

Review

The effectiveness of spiritual intelligence educational interventions for nurses and nursing students: A systematic review and meta-analysis

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ABSTRACT

Aim: To synthesize the best available research evidence regarding the effectiveness of spiritual intelligence educational interventions on spiritual intelligence and professional outcomes in nurses and nursing students.

Background: Spiritual intelligence is a form of intelligence with which individuals can deal with a crisis, alter situations, solve problems and achieve goals through a set of capacities and abilities. Possessing spiritual intelligence contributes to professional practice and competence in the workplace and has been seen to be beneficial for nurses and nursing students. Nursing interventions to teach and increase understanding of spiritual intelligence have been explored in the literature, but the effectiveness of spiritual intelligence training for nurses and nursing students remains uncertain.

Design: A systematic review and meta-analysis.

Data sources: A three-step systematized search of sixteen electronic English and Persian databases was conducted to identify randomized and non-randomized trials published in English and Persian from January 2000 to November 2021.

Methods: The methodological quality of eligible studies was undertaken by two independent reviewers using the Medical Education Research Study Quality Instrument. Meta-analyses were undertaken where appropriate using STATA v16.

Results: Seven studies involving 512 participants were included. Pooled results demonstrated that those who received the educational intervention had significantly higher spiritual intelligence scores at 2 weeks (MD 13.38, 95 % CI: 5.76, 20.99) and one month follow up (MD 20.03, 95 % CI: 6.61, 33.45) compared with those who did not. No difference in spiritual intelligence scores was observed among those who received spiritual intelligence education or life skills training (MD 7.52, 95 % CI: -1.78, 16.82). Significantly higher communication skills (MD 5.41, 95 % CI: 2.16, 8.66), job satisfaction (MD; 11.30, 95 % CI: 8.63, 13.97) and spiritual care competence (MD; 28.55, 95 % CI: 26.08, 31.02) and decrease in overall stress (MD; 10.30, 95 % CI: 6.84, 13.76) among those who received the educational interventions were reported at the one-month follow-up. Significantly higher job satisfaction levels were also reported at 2-month follow-up among those who received the educational interventions (MD; 16, 95 % CI: 11.06, 20.94).

Conclusions: The evidence from this review demonstrates that spiritual intelligence educational interventions have a positive effect on spiritual intelligence and professional outcomes in nurses and nursing students. We noted that the outcomes in the studies included were mostly measured at one-month follow-up and with subjective measures. Longer trials with objective measures are required to provide higher levels of evidence. The results of this review are largely based on single trials and were limited in terms of the number of outcomes.

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Conducting further trials is warranted to identify the influence of such education on various professional outcomes in nursing practice.

Tweetable Abstract: Systematic review and meta-analysis shows spiritual intelligence educational interventions have a positive effect on nurses' and nursing students' spiritual intelligence, work-related stress and professional practice.

1. Introduction

The evolving world of health care and delivery requires nursing students and nurses to be constantly trained and educated. Developments in technology, global connectedness and life expectancy mean nursing students and nurses need to foster internal strength and passion within, often, a fast-paced environment (Riahi et al., 2018). Having the skills to bounce back, maintain self-reflection and personal values to be more self-aware and conscious are the fundamental elements of Spiritual Intelligence (SI) (Hacker and Washington, 2017). A term first coined by Zohar in 1997, Spiritual Intelligence has been defined as a form of intelligence with which individuals can solve problems and achieve goals through a set of capacities and abilities (Skrzypińska, 2021; Srivastava, 2016). Spiritual intelligence does not refer to religious or spiritual practice, however, signifies spiritual aptitude (Srivastava, 2016). As one of the early contributors to the concept of spiritual intelligence, Vaughan (2002) suggests that spiritual intelligence is the deep understanding and awareness of life, mind, body and soul, with the capacity to see things from more than one perspective. Psychologist, Sisk (2002) also contributed to the early work on spiritual intelligence believing that there are six core components to spiritual intelligence. The spiritual intelligence components that Sisk refers to are: core capacities – skills of intuition and visualization; core values – connectedness and a sense of balance; core experiences – awareness of ultimate values; key virtues – justice, caring and compassion; symbolic system – music, metaphors and dance; and lastly, brain states – rapture (Sisk, 2002). Referring to spiritual intelligence as the tenth type of intelligence, Sisk and Torrance (2001) believe that spiritual intelligence enables inner knowing and access to higher consciousness, connecting with problem solutions with deep intuition and a sense of empowerment. Similarly, spiritual intelligence is described as the ability to be self-aware, provide meaning to life and express values, spiritual intelligence enables an individual to deal with a crisis, alter situations and from which individuals can care (Skrzypińska, 2021). Furthermore, Emmons (2000) proposes that spiritual intelligence contains five elements, that is, an ability: to use spiritual means to resolve problems; to possess alertness to greater levels of consciousness; to sanctify daily experience; to surpass the physical and material; and the capacity to be righteous.

In workplaces and particularly for nurses and nursing students, having spiritual intelligence contributes to professional practice and competence through increasing optimal performance, integrity and flexibility in dealing with crises (Oyewunmi et al., 2021). These attributes are especially important in the health care environment where nurses and nursing students must adapt to ever-changing and complex clinical environments (Khodabakhshi et al., 2019; Pinto and Pinto, 2020). Nursing involves more than physical health care and incorporates a holistic approach including mental, emotional, spiritual, physical and social care of patients (Thornton, 2019). Possessing spiritual intelligence and learning to be spiritually intelligent has been seen to be beneficial in nursing, as the features such as calmness in any circumstance, ability to control one's emotions, having inner wisdom and job satisfaction lead to enhanced caring behaviors and quality patient care (Dewi, 2020; Riahi et al., 2018). Nurses who possess high spiritual intelligence have been reported to have a positive effect on patients healing and well-being by increasing their satisfaction (Ahmadi et al., 2021). Additionally, nurses with spiritual intelligence can reflect on their nursing practice and hence improve the quality of care (Pinto

and Pinto, 2020).

It has been well established that spiritual intelligence is vital to nurses and nursing students providing holistic and quality patient care, however not all nurses and nursing students have spiritual intelligence (Ahmadi et al., 2021). Nursing interventions and education programs to teach and increase awareness and understanding of spiritual intelligence have been explored in the literature, with varying outcomes. Heydari et al. (2017) assessed spiritual intelligence education on job satisfaction of nurses and found that spiritual intelligence training was effective at increasing job satisfaction. Conversely, a study by Arad et al. (2020) demonstrated no difference in spiritual intelligence between the control and intervention groups, following the intervention group receiving seven sessions of spiritual intelligence training.

A preliminary search in PROSPERO, MEDLINE, Cochrane database of systematic reviews and the JBI Database of Systematic Reviews & Implementation Reports found no existing review on the topic. Therefore, given the existing quantitative literature regarding spiritual intelligence educational interventions among nurses, it is timely that a systematic review is conducted to assess the effectiveness of spiritual intelligence training on nurses' and nursing students' spiritual intelligence and professional outcomes.

1.1. Review question

What is the effectiveness of spiritual intelligence educational interventions on nurses' and nursing students' spiritual intelligence, work-related stress and professional practice?

2. Methods

2.1. Design

A systematic review was undertaken according to preferred reporting items for systematic review protocols (PRISMA) (Page et al., 2021) and the Cochrane handbook for systematic reviews of interventions (Higgins et al., 2019) guidelines. The protocol of this systematic review was registered with PROSPERO (registration number CRD42021261000).

2.2. Search methods

A three-step systematized search strategy was used to identify study articles from 13 English [Embase, CINAHL, Web of Science, Scopus, PubMed, PsycINFO, ProQuest, Cochrane CENTRAL, Register of controlled trials, Cochrane database of systematic reviews, JBI Database of Systematic Reviews, PROSPERO, Education Resources Information Center (ERIC), Google Scholar] and 3 Persian [Magiran, SID, IranDoc] electronic databases. Initially, a preliminary search was conducted in Medline to identify initial subject headings and keywords including 'Nurse*' or 'Nursing student*' (Population); 'Training' or 'Teaching' or 'Education*' and 'Spiritual intelligence' (Intervention); 'Effect*' or 'Impact*' (Outcome) in the titles and abstracts. Then, a comprehensive search with derivations of initial keywords was conducted and adapted to all databases. (Supplementary file, Table1) Lastly, reference lists of included studies were hand-searched for eligible records.

2.3. Study selection

All citations were loaded using Mendeley Desktop software (Version 1.19.8). Duplicate citations were removed, and the titles and abstracts of studies were screened following eligibility by two independent reviewers (AS and HG). The full text of potentially relevant studies was retrieved and assessed by both reviewers. There was not any disagreement between reviewers in this step of review.

2.4. Inclusion and exclusion criteria

This review included published and unpublished randomized and non-randomized controlled trials published in English and Persian between January 2000 and November 2021. This period was chosen due to the introduction of the concept of spiritual intelligence in the academic literature of psychology in 1999 (Emmons, 2000, 1999). The studies with a non-exposed control group or the same group and single group pre-test post-test in experimental and quasi-experimental design were included if they assessed any self-report or objective measured quantitative data on spiritual intelligence interventions outcomes for nurses and nursing students using valid instruments. Observational and qualitative studies, conference abstracts and studies with concepts similar to spiritual intelligence such as spirituality were excluded.

2.5. Data extraction

The study details (design, sample, treatment groups, measurement instrument (s) and results) were extracted from included studies using a standardized data extraction form by the first author and reviewed by the second author (Table 1). Additional information about the included studies was retrieved by contacting the authors.

2.6. Methodological quality assessment

Two reviewers (AS and HG) independently reviewed each study for methodological quality by using the 10- item Medical Education Research Study Quality Instrument (MERSQI) for quantitative studies (Reed et al., 2007). The MERSQI appraises six areas of each study: Design, sampling, data type, the validity of the evaluation instrument, data analysis and outcome measure, giving a potential score from 5 to 18. MERSQI has been previously confirmed as a reliable measurement instrument in medical education research (Cant et al., 2018; Reed et al., 2008, 2007).

2.7. Data analysis

Data from included trials were pooled in a statistical meta-analysis model using Stata/MP 16.0 (Stata Corp, College Station, Texas, USA). For individual trials, the mean and standard deviation (SD) were extracted. The mean difference (MD), along with its 95 % CI were calculated when studies included in the meta-analysis used the same scale to measure outcomes. Data were pooled using the random-effects model. To ensure accuracy in data entry, all pooled statistics were checked by a second author. Statistical heterogeneity was assessed in the meta-analysis using I^2 statistics and heterogeneity was considered substantial if I^2 was $> 50\%$ (Higgins et al., 2003).

3. Results

3.1. Study selection

The search identified 370 potential studies and 262 studies remained after the removal of duplicates. Following a review of the titles and abstracts, 254 records, mostly non-experimental observational studies were excluded, and eight studies were identified for potential inclusion in the review. A review of the reference of these studies identified no

further studies. Of the eight studies, one study was published in both Persian and English, however, the English version had more complete data and was included in the review.

Of the seven studies included in the final review, three were included in the meta-analysis and five studies were narratively synthesized. The PRISMA flow diagram (Page et al., 2021) details the results of the search (Fig. 1).

3.2. Methodological quality

The included studies revealed moderate and high methodological quality with scores ranging from 10 (55.5 %) to 13.5 (75 %) out of a possible 18 points according to the MERSQI. All studies used self-report surveys. The main domains not addressed in most studies were the type of data and outcomes measured. Regarding the type of outcomes measured, all the studies were focused on participants' satisfaction, perception, knowledge and skills. None of the studies focused on participants' behavior or the patient/healthcare outcomes, consequently, studies received low scores related to these two domains (Supplementary file, Table S2).

3.3. Characteristics of included studies

Among the trials included in the review, There were six Randomized Controlled Trials (RCTs) (Arad et al., 2020; Bagherian and Mahmoudi Rad, 2020; Heydari et al., 2017; Hydari et al., 2018; Karimi et al., 2016; Mahmoudirad and Bagherian, 2015) and one Controlled Clinical Trial (CCT) (Riahi et al., 2018). Except for one study with three arms including one intervention and two controls (Karimi et al., 2016), the rest of the studies had two arms. The trials were conducted in Iran and published in English (Bagherian and Mahmoudi Rad, 2020; Heydari et al., 2017; Hydari et al., 2018; Riahi et al., 2018) and Persian (Arad et al., 2020; Karimi et al., 2016; Mahmoudirad and Bagherian, 2015) between 2015 (Mahmoudirad and Bagherian, 2015) and 2020 (Arad et al., 2020; Bagherian and Mahmoudi Rad, 2020). In five studies, the outcomes were assessed immediately after the intervention and in one month of follow up (Bagherian and Mahmoudi Rad, 2020; Heydari et al., 2018; Mahmoudirad and Bagherian, 2015; Riahi et al., 2018), two studies assessed the outcomes relatively in two weeks (Arad et al., 2020; Karimi et al., 2016) and one month of follow up (Arad et al., 2020) and one remaining study assessed outcomes in one and two months (Heydari et al., 2017) (Table 1).

3.3.1. Participant Characteristics

Overall, 594 participants including 536 nurses (6 studies) and 58 nursing students with high anxiety scores (1 study) were involved in the spiritual intelligence educational interventions. The number of participants in the studies ranged from 54 (Heydari et al., 2017) to 94 (Bagherian and Mahmoudi Rad, 2020; Mahmoudirad and Bagherian, 2015). Most participants were female. The nurses in three studies worked in critical care units (Riahi et al., 2018) and psychiatric wards (Heydari et al., 2017; Hydari et al., 2018), while in the remaining four studies worked in various clinical settings. Nursing students with high anxiety scores and from all years of their nursing education were represented (Karimi et al., 2016) (Table 1).

3.3.2. Spiritual intelligence education strategies

All interventions used face-to-face workshop-based methods and focused on spiritual intelligence education. There was substantial variation in the protocol of education and duration of the intervention. Two studies used a protocol based on studies conducted by Zohar & Marshall, Sisk & Torrance and Moeinei (Bagherian and Mahmoudi Rad, 2020; Mahmoudirad and Bagherian, 2015), two used a protocol based on king's studies (Arad et al., 2020; Karimi et al., 2016), two others used a protocol based on the studies conducted by Zohar & Marshall, Sisk & Torrance and Emmons (Heydari et al., 2017; Hydari et al., 2018) and

Table 1

Characteristics of included studies and educational outcomes for spiritual intelligence interventions.

Study/ Country	Design	Sample	Treatment groups	Measurement instrument (s)	Results	Quality score/18
Arad et al. (2020) (Iran) [#]	RCT	70 registered nurses	CG: No training(n = 35) IG: Spiritual intelligence training* and Reminders of contents at intervals using social media. Duration: 7 weeks – weekly 1.5-hour face-to-face sessions (workshop). (n = 35)	SISRI	Spiritual Intelligence Pre-intervention CG: 51.68 (14.43), IG: 57.48 (19.54), P = 0.162 2 week follow up CG: 51.77 (15.50), IG: 61.80 (14.12), P = 0.006 1 month followup CG: 54.28 (17.35), IG: 67.05 (13.33), P = 0.001	13.5
Bagherian and Mahmoudi Rad, (2020) (Iran)	RCT	94 registered nurses	CG: No training(n = 47) IG: Spiritual intelligence training* Duration: 12 × 1.5-hour sessions over 2 months.(n = 47)	Queendom Communication Skills questionnaire	Communication Skills Pre-intervention CG: 115.32 (9.27), IG: 116.83 (8.58), P = 0.41 Post-intervention CG: 114.60 (8.68), IG: 120.11 (6.73), P = 0.001 1 month followup CG: 113.57 (7), IG: 118.98 (8.45), P = 0.001	12.5
Heydari et al. (2017) (Iran)	RCT	54 registered psychiatric nurses	CG: Teaching psychiatric signs and symptoms and common terms. (n = 27) IG: Spiritual intelligence training* and Telephone follow-up Duration: 7 × 1.5-hour sessions over 2 months; follow-up every two weeks for 2 months.(n = 27)	Brayfield and Rothe Job Satisfaction Questionnaire	Job Satisfaction Pre-intervention CG: 64.4 (9), IG: 65.5 (9.9), P = 0.630 1 month followup CG: 58.5 (3.2), IG: 69.8 (6.3), P = 0.030 2 month followup CG: 56.5 (9.6), IG: 72.5 (8.9), P = 0.000	12
Hydari et al. (2018) (Iran)	RCT	60 registered psychiatric nurses	CG: not reported (n = 30) IG: Spiritual intelligence training* Duration: 7 × 1.5-hour sessions over 2 months.(n = 30)	Cohen's perceived stress scale	Perceived stress Pre-intervention CG: 33.4 (4.1), IG: 34.4 (6.7), P = 0.785 Post-intervention CG: 32.8 (9.4), IG: 38.1 (3.4), P = 0.002 1 month followup CG: 31.2 (2.3), IG: 41.5 (9.4), P = 0.000	12
Karimi et al. (2016) (Iran) [#]	RCT	58 undergraduate anxious nursing students	CG1: No training(n = 19) CG2: Life skills training.(n = 19) IG: Spiritual intelligence training* (n = 20) Duration: 10 weeks – weekly 1-hour sessions.	SISRI	Spiritual Intelligence Pre-intervention CG1: 52.31 (11.48), IG: 52.9 (13.93), P = 0.89; CG2: 51.36 (16.02), IG: 52.9 (13.93), P = 0.75. 10 days follow up CG1: 47.31 (13.85), IG: 65.2 (15.18), P = 0.001; CG2: 57.68 (14.40), IG: 65.2 (15.18), P = 0.11.	11.5
Mahmoudirad and Bagherian (2015) (Iran) [#]	RCT	94 registered nurses	CG: No training(n = 47) IG: Spiritual intelligence training ^ Duration: 12 × 1.5-hour sessions (workshop) over 2 months.(n = 47)	Taft & Anderson nursing stress scale (NSS)	Job stress Pre-intervention CG: 43.98 (10.70), IG: 44.91 (11.22), P = 0.68 Post-intervention CG: 45.55 (13.52), IG: 40.43 (9.06), P = 0.03 1 month followup CG: 44.23 (12.60), IG: 44.68 (12.31), P = 0.86	10
Riahi et al. (2018) (Iran)	CCT	82 registered critical care nurses	CG: not reported (n = 30) IG: Emmons Spiritual intelligence training Meditation training after each session. Duration: 8 weeks – weekly 1.5-hour face-to-face sessions (workshop). (n = 40)	SISRI, Nurses Professional Competence scale in Spiritual Care (SANCSC)	Spiritual Intelligence Pre-intervention CG: 51.64 (5.50), IG: 53.37 (5.17), P = 0.14 Post-intervention CG: 52.64 (6.42), IG: 78.50 (4.99), P = 0.00 1 month followup CG: 52.76 (6.43), IG: 79.25 (5.60), P = 0.00 Spiritual care competence Pre-intervention CG: 104.66 (5.69), IG: 106.90 (6.40), P = 0.09	13

(continued on next page)

Table 1 (continued)

Study/ Country	Design	Sample	Treatment groups	Measurement instrument (s)	Results	Quality score/18
					Post-intervention CG: 103.38 (7.54), IG: 132.32 (4.96), $P = 0.00$ 1 month followup CG: 104.45 (6.63), IG: 133.00 (4.54), $P = 0.00$	

Persian; NR = not reported; IG = Intervention Group, CG = controls Group; RCT: Randomized Controlled Trial; CCT: Controlled Clinical Trial. SISRI: Spiritual Intelligence Self-Report Inventory

^ Spiritual intelligence training based on studies conducted by Zohar & Marshal, Sisk & Torrance, and Moeinei.

&Teaching Spiritual intelligence with a protocol based on studies conducted by Zohar & Marshall, Sisk & Torrance, and Emmons.

*Spiritual intelligence training based on King studies.

the remaining one used a protocol based on the components of Emmons, The book of "spiritual intelligence" by Hassan Abdullah Zadeh and studies conducted in the field of spiritual intelligence training (Riahi et al., 2018).

The duration of the interventions ranged from seven (Arad et al., 2020; Heydari et al., 2017; Hydari et al., 2018) to ten weeks (Karimi et al., 2016). All interventions were performed based on 1.5-hour weekly education sessions, except for one study where the education was 1 h per week (Karimi et al., 2016). The study by Arad et al. (2020) provided reminders of contents at intervals between sessions using social media, Heydari et al. (2017) provided telephone follow-up every two weeks to two months after the intervention to reinforce compliance with the educational program, whilst Mahmoudirad and Bagherian (2015) recommended continuing education for one month after the intervention. In addition to spiritual intelligence training interventions, one study presented meditation training content for relaxation after each session (Riahi et al., 2018).

The control group received no intervention, except in two studies in one of which the psychiatric nurses were taught psychiatric signs and symptoms and common terms (Heydari et al., 2017) and in one other nurses were thought Life skills based on ten key skills announced by the World Health Organization, including self-awareness, communication, interpersonal relationships, problem-solving, creative thinking, coping with emotions, coping with stress, empathy, decision-making and critical thinking (Karimi et al., 2016). In two studies the content of the intervention was provided to the control group after the study (Arad et al., 2020; Mahmoudirad and Bagherian, 2015). A detailed description of the intervention was reported in all studies (Table 1).

3.3.3. Types of outcome measure

The outcomes were assessed in the studies using different scales including the Spiritual Intelligence Self-Report Inventory (SISRI) (Arad et al., 2020; Karimi et al., 2016; Riahi et al., 2018), Queendom Communication Skills questionnaire (Bagherian and Mahmoudi Rad, 2020), Brayfield and Rothe Job Satisfaction Questionnaire (Heydari et al., 2017), Cohen's perceived stress scale (Hydari et al., 2018), Taft & Anderson nursing stress scale (NSS) (Mahmoudirad and Bagherian, 2015) and Nurses Professional Competence scale in Spiritual Care (SANCSC) (Riahi et al., 2018) (Table 1).

3.4. Spiritual intelligence

3.4.1. Two weeks or less

Two studies reported on spiritual intelligence scores at 2 weeks follow-up among nurses (Arad et al., 2020) and student nurses (Karimi et al., 2016). Pooled results demonstrated that those who received the spiritual intelligence educational intervention had significantly higher scores in spiritual intelligence scores at 2-week follow-up compared with those who did not (MD 13.38, 95 % CI 5.76, 20.99) (Arad et al., 2020; Karimi et al., 2016) (Fig. 2). One study (Karimi et al., 2016) reported no difference in spiritual intelligence scores among both who received

spiritual intelligence education compared with those who received life skills training (MD 7.52, 95 % CI -1.78, 16.82).

3.4.2. One month

Similarly, at 1-month follow-up, pooled data from two studies (Arad et al., 2020; Riahi et al., 2018) demonstrated that nurses who received the educational intervention had significantly higher scores for spiritual intelligence scores at one-month follow-up compared with those who did not (MD 20.06, 95 % CI 6.65, 33.48) (Fig. 3).

3.5. Other outcomes

One study each assessed communication skills (Bagherian and Mahmoudi Rad, 2020), Job satisfaction (Heydari et al., 2017), overall stress (Hydari et al., 2018), nursing stress (Mahmoudirad and Bagherian, 2015) and Spiritual care competence (Riahi et al., 2018) at one month follow up. The results demonstrated a significant increase in communication skills (MD 5.41, 95 % CI 2.16, 8.66), Job satisfaction (MD 11.30, 95 % CI 8.63, 13.97) and Spiritual care competence (MD 28.55, 95 % CI 26.08, 31.02) and decrease in overall stress (MD 10.30, 95 % CI 6.84, 13.76) among those who received the educational interventions. However, there was no significant difference in nursing stress levels (MD 0.45, 95 % CI -4.59, 5.49) among those who did and did not receive the education interventions.

Significantly higher job satisfaction levels were also reported at 2-month follow-up among those who received the educational interventions compared with those who did not (MD 16, 95 % CI 11.06, 20.94) (Heydari et al., 2017).

4. Discussion

The purpose of this systematic review was to synthesize the best available research evidence regarding the effectiveness of educational interventions on spiritual intelligence and professional outcomes in nurses and nursing students. The findings of the included studies (Arad et al., 2020; Bagherian and Mahmoudi Rad, 2020; Heydari et al., 2017; Hydari et al., 2018; Karimi et al., 2016; Mahmoudirad and Bagherian, 2015; Riahi et al., 2018) indicated that nurses who received the spiritual intelligence educational intervention had significantly higher spiritual intelligence scores, indicating that spiritual intelligence education was effective on the spiritual intelligence.

Although an empirical study to improve the nurses' spiritual intelligence was limited, studies related to spiritual intelligence training and nursing care showed that spiritual intelligence is a key element of nursing care behaviors (Ahmadi et al., 2021; Pinto and Pinto, 2020). Educational interventions about spiritual intelligence have a great positive effect on improving the nurses' satisfaction and happiness (Tam-annaeifar, 2019) which can be due to the fact that religiosity and spirituality influence people's attitudes and behaviors (Zohar and Marshall, 2004). A study by Charkhabi et al. (2014) showed that there is a positive correlation found between spiritual intelligence and work

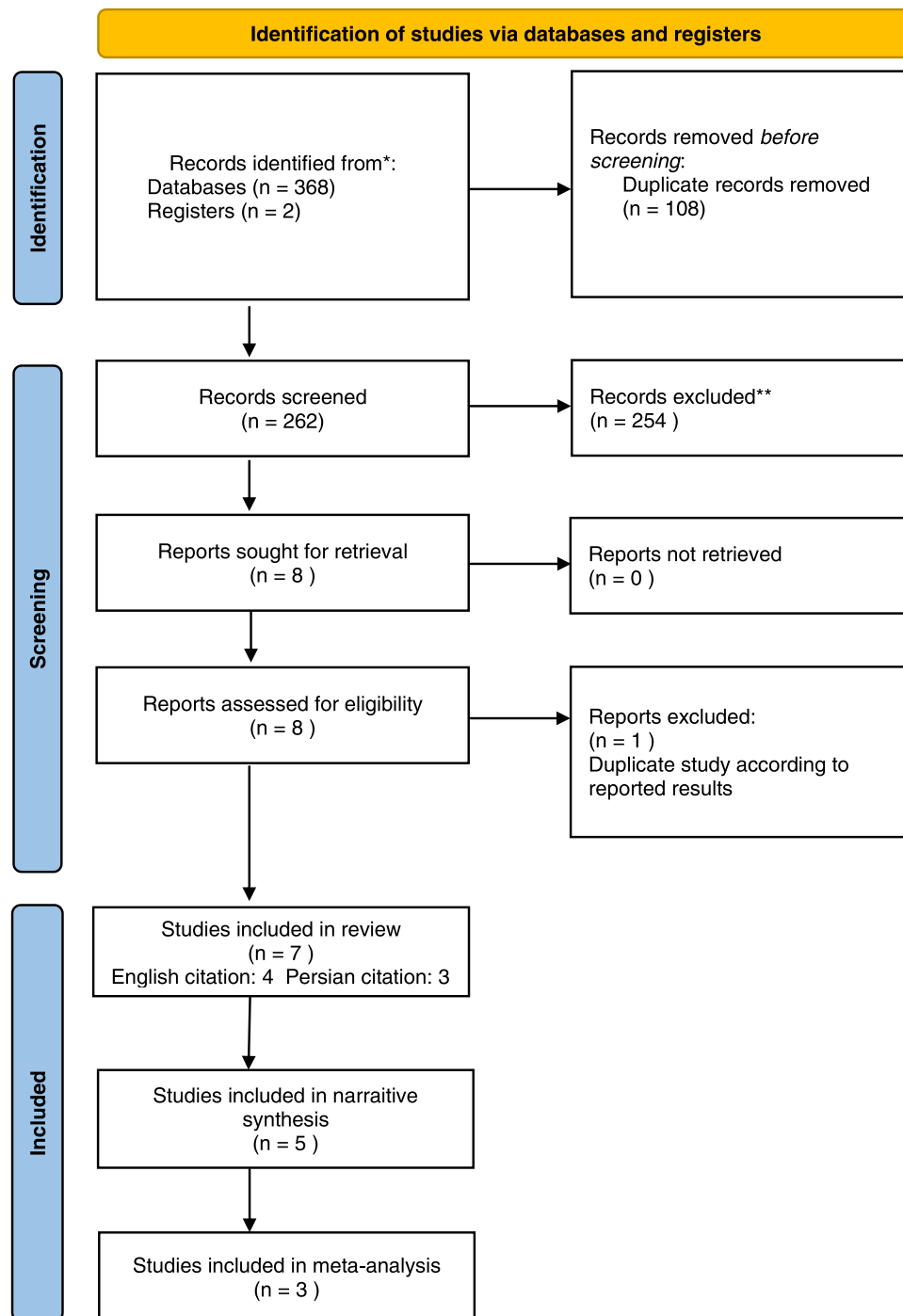


Fig. 1. PRISMA 2021 Flow Diagram (Page et al., 2021).

satisfaction and performance. The results showed that nurses with higher spiritual intelligence perform more in their work. Nurses who can apply their spiritual intelligence can be happier, give more meaning to the work and be more motivated as they connect their work to “God” (Tamannaefar, 2019).

Our systematic review revealed that nurses who received the spiritual intelligence educational intervention had significantly higher scores for spiritual intelligence and showed a better ability to adapt to the work stress. This result is congruent with the literature that indicates that people with high spiritual intelligence have the strength and resilience that enables them to adapt to adversity (Seena and Sundaram, 2018). Similarly, other studies have also reported that those with higher

spirituality have lower stress levels (Fabbris et al., 2017; Kent et al., 2020; Safavi et al., 2019). A recent review by Satpathy and Samanta (2020) highlighted that spiritual intelligence is an important influence on human behavior. For example, spiritual intelligence has a positive correlation and have an impact on people’s psychological well-being and transforms the personality of the individual.

Our review also identified that spiritual intelligence educational interventions can be effective in improving nurses’ communication skills level. This finding is align with previous research that connects spiritual intelligence with interpersonal relationships in the workplace and makes its role in the workplace more prominent (Ling et al., 2020). Additionally, the findings from our review demonstrated the effect of

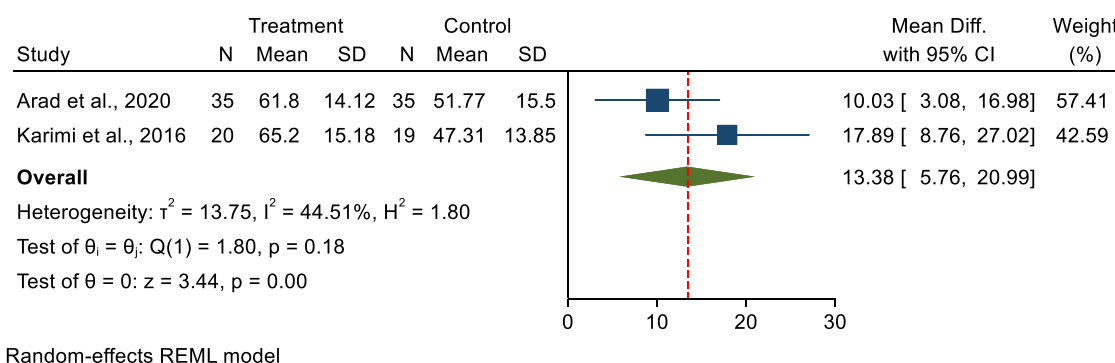


Fig. 2. Forest plot of spiritual intelligence at two weeks follow up among two included studies.

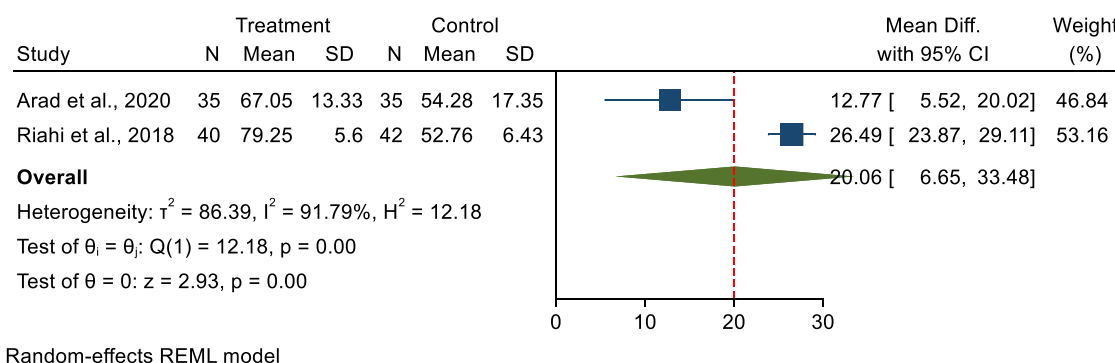


Fig. 3. Forest plot of spiritual intelligence at one-month follow-up among two included studies.

spiritual intelligence training on nurses' spiritual care competency which is congruent with a study written by Pinto and Pinto (2020) where spiritual care is discussed as an indisputable part of patient-centered holistic care and the importance of improving spiritual self-consciousness and self-awareness among health care professional who can deliver spiritual care to patients have been discussed. Evidence suggests that the healthcare professionals awareness of their own spirituality may be related to their willingness and sensitivity to address patients spiritual needs and concerns (Bar-Sela et al., 2019).

A recent systematic review (Niskala et al., 2020) highlighted that numerous educational and organizational interventions can be used to improve the spiritual intelligence among staff including educational sessions, workshops, mentoring programs, interpersonal interactions improvement programs and evidence-based nursing management practices. More specifically, recommendations from this systematic review include that health care organizations should consider the inclusion of spiritual intelligence development interventions along with other professional development activities for staff. These interventions can build professional relationships in the workplace contributing to improved job satisfaction among staff.

4.1. Implications for nursing research

Given that a limited number of professional outcomes were measured to assess the influence of spiritual intelligence interventions, other outcomes should be considered to corroborate the results of this review. All studies included in this review were conducted in Iran, which may be due to cultural reasons. The Iranian people have deep religious tendencies and spirituality is inextricably entwined in Iranian society and culture. During the last decades, they have tried to integrate spiritual based-interventions into clinical practice and to this end, various healthcare professionals have become involved in these interventions (Shirzad and Dadfar, 2020). Although most of the educational interventions were conducted in Iran, the concept of spiritual intelligence

does not inherently belong to a particular religion or culture (Srivastava, 2016) and can be explored in other societies and cultures with various religions. Hence, spiritual intelligence interventions should be incorporated among nurses and nursing students in other countries to improve the generalizability of the findings. The time of follow-up in the trials included in this research did not exceed two months hence, further studies with longer follow-up periods are required, which may provide more accurate results on the influence of spiritual intelligence interventions. In addition, the use of objective approaches to measuring differences in outcomes associated with educational interventions should be considered in future research.

4.2. Strengths

The major strength of the review is the rigor with which it was conducted. First, both English and Persian databases were searched and studies in both these languages were included. Limiting the search strategy to only the English language may have provided a biased view of the effect of spiritual intelligence interventions on spiritual intelligence and professional nursing outcomes. The number of studies identified in each step of the search was recorded and reported with the exact search terms in databases. Finally, a meta-analysis was undertaken where possible to provide evidence that can be used to inform decision-making.

4.3. Limitations

Despite the rigor with which this review was conducted and its significant results, it is not without limitations. Due to the limited evidence regarding spiritual intelligence educational interventions, the results are mostly based on single trials that reduce the validity of the findings. The search strategy was limited to English and Persian languages, expanding the strategy to other languages may find more evidence regarding the spiritual intelligence interventions. All the included studies were

conducted in Iran hence the generalizability of the results to other countries may be limited. Additionally, all the studies used subjective and self-report measures to assess outcomes and none of them used objective approaches.

5. Conclusion

This paper reviewed 7 studies related to spiritual intelligence educational interventions among nurses and nursing students. The results of this systematic review demonstrated that spiritual intelligence educational interventions induce a positive effect on nurses' and nursing students' spiritual intelligence, level of stress and professional practice. The research designs of studies included were somewhat limited in terms of levels of evidence because their outcomes were mostly measured at one-month follow-up and with subjective measures. Longer trials using objective measures are required to identify precise outcomes in terms of spiritual intelligence education and improve the levels of evidence. The results of this review are mostly based on single trials and the professional practice outcomes were limited to three outcomes including communication skills, job satisfaction and spiritual care competency. Conducting further trials on spiritual intelligence educational interventions is warranted to identify the influence of such education on various professional outcomes in nursing practice and provide higher levels of evidence regarding spiritual intelligence education.

Ethical approval

Since this paper is a systematic review, No formal Ethical approval is needed.

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CRedit authorship contribution statement

Amir Masoud Sharifnia: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing. **Ritin Fernandez:** Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Supervision, Project administration. **Heidi Green:** Methodology, Formal analysis, Investigation, Resources, Writing – original draft, Writing – review & editing. **Ibrahim Alananzeh:** Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

All data is collected in separate files and is publicly available through Mendeley.

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Registration

The protocol for this systematic review was registered with PROSPERO with the registration number CRD42021261000.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.nepr.2022.103380.

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