

The Effectiveness of Spiritual Interventions in Improving the Mental Health of Patients Receiving Hemodialysis Treatment in Nursing Care: A Meta-Analysis Study

Hemşirelik Bakımında Hemodiyaliz Tedavisi Alan Hastaların Ruh Sağlığını Geliştirmede Manevi Müdahalelerin Etkinliği: Bir Meta Analiz Çalışması

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ABSTRACT

Objective: The aim of this study is to investigate the relationship between spiritual well-being and anxiety and depression in patients receiving hemodialysis treatment through meta-analysis method.

Methods: Pubmed, the Cochrane Central Register of Controlled Trials (CENTRAL), Web of Science, EBSCOhost, and ProQuest databases were used to gather the data. All databases were reviewed for the last time on April 5, 2022, and a total of 5 studies were included in this meta-analysis. Effect size was evaluated according to Cohen's r correlation coefficient effect width classification. I2 tests were calculated to test heterogeneity.

Results: It was found that the effect of spirituality on reducing depression was negative and at a large effect level. Moreover, it was investigated that the effect of spiritual well-being on reducing anxiety was negative and moderate. Since $I^2 > 50$ in both analyses, random effects model was used for carrying out the process of analysis.

Conclusion: It was found that spiritual well-being had a great effect on depression and moderate effect on anxiety in patients receiving hemodialysis treatment. High levels of spiritual well-being can reduce the incidence of anxiety and depression in hemodialysis patients. In addition, it can be indicated that spiritual care offered to patients receiving hemodialysis treatment would reduce the level of anxiety and depression.

Keywords: Anxiety; Depression; Meta-analysis; Nursing; Spirituality

Öz

Amaç: Bu çalışmada hemodiyaliz tedavisi alan hastalarda ruhsal iyi oluş ile anksiyete ve depresyon arasındaki ilişkiyi meta-analiz yöntemiyle araştırma amacıyla yapılmıştır.

Yöntemler: Verilerin toplanmasında Pubmed, Cochrane Central Register of Controlled Trials (CENTRAL), Web of Science, EBSCOhost ve ProQuest veritabanları kullanıldı. 5 Nisan 2022'de tüm veritabanları son kez incelendi ve toplam 5 çalışma bu meta analize dahil edildi. Etki büyüklüğü Cohen'in r korelasyon katsayısı etki genişliği sınıflandırmasına göre değerlendirilmiştir. Heterojenliği test etmek için I^2 testleri hesaplandı.

Bulgular: Bu çalışmada ruhsal iyi oluşun depresyonu azaltmadaki etkisinin negatif ve geniş etki düzeyinde olduğu bulunmuştur. Ayrıca manevi iyi oluşun kaygıyı azaltma üzerindeki etkisinin negatif ve orta düzeyde olduğu araştırılmıştır. Her iki analizde de $I^2 > 50$ olduğundan analiz sürecinin yürütülmesinde rastgele etkiler modeli kullanılmıştır.

Sonuç: Bu meta-analizde, hemodiyaliz tedavisi alan hastalarda ruhsal iyi oluşun depresyon üzerinde büyük, anksiyete üzerinde ise orta düzeyde etkisinin olduğu bulunmuştur. Yüksek düzeyde manevi iyilik, hemodiyaliz hastalarında anksiyete ve depresyon görülme sıklığını azaltabilir. Ayrıca hemodiyaliz tedavisi gören hastalara verilecek manevi bakımın anksiyete ve depresyon düzeylerini azaltacağı söylenebilir.

Anahtar Kelimeler: Kaygı; Depresyon; Meta-analiz; Hemşirelik; Maneviyat

INTRODUCTION

Chronic kidney disease (CKD) affects numerous systems and it is a chronic condition. 10-15% of adults have CKD around the world.¹ Medical institutions globally report 242 cases of CKD for every one million people. This statistics increase approximately %8 every year.² Moreover, approximately 26.3 million people worldwide experience chronic renal failure.³ Hemodialysis (HD) patients' reliance on a dialysis machine, medical staff, and family for an average of four hours a day and three days a week has an impact on their personal lives.^{4,5} Patients receiving HD treatment may exhibit psychological issues such worry, fear of dying, anxiety, wrath, hopelessness, brought on by machine alarms.⁶ Some studies reported that people receiving HD therapy experience anxiety at a rate that ranges from 3 to 46%.⁷⁻⁹ The most crucial elements in the development of depression are the patients' fears of the loss of their health, their autonomy, their physical strength and their ability to work.¹⁰

After the acute phase, depression is the most prevalent psychiatric condition in people getting therapy for HD.^{11,12} Researchers reported that persons with HD who are undergoing therapy for depression have depression rates that range from 25 to 60%.^{7,8,10,13} In patients getting HD treatment, high spiritual well-being is linked to lower levels of stress, anxiety, and depression.¹⁴

Health and mental well-being have a lot to do with spiritual well-being. It was stressed that spirituality is one of the fundamental characteristics that define humans.¹⁵ The need of highlighting patients' spiritual needs was underlined in some studies.¹⁶ It has been stressed in various research that spiritual well-being is crucial for enhancing mental health and is useful in lowering anxiety and sadness.¹⁷⁻¹⁹ Studies have shown that spiritual well-being lowers the amount of fear and anxiety associated with chronic conditions, is crucial in the battle against the condition, aids in patient adaptation, improvement and development of mental health and quality of life.²⁰⁻²³

Spirituality makes it easier to deal with existential symptoms like meaninglessness in life and mental illnesses like anxiety and depression. Additionally, one of the most effective strategies for navigating significant life changes and creating a coping strategy for traumatic situations is spiritual well-being.^{24,25} It is indicated that employing spiritual coping mechanisms that can deepen spirituality helps people's symptoms of depression.²⁶ Research has shown that spiritual therapy is an effective intervention for improving mental health and self-efficacy in hemodialysis patients.²⁷

Studies investigating the impact of spirituality in anxiety and depression in patients undergoing HD treatment have found that spiritual therapies lower patients' levels of anxiety and sadness.²⁸⁻³⁰ Spiritual care is valued as a life-enriching component that helps patients cope with hardships more effectively.³¹

AIM

The review found no meta-analysis studies in the literature examining the relationship between spiritual well-being and anxiety and depression in HD patients. The aim of this study is to investigate the relationship between spiritual well-being and anxiety and depression in patients receiving HD treatment using meta-analysis method.

METHODS

Study Design

This is a meta-analysis study. This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis 2020 (PRISMA) guidelines and no protocol was registered for the study.³²

Inclusion and Exclusion Criteria

Inclusion criteria: (a) patients receiving hemodialysis treatment, (b) studies on the relationship between spiritual well-being and anxiety or depression, and (c) studies published in English.

Exclusion criteria: (a) studies on different subjects, (b) case reports, letters, reviews, and (c) studies with missing data for analysis.

Search Strategy

Data were collected using the databases PubMed, The Cochrane Central Register of Controlled Trials (CENTRAL), Web of Science, EBSCOhost, and ProQuest. In addition to these databases, a thesis from the Turkish National Thesis Center was added in the meta-analysis. The review's findings were presented using the PRISMA Flowchart (Figure 1). EndNote X7 was used for the duplication procedure.

A preliminary study was conducted in March 2022. Following the confirmation that the study met the criteria for a meta-analysis, databases were immediately initiated. The search process across all databases was finalized on April 5, 2022. The databases were conducted via the Muş Alparslan University data network.

Boolean Operators were used as well as MeSH (Medical Subjects Headings) content while creating search words. The review was done in English. All databases were reviewed as "(spiritual* OR spirituality OR spiritualities OR spiritual therapies) AND (renal dialysis OR hemodialysis)

AND (anxiety OR depressive disorder OR depression)". There was no chronological restriction in the review; all research prior to the date of the final review were included. The final scan of all databases was performed on April 5, 2022.

Data Extraction

Data extraction was completed independently by the four reviewers (DM, TÖ, OA, EM) and the reviews were then compared. Conflicts encountered were resolved through discussion. Data extraction included the following variables: the surname of the first author, the year of publication, country, scales used, mean age, sample size, *r* values, and quality assessment.

Quality Assessment

All included articles/dissertations were assessed for methodological quality using the published 'Quality Assessment and Validity Tool for Correlation Studies', adapted from previous systematic reviews.³³⁻³⁶

This evaluation device consists of 13 questions for chording and assessing the project, sample, dimension and statistical dissection of each study (Table 1). tallying to this device, the grand grudges of the publications were distributed as low (0 - 4), medium (5 - 9) or high (10 - 14). Two coders familiar with the work - blood discordance and development literature - coded the queries using an Excel distance. The rendering details of all inquiries comprehended in this meta-analysis are offered in Table 1. Four independent reviewers carried out the evaluation (DM, TÖ, OA, EM). Conflicts that arose were resolved by deliberation.

Data Analysis

Effect size is categorized in many ways by different researchers, but Cohen's is the most important.³⁷ According to Cohen's effect width classification, the correlation coefficient *r* is 0.1: small effect, 0.25: medium effect, 0.4: large effect.³⁸ The effect size was calculated accordingly in the present study. Heterogeneity was determined to be significant at $I^2 > 50\%$ or $p < 0.1$. The following is a guide to interpret I^2 of heterogeneity: 0%-40%: might not be important; 30%-60%: moderate; 50%-90%: substantial; 75%-100%: considerable.³⁹ Since $I^2 > 50\%$ was found in the analysis, the random effect model was employed.

Kepes et al.⁴⁰ They published a user guide for assessing publication bias in 2022. According to this guideline, it is recommended to use three or more methods with different statistical assumptions and to use visual graphics to reliably

assess publication bias. Five different methods were employed to evaluate publication bias in the present study: "Funnel plot", "Classic Fail-safe N", "Begg and Mazumdar", "Egger" and "Duval and Tweedie's trim and fill". The Comprehensive Meta-Analysis V2 (CMA) program was used in the meta-analysis. Because the number of studies was small, moderator analysis was not performed.

Ethical Considerations

Since there is no need to obtain an ethics committee report in studies conducted as meta-analysis, an ethics committee report was not obtained for this study.

RESULTS

There were 5 study and 811 people included in the study as a result of reievew.⁴¹⁻⁴⁵ Detailed review results are shown in the PRISMA 2020 flowchart (Figure 1). One study (30) had missing data, this study were not included in the analysis.

Characteristics of the Study

Of the five included studies, three were conducted in Jordan, one in Iran and one in Türkiye. Four of the five studies examined the relationship between spirituality and anxiety and depression, while one study only examined the relationship between spirituality and depression.

The included studies used the Spiritual Well-Being Scale (SWBS), the Functional Assessment for Chronic Illness Therapy- Spiritual well-being (FACIT-SP-12), the Depression, Anxiety and Stress Scales 21 (DASS-21), the Patient Health Questionnaire (PHQ9), the Depression was assessed using the Patients Reported Outcomes Measurement Information System (PROMIS), the Beck Anxiety Inventory (BAI), the Beck Depression Inventory (BDI), and the Generalized Anxiety Disorder Scale (GAD-7). Detailed information about the studies is presented in Table 2.

The results show that the effect of spiritual well-being on reducing depression is statistically significant. The estimated effect size was calculated as -0.46, revealing that spiritual well-being greatly influences depression. Random effect model was used because $I^2 > 50$ was found in the analysis (Table 3).

In case of any publication bias, the funnel plot is expected to be significantly asymmetrical.³⁵ According to Funnel plot (Figure 2) and Egger test result (0.086, $P > .05$), there is no publication bias. Based on Duval and Tweedie's trim and fill test, observed and adjusted values are the same. Both tests report that there is no publication bias.

Table 1. Quality Assessment Scores

Criteria	Alradaydeh et al. ⁴¹	Alshraifeen et al. ⁴³	Durmus ⁴⁴	Musa et al. ⁴²	Senmar et al. ⁴⁵
DESIGN					
1 Was the study prospective?	0	0	1	0	0
SAMPLE					
2 Was probability sampling used?	0	0	1	1	1
3 Was sample size justified?	1	1	1	1	1
4 Was the sample drawn from more than one site?	1	1	0	1	0
5 Was anonymity ensured?	0	1	0	0	0
6 Was the response rate more than 60%?	0	1	1	1	0
MEASUREMENT					
Independent variable (Spiritual Well-Being)					
7 Was the outcome measured reliably?	1	1	1	1	1
8 Was the outcome measured using a valid instrument?	1	1	1	1	1
Dependent variable (Depression and Anxiety)					
9 Was the dependent variable measured using a valid instrument?	1	1	1	1	1
10 If a scale was used for measuring the dependent variable, was the internal consistency $\geq .70$?	2	2	2	2	0
11 Was a theoretical framework used for guidance?	1	1	1	1	1
STATISTICAL ANALYSIS					
12 If multiple outcomes were studied, were the correlations analyzed?	1	1	1	1	1
13 Were outliers managed?	0	1	0	0	0
TOTAL	9	11	11	11	7
Overall Study Validity Rating (circle one) (0–4 = LO; 5–9 = MED; 10–14 = HI)	2	3	3	3	2

LO, Low; MED, Medium; HI, High

Table 2. Characteristics of Included Studies

Author, year	Sample size	Mean Age	Scales used	Country	r (depression)	r (anxiety)	Quality rating	Type of study	Main outcomes
Alshraifeen et al. ⁴³	202	47.7±15.1	SWBS, PHQ9, GAD-7	Jordan	.028	.018	High	A cross-sectional (descriptive and correlational)	Depression and anxiety were found to be common among participants. Spirituality was found to be moderately significant for patients, while there was no significant relationship with depression and anxiety.
Alradaydeh et al. ⁴¹	158	50.7±13.9	FACIT-SP-12, PROMIS	Jordan	-.64	-	Medium	A cross-sectional (descriptive and correlational)	A significant negative correlation was discovered between spiritual well-being and depression. It is recommended to implement interventions aimed at increasing the level of spiritual well-being to reduce patients' depression.
Durmus ⁴⁴	83	48.1±14.9	FACIT-SP-12, BAI, BDI	Türkiye	-.79	-.57	High	A cross-sectional (descriptive and correlational)	A significant negative relationship was found between spiritual well-being levels and anxiety and depression. The results indicate that as individuals' spirituality increases, their levels of anxiety and depression decrease.
Musa et al. ⁴²	218	-	SWBS, DASS-21	Jordan	-0.39	-0.26	High	A cross-sectional (descriptive and correlational)	A significant correlation exists between levels of spiritual well-being and anxiety and depression. These patients utilize spiritual beliefs and practices as coping mechanisms to conquer depression and anxiety.
Senmar et al. ⁴⁵	150	44.6±18.1	SWBS, DASS-21	Iranian	-0.28	-0.24	Medium	A cross-sectional (descriptive and correlational)	A significant relationship exists between levels of spiritual well-being and anxiety and depression. Patients with higher levels of spiritual well-being exhibit fewer psychological symptoms.

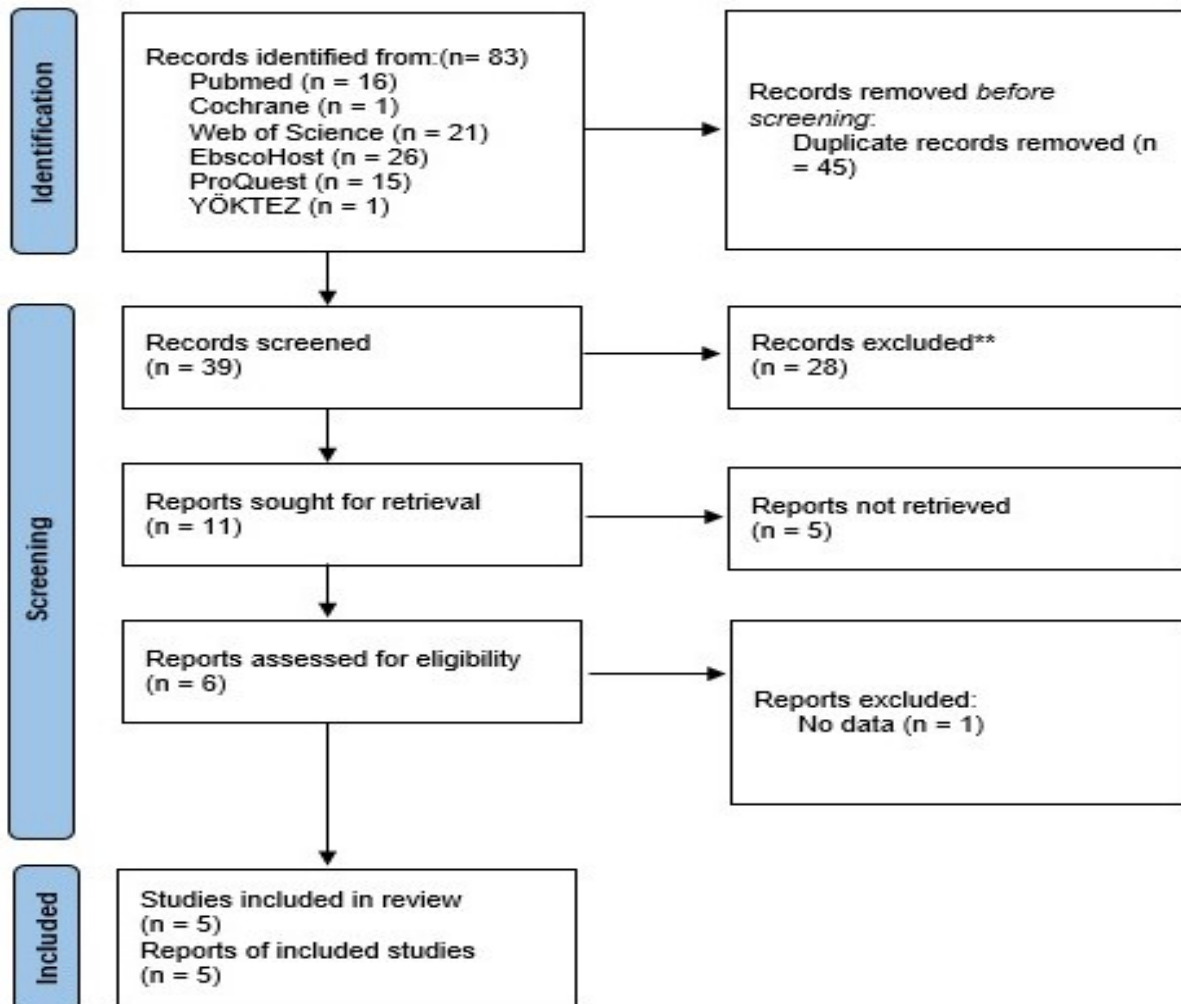
SWBS, Spiritual Well-Being Scale; PHQ9, Patient Health Questionnaire; GAD-7, Generalized Anxiety Disorder Scale; FACIT-SP-12, Functional Assessment for Chronic Illness Therapy- Spiritual well-being; PROMIS, Patients Reported Outcomes Measurement Information System; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; DASS-21, Depression, Anxiety and Stress Scales 21

Table 3. Results of Spiritual Well-being-depression Forest Plot

Study	N	r	95%CI		Weight
			LL	UL	
Alradaydeh et al. ⁴¹	158	-0.64	-0.72	-0.53	20.08
Alshraifeen et al. ⁴³	202	0.02	-0.11	0.16	20.27
Durmus ⁴⁴	83	-0.79	-0.86	-0.69	19.31
Musa et al. ⁴²	218	-0.39	-0.49	-0.27	20.32
Senmar et al. ⁴⁵	150	-0.28	-0.42	-0.12	20.03
Random effect	811	-0.46*	-0.68	-0.15	100
Heterogeneity: Q: 95.261 P< .001 I ² : 95,801					
CI, confidence interval; LL, lower limit; UL, upper limit					

The results show that the effect of spiritual well-being on reducing anxiety is statistically significant. The estimated effect size was calculated as -0.27, which reveals that

spiritual well-being moderately affects reducing anxiety levels.³⁸ Random effect model was used because $I^2 > 50$ was found in the analysis (Table 4.).

**Figure 1.** PRISMA Flowchart

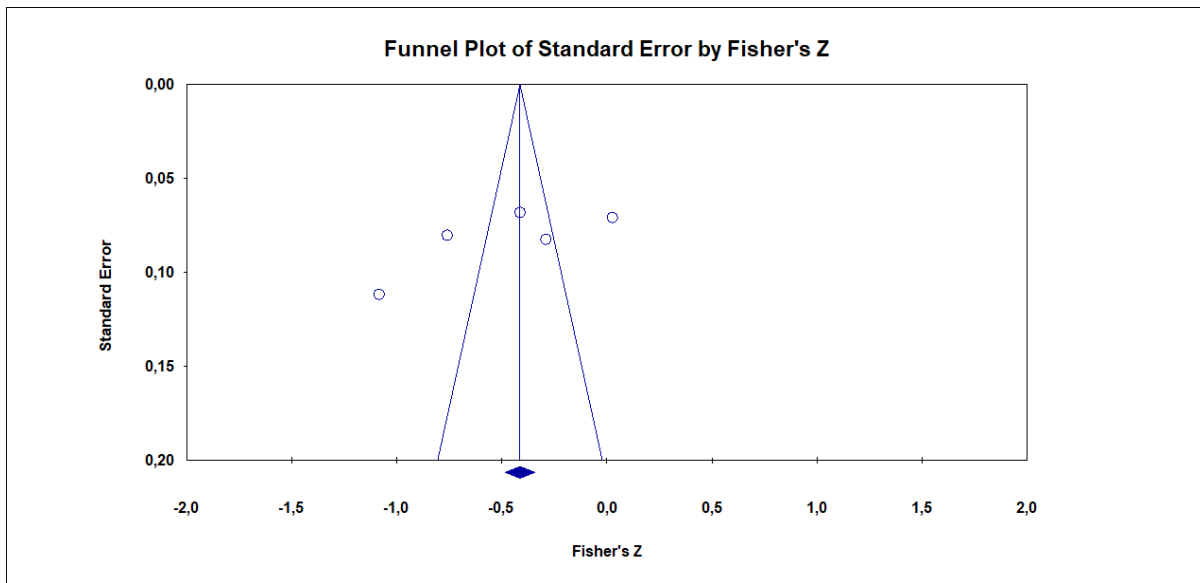


Figure 2. Funnel Plot of the Sample (spiritual well-being-depression)

Table 4. Results of Spiritual Well-Being- Anxiety Forest Plot

Study	N	r	95%CI		Weight
			LL	UL	
Alshraifeen et al. ⁴³	202	0.01	-0.12	0.15	25.91
Durmus ⁴⁴	83	-0.57	-0.70	-0.40	22.89
Musa et al. ⁴²	218	-0.26	-0.38	-0.13	26.08
Senmar et al. ⁴⁵	150	-0.24	-0.38	-0.08	25.12
Random	653	-0.27*	-0.47	-0.03	100
Heterogeneity: Q: 26.283 P< .001 I ² : 88.836					

CI, confidence interval; LL, lower limit; UL, upper limit; *P<.05

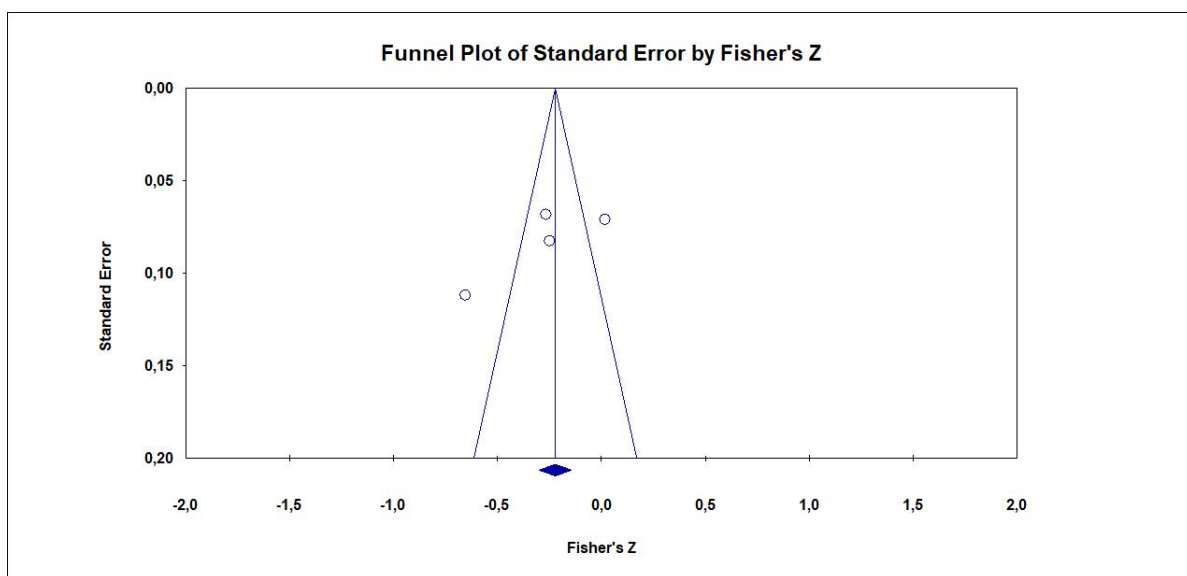


Figure-3. Funnel Plot of the Sample (spiritual well-being- anxiety)

Table 5. Result of Trim-and-fill Test for the Random Method

	Studies trimmed	Point estimate	Confidence Interval (CI)		Q value
			Lower limit	Upper limit	
Observed values		-0.27	-0.47	-0.03	26.28
Adjusted values	1	-0.36	-0.58	-0.08	71.96

According to Funnel plot (Figure 3) and Egger test result (0.109, $P > .05$), there is no publication bias. According to Duval and Tweedie's trim and fill test, it is suggested to add a study to the left side of the effect size (Table 5). Even if the suggested correction is made, the result obtained is within the same effect level.

DISCUSSION

The relationship between spiritual well-being and anxiety and depression levels in patients receiving hemodialysis treatment was evaluated through a meta-analysis method in the present study. Interesting results were obtained after the analysis process. Spiritual care programs can significantly reduce anxiety in patients with chronic illnesses. Thus, while the frequency of cerebral problems in patients with chronic conditions draws attention, the positive goods of spiritual care on quality of life and the positive goods of conditions on the treatment and mending process are vastly significant.^{46,47}

The present meta-analysis study revealed that the effect of spiritual well-being on reducing depression is statistically significant. It was indicated that spiritual well-being affects depression negatively at a large level. This result is thought to be considerable for hemodialysis patients who are greatly affected by mental problems.

Spiritual practices are recognized as one of the most important ways to adapt to difficult or stressful circumstances.⁴⁵ In recent years, many observational studies suggest that spiritual well-being is an important element in coping with a chronic or fatal illness.⁴⁸ Spirituality may be a protective factor for HD patients' mental health. Studies show that patients receiving HD treatment use spiritual well-being as a stress management strategy to cope with emotional needs and various limitations caused by end-stage renal disease.⁴⁹

Similar results were reported by different researchers. It was reported that there is a strong link between depression prevalence and spiritual wellbeing.⁴¹ It was indicated that there was a negative and low-significant relationship between depression and spiritual well-being. In other studies, it was investigated that higher levels of spiritual

well-being were associated with lower levels of depression.^{48,50,51}

Alshraifeen et al.⁴³ found that depression and anxiety were common among patients receiving hemodialysis treatment.⁴³ Spirituality was moderately important for patients in this study, but it was reported not to be significantly associated with depression and anxiety.⁴³ In the study conducted by Loureiro et al.³⁰, it was stated that spiritual well-being had positive effects on the mental health of patients receiving hemodialysis treatment and spirituality had a significant role in reducing the depression levels of patients receiving hemodialysis treatment.³⁰

It was found in the present meta-analysis study that the effect of spiritual well-being on reducing anxiety was statistically significant. Moreover, spiritual well-being had a medium effect size and negative effect on anxiety. Senmar et al.⁴⁵ emphasized that there was a low significant relationship between spiritual well-being and anxiety.⁴⁵ Alshraifeen et al.⁴³ stated that there is a negative relationship between anxiety and spiritual well-being.⁴³

Huang et al.⁵² emphasized that the prevalence of anxiety disorders and increased anxiety symptoms in patients receiving hemodialysis treatment were high, with 19% and 43%, respectively.⁵² In another study, it was stated that the prevalence of increased anxiety symptoms in hemodialysis and peritoneal dialysis patients is two times higher than in healthy patients.⁵³ Like these results, Zhang et al.⁵⁴ emphasized that increased anxiety symptoms affect 43% of hemodialysis patients.⁵⁴ It was stated in different studies that patients receiving hemodialysis treatment generally use spirituality as a way of coping with the disease. Spiritual therapy has been shown to reduce depression, anxiety and stress among haemodialysis patients.^{42, 49,55} The meta-analysis results obtained in the present study also support the existing studies in the literature. It has been determined that hemodialysis patients experience many mental problems such as anxiety and depression, and spiritual well-being has considerable effects on the anxiety and depression levels of the patients. For this reason, it can be indicated that it is necessary to include more spiritual care in the care of hemodialysis patients. Considering the

low cost of the spiritual care to be applied to the patients and its positive effects on the psychological dimensions of the patients, it turns out to be a considerably significant issue.

Limitations of Study

This meta-analysis has some limitations. First, only published quantitative studies were included in the meta-analysis. Second, we may have missed other relevant studies, even though we collected data from five different databases. Third, heterogeneity was high in the analysis. Although we wanted to perform a moderator analysis to find the cause of the heterogeneity, it was not possible due to the small number of studies included. Fourth, the literature review was done in English. However, the limitations mentioned above do not affect the significance of the present study because it may be the first meta-analysis on this subject, and the included studies were published in respected journals. Moreover, the results of the study are thought to contain significant data regarding the quality of care offered to hemodialysis patients.

In conclusion, it was found in this meta-analysis study that spiritual well-being had a great effect on depression and moderate effect on anxiety in patients receiving hemodialysis treatment. The high level of spiritual well-being of the patients who receive haemodialysis treatment may reduce the incidence of anxiety and depression in patients. In addition, it can be said that spiritual care for patients with high levels of anxiety and depression would reduce the level of anxiety and depression. These results suggest that spiritual care is an effective non-pharmacological method for overcoming anxiety and depression in patients with chronic renal failure receiving hemodialysis treatment. In the present meta-analysis study, it is thought that spiritual care, which is included in psychosocial interventions, is a promising intervention for reducing anxiety and depression and improving quality of life in haemodialysis patients. It is recommended to consider the spiritual dimensions of patients receiving hemodialysis treatment in the treatment of anxiety or depression. This study will make significant contributions to the literature in terms of guiding future studies.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Fikir- MD, OT; Tasarım- MD, OT; Denetleme- AO, ME; Kaynaklar- MD, OT; Veri Toplanması ve/veya İşlemesi- MD, OT; Analiz ve/veya Yorum- MD, OT, AO, ME; Literatür Taraması- MD, OT; Yazıyı Yazan- MD, OT; Eleştirel İnceleme- MD, OT, AO, ME.

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