patients in various cultural and medical contexts might be beneficial.

Conclusions

Spiritual intervention is essential in improving spiritual well-being, quality of life, sleep quality, and anxiety, distress, and suffering. Despite high heterogeneity, the results showed a spiritual intervention effect on improving spiritual well-being was high, an effect on improvement in anxiety, distress, and suffering was high, an effect on improving the quality of life functional scale between moderate and high, and showed a low effect on improving the quality of life symptoms scales. The results of this study showed that the effect of spiritual intervention on sleep quality is not significant, but further proof is needed in future studies. The study's findings made clear how urgent it is for nurses to conduct continual spiritual interventions to enhance spiritual well-being and quality of life and to shield cancer patients from anxiety, distress, and suffering. The recommended duration of the spirituality intervention is at least six months or more to obtain a significant outcome effect in female patients with cancer.

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Declaration Of Interest

The author declares there is no conflict of interest.

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