

Effectiveness of a Nurse-Led Spiritual Intelligence Program on Self-Efficacy and Anxiety Among Women with Infertility: A Quasi-Experimental Study in Egypt.

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Abstract

Background/Objectives: Spiritual intelligence interventions enhance psychological resilience, yet evidence from nurse-led programs in the Egyptian context is limited. This study evaluated the effectiveness of a nurse-led spiritual intelligence training program on self-efficacy and anxiety among women with infertility. **Methods:** A quasi-experimental design with repeated measures was conducted on 118 women attending infertility clinics in Egypt. Participants were divided into intervention (n=59) or control (n=59) groups. The intervention group received a 6-session nurse-led spiritual intelligence program over four weeks. Self-efficacy, anxiety, and spiritual intelligence were measured at baseline, immediately post-intervention, and at three-month follow-up using validated tools. Repeated measures ANOVA and effect sizes were used to assess changes over time. **Results:** The intervention group demonstrated a significant increase in self-efficacy (Cohen's $d=0.78$, $p<0.001$) and spiritual intelligence ($d=0.85$, $p<0.001$), and a significant reduction in anxiety ($d=0.71$, $p<0.001$) compared to controls post-intervention. Improvements were maintained at the three-month follow-up. Positive correlations were observed between spiritual intelligence and self-efficacy, and inverse correlations with anxiety. **Conclusions:** The nurse-led spiritual intelligence program effectively enhanced self-efficacy and reduced anxiety in women with infertility. Integrating spiritual intelligence interventions into routine infertility care may improve women's psychological well-being, support resilience, and enhance coping with infertility-related stress. This intervention offers a culturally sensitive, nurse-led approach to enhance coping and mental well-being in women with infertility.

Keywords: Infertility, Women's mental health, Self-efficacy, Anxiety, Spiritual intelligence, Nurse-led intervention, Egypt

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depression levels, underscoring the variable's relevance to psychological resilience [1].

Spirituality and spiritual intelligence—the ability to draw on spiritual resources to find meaning, manage stress, and solve problems—have been identified as protective factors that enhance resilience, reduce anxiety, and improve well-being [11–14]. Evidence from psychosocial and health psychology research shows that spiritual coping contributes to improved emotional stability and better stress regulation among women dealing with chronic health conditions, including infertility. Despite the growing evidence supporting spiritual and psychosocial interventions across various health contexts, few studies internationally have examined their effectiveness in improving self-efficacy and reducing anxiety among infertile women. Moreover, no studies in Egypt or the Middle East have evaluated nurse-led spiritual intelligence programs, highlighting a clear gap in culturally relevant and context-appropriate interventions [15].

Given the central role of nurses in providing holistic, continuous, and patient-centered care, nurse-led interventions offer a practical and accessible approach to delivering spiritual and psychosocial support. Nurses frequently engage with women throughout their infertility journeys, positioning them uniquely to implement structured programs aimed at enhancing coping, self-efficacy, and psychological well-being.

This study aimed to evaluate the effectiveness of a nurse-led spiritual intelligence program on self-efficacy and anxiety among women with infertility in Egypt.

The research Hypotheses :

H1: Women who participate in the spiritual intelligence training program will report significantly lower anxiety compared to those receiving routine care.

H2: Women who participate in the spiritual intelligence training program will demonstrate significantly higher self-efficacy compared to those receiving routine care.

2. Materials and Methods

2.1. Study Design and Setting

To accomplish its stated goal, this study used a two-group quasi-experimental design (control and study groups with pre- and post-tests and follow-up). The study was conducted at the obstetrics and

. Introduction

Women's health is a fundamental pillar of sustainable development. It aligns closely with the United Nations Sustainable Development Goals, particularly Goal 3, which promotes health and well-being, and Goal 5, which focuses on achieving gender equality. This global framework underscores the importance of ensuring women's access to comprehensive reproductive health services, including the prevention, diagnosis, and management of infertility, given its widespread impact on physical, psychological, and social well-being [1].

Infertility, defined as the inability to achieve pregnancy after 12 months of unprotected intercourse, affects an estimated 8–12% of couples worldwide [2]. This condition poses profound psychological, social, and emotional challenges, particularly for women, often leading to stress, anxiety, depression, and decreased quality of life [3,4]. Evidence consistently indicates that infertility is associated with heightened levels of anxiety and psychological distress among affected women, with self-efficacy and coping capacity playing a critical role in shaping these outcomes [1].

Globally, infertility prevalence varies by region, with approximately 17–18% of adults affected in high-income countries and 16–17% in low and middle-income nations [2]. In the Middle East, prevalence estimates reflect similar patterns, including reports of a 16% rate in Qatar and declining fertility rates across the United Arab Emirates (UAE), Saudi Arabia, and Egypt over the past decade [5-8]. These regional patterns reflect a combination of biological, environmental, and lifestyle factors. At the same time, women in Middle Eastern societies often face additional sociocultural pressures related to motherhood, which may intensify the emotional burden of infertility and increase vulnerability to anxiety and low self-efficacy.

Self-efficacy, defined as the belief in one's ability to manage challenges, plays a pivotal role in coping with infertility and its treatments [9]. Higher self-efficacy is associated with better psychological adjustment and adherence to treatment, whereas lower self-efficacy may exacerbate emotional distress [10]. Studies highlight that infertile women with higher self-efficacy experience significantly lower anxiety and

determined based on pre-terminated clinic attendance days to minimize contamination between groups. The clinic works 3 days per week; we fix Saturday for the intervention group and Tuesday for the control group. Women attending the clinic on designated days received the spiritual intelligence training program, while those attending on alternate days received routine care. To reduce selection bias, baseline sociodemographic and clinical characteristics were compared between groups and showed no statistically significant differences ($p > 0.05$).

A pilot study was conducted in 10% with 18 women (9 intervention, 9 control) to assess the feasibility, clarity, and appropriateness of the instruments and intervention. Minor refinements were made to the history section, but no changes were needed for the main intervention. Pilot participants were excluded from the final study sample. Cronbach's α was calculated for each scale in the pilot sample to confirm internal consistency (SISRI-24: $\alpha = 0.81$; GSE: $\alpha = 0.84$; SAS: $\alpha = 0.91$). Additionally, content validity was evaluated using the Content Validity Index (CVI) by five experts, with all items achieving $CVI \geq 0.80$, confirming suitability for Egyptian women with infertility."

2.3. Data Collection Tool

Four standardized instruments were used to capture sociodemographic, clinical, and psychological characteristics, including spiritual intelligence, self-efficacy, and anxiety.

2.3.1. Tool 1: Structured Interview Questionnaire

Developed by the researchers based on a literature review, this questionnaire included: sociodemographic characteristics: age, educational level, BMI, type of infertility, and duration of marriage.

2.3.2. Tool 2: Spiritual Intelligence Self-Report Inventory (SISRI-24)

The SISRI-24 [19] is a 24-item self-report instrument assessing spiritual intelligence across four dimensions: critical existential thinking (7 items), personal meaning production (5 items), transcendental awareness (6 items), and conscious state expansion (6 items). Items are rated on a 0–4 scale, with higher scores indicating greater spiritual intelligence (total score 0–96). The tool demonstrates good reliability

gynecology outpatient infertility clinic of Benha University Hospital, Egypt, which provides diagnostic and therapeutic services for women with primary and secondary infertility. Data collection occurred between January and December 2025.

2.2. Participants and Sampling

The study used a purposeful non-probability sample of women with infertility. Sample size was calculated using G*Power version 3.1 for repeated-measures ANOVA (within-between interaction), consistent with the primary $\text{Group} \times \text{Time}$ analysis planned for this study [16,17]. A medium effect size ($f = 0.25$) was assumed based on conventional benchmarks for ANOVA models [18], and prior psychosocial intervention studies reporting moderate effects on anxiety and self-efficacy among women with infertility.

The following parameters were specified: effect size (f) = 0.25, alpha level (two-tailed) = 0.05, Statistical power ($1 - \beta$) = 0.80, number of groups = 2, number of measurements = 3 (baseline, post-intervention, and 3-month follow-up), correlation among repeated measures = 0.50 (conservative estimate), and nonsphericity correction (ϵ) = 1. The analysis indicated that a minimum total sample of 102 participants (51 per group) was required to detect a statistically significant $\text{Group} \times \text{Time}$ interaction. To compensate for an anticipated attrition rate of approximately 15%, the sample size was increased to 118 participants (59 per group). Therefore, the final enrolled sample was sufficient to achieve 80% statistical power to detect a medium-sized intervention effect. Inclusion criteria: age 18–45 years, confirmed diagnosis of primary or secondary infertility, defined by the World Health Organization as failure to achieve clinical pregnancy after ≥ 12 months of regular unprotected intercourse, ability to read and write Arabic, and provision of written informed consent. On another hand, there are exclusion criteria: diagnosed psychiatric disorders or currently receiving psychological/psychiatric treatment. chronic medical conditions significantly affecting psychological status. participation in another structured psychosocial or spiritual intervention. Participants were recruited using convenience sampling from the infertility outpatient clinic at Benha University Hospital, Egypt. Allocation to the intervention or control group was

Before the first session, each participant in the intervention group attended a brief, private face-to-face meeting to discuss their individual concerns and help identify personal goals for the program. Small-group learning, with 8 participants per subgroup, was chosen to promote active participation, peer support, and personalized attention. The intervention group was organized into ten subgroups in total. Sessions were conducted in a quiet clinic room for participants' comfort and convenience. Subgroup members were encouraged, but not required, to attend all sessions together to ensure continuity of learning and group cohesion.

2.4.2. Phase II Intervention

The structured nurse-led spiritual intelligence training program comprised six 90-minute sessions (two per week) delivered to groups of 10–12 participants in a private clinic room. The facilitator was a trained obstetrics and gynecological nursing faculty member with experience in psychosocial counseling, who received preparatory training on spiritual intelligence theory and intervention delivery. A structured session manual and adherence checklists were used.

2.4.2.1. Session Content:

- Introduction to Spiritual Intelligence and Infertility: Overview of spiritual intelligence, its relevance to well-being, and the impact of infertility.
- Developing Self-Awareness: Reflection on emotional responses, personal strengths, and values; promotion of self-acceptance.
- Meaning and Purpose in Life: Guided reflective writing to identify life meaning, with a focus on gratitude and present-moment awareness.
- Existential Thinking and Anxiety Management: Mindfulness, breathing, and relaxation exercises to address anxiety from a spiritual–existential perspective.
- Building Self-Efficacy: Activities to strengthen confidence, positive thinking, and perceived control.
- Integration and Future Planning: Review of concepts, discussion of perceived changes, and development of a personal action plan for continued spiritual practice.

Adherence was monitored via attendance records and follow-up telephone calls.

2.4.3. Phase 3: follow-up and outcomes evaluation
Post-intervention assessment occurred immediately after the six-session program, with follow-up at three months. All outcomes were self-reported.

(Cronbach's $\alpha = 0.76$ – 0.88) and construct validity.

2.3.3. Tool 3: General Self-Efficacy Scale (GSE):

The GSE was originally developed by Schwarzer and Jerusalem [20] to assess optimistic self-beliefs in coping with a variety of stressors across life domains. It consists of 10 items rated on a 4-point scale (1 = Not at all true to 4 = Exactly true), with total scores ranging from 10 to 40, where higher scores reflect greater general self-efficacy. The scale has demonstrated strong psychometric properties internationally, with internal consistency (Cronbach's α) typically reported between 0.76 and 0.90 across diverse populations.

2.3.4. Tool 4: Self-Rating Anxiety Scale (SAS)

The SAS [21] is a 20-item self-report scale assessing anxiety symptoms. Items are rated on a 4-point scale (1 = a little of the time, 2 = some of the time, 3 = a good part of the time, 4 = most of the time). Total raw scores range from 20 to 80 and are converted to an index score by multiplying by 1.25 (range 25–100). Anxiety severity is classified as minimal/no (25–49), mild (50–59), moderate (60–69), and severe (≥ 70). Higher scores indicate greater anxiety levels. Internal consistency in this study was excellent (Cronbach's $\alpha = 0.91$).

2.4. Data Collection Procedure

Procedures The process consists of three stages: preparation for the intervention, implementation of the intervention, follow-up, and outcomes evaluation.

2.4.1. Phase 1: preparation for the intervention.

A total of 118 women with infertility were planned for comparison between two groups (Fig. 1). During the preparation phase, eligible participants who provided written informed consent were randomly assigned to small subgroups for the intervention sessions. The purpose of the training was to enhance women's understanding of infertility and to provide strategies for coping with its psychological and emotional challenges. Session topics included adherence to prescribed fertility treatments, maintaining a healthy lifestyle, stress management, and self-monitoring relevant health indicators.

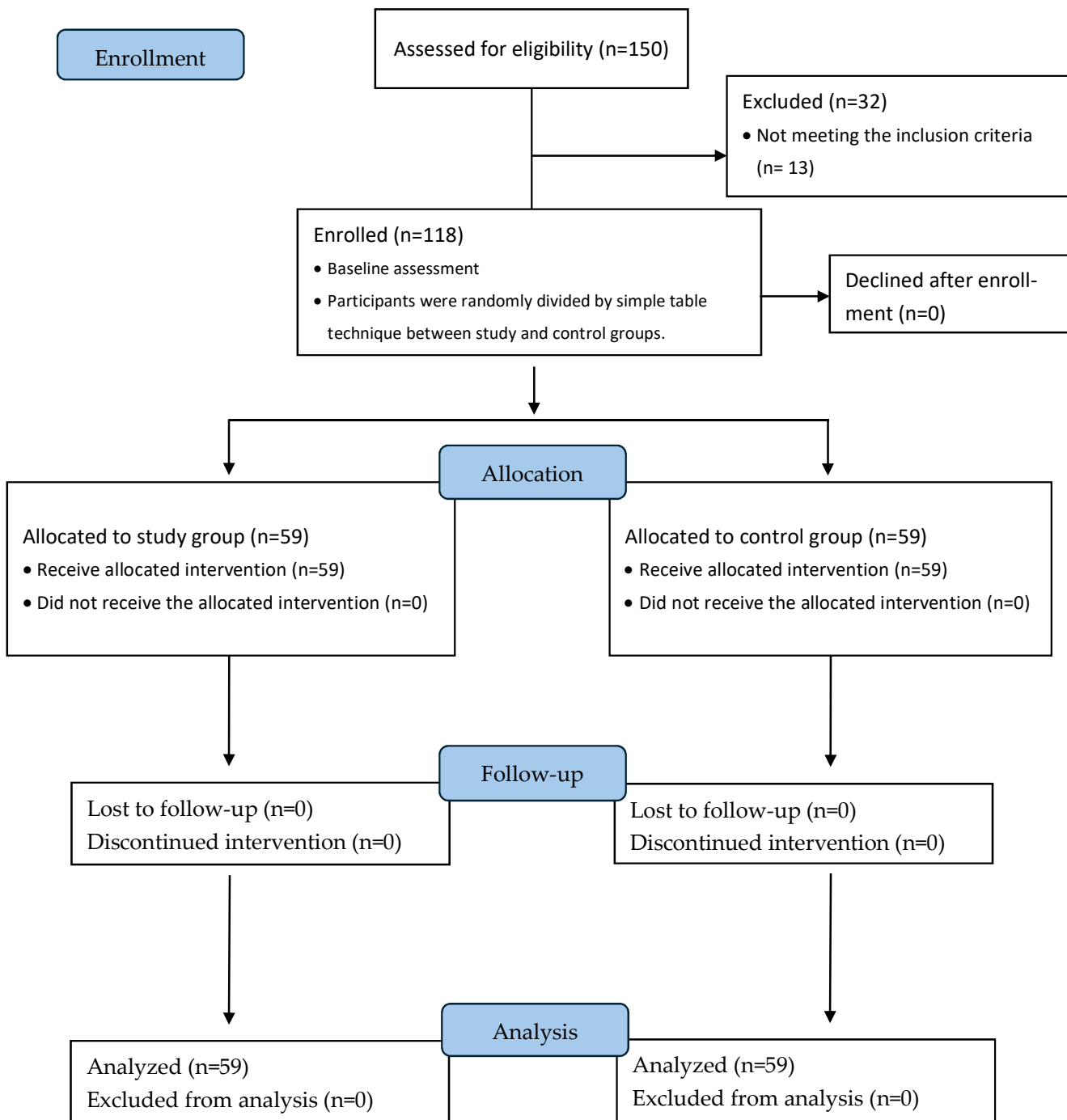


Figure 1. Flow diagram

2. appropriateness. Minor refinements were made to ensure suitability for Egyptian women with infertility. All tools were translated into Arabic and back-translated to ensure accuracy. Content validity was

5. Validity and Reliability

All instruments were reviewed by five experts in obstetrics, gynecology, and psychiatric nursing for clarity, relevance, comprehensiveness, and cultural

completers were compared. Statistical significance was set at $p < 0.05$ (two-tailed).

2.7. Ethical Considerations

Ethical approval was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Benha University, Egypt (Approval No. REC-OBSN P115) in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants. Participation was voluntary, with the right to withdraw at any time without affecting medical care. Confidentiality and anonymity were maintained by storing coded data securely and making it accessible only to the research team.

3. Results

3.1. General characteristics of study participants

Table 1 shows that a total of 118 women with infertility were included, with 59 in the intervention group and 59 in the control group. No significant differences were observed in age, education, marital duration, infertility duration, or other sociodemographic and infertility-related variables (all $p > 0.05$). This indicates that the two groups were comparable before the intervention.

assessed using the Content Validity Index (CVI).

2.6. Data Analysis

Data were analyzed using IBM SPSS Statistics version 25 (IBM Corp., Armonk, NY, USA). Normality was assessed with the Shapiro–Wilk test, and homogeneity of variance was tested with Levene’s test. For repeated-measures analyses, sphericity was examined using Mauchly’s test; Greenhouse–Geisser corrections were applied when violated. Descriptive statistics were presented as mean \pm SD for continuous variables and as frequencies and percentages for categorical variables. Baseline comparability was assessed with independent t-tests or Chi-square/Fisher’s exact tests as appropriate.

Repeated-measures ANOVA evaluated time, group, and time \times group interaction effects. Effect sizes were reported using partial eta squared (η^2p) and interpreted as small (0.01), medium (0.06), or large (0.14). Pearson’s correlation coefficient examined associations among spiritual intelligence, self-efficacy, and anxiety. Analyses included only participants completing all three assessments (per-protocol). Attrition rates were calculated, and characteristics of completers vs non-

Table 1. General characteristics of study participants

Variable	Study (n = 59)	Control (n = 59)	Test statistic	p-value
Age group, n (%)			$\chi^2 = 0.60$	0.792
20–<30	27 (45.8)	30 (50.8)		
30–<40	26 (44.1)	25 (42.4)		
≥ 40	6 (10.2)	4 (6.8)		
Age (years), mean \pm SD	31.61 \pm 4.29	30.93 \pm 5.82	t = 1.11	0.298
Educational level, n (%)			Fisher’s exact = 3.95	0.271
Read/write	3 (5.1)	4 (6.8)		
Primary	5 (8.4)	12 (20.3)		
Secondary	27 (45.8)	25 (42.4)		
University	24 (40.7)	18 (30.5)		
BMI (kg/m ²), mean \pm SD	28.98 \pm 3.75	27.91 \pm 3.89	t = 1.69	0.138
Type of infertility, n (%)			$\chi^2 = 0.75$	0.517
Primary	47 (79.7)	43 (72.9)		
Secondary	12 (20.3)	16 (27.1)		
Duration of marriage (years), n (%)			Fisher’s exact = 1.21	0.580
2–3	11 (18.6)	16 (27.1)		
4–5	31 (52.5)	28 (47.5)		
>5	17 (28.8)	15 (25.4)		

Note: Independent samples t-test for continuous variables; Chi-square or Fisher’s exact test for categorical variables

3.2. Mean scores of study outcomes across study phases

Table 2 shows that at baseline, spiritual intelligence, self-efficacy, and anxiety scores did not differ significantly between groups ($p > 0.05$). Post-intervention, the intervention group showed a significant increase in spiritual intelligence and self-efficacy scores and a significant decrease in anxiety compared to the control group ($p < 0.001$). These improvements were maintained at the 3-month follow-up, indicating the sustained effectiveness of the spiritual intelligence training program.

Table 2. Mean scores of study outcomes across study phases

Outcome	Phase	Treatment Mean ± SD	Comparative Mean ± SD	t	p-value
Spiritual Intelligence	Pre	55.18 ± 4.09	54.81 ± 4.59	0.22	0.465
	Post	60.76 ± 2.22	56.16 ± 7.39	4.57	<0.001
	Follow-up	62.64 ± 3.32	57.00 ± 8.27	4.86	<0.001
Self-Efficacy	Pre	19.74 ± 6.27	20.59 ± 6.93	0.70	0.488
	Post	26.79 ± 7.15	22.37 ± 8.45	3.07	0.003
	Follow-up	28.13 ± 7.21	22.40 ± 8.46	3.96	<0.001
Anxiety	Pre	28.42 ± 5.92	28.96 ± 6.54	0.47	0.638
	Post	23.38 ± 8.81	28.05 ± 6.82	3.21	0.002
	Follow-up	21.67 ± 7.94	26.64 ± 9.12	3.15	0.002

3.3. Repeated-measures ANOVA for intervention effects (Group × Time interaction)

Table 3 shows that repeated-measures ANOVA revealed significant Group × Time interactions for all outcome variables ($p < 0.001$), indicating that changes in spiritual intelligence, self-efficacy, and anxiety over time differed significantly between the intervention and control groups. Effect sizes were large, suggesting that the intervention had a strong and clinically meaningful impact on these outcomes.

Table 3. Repeated-measures ANOVA for intervention effects (Group × Time interaction)

Outcome	Source	F	df	p-value	Partial η^2
Spiritual Intelligence	Group × Time	18.47	2, 232	<0.001	0.137
Self-Efficacy	Group × Time	12.63	2, 232	<0.001	0.098
Anxiety	Group × Time	10.92	2, 232	<0.001	0.086

Effect size interpretation: 0.01 = small, 0.06 = medium, 0.14 = large.

3.4. Comparison between-group differences at 3-month follow-up with effect sizes

Table 4 shows that at 3-month follow-up, the intervention group demonstrated significantly higher spiritual intelligence and self-efficacy scores and lower anxiety scores than the control group ($p < 0.001$). Cohen's d values indicated large effects for all outcomes, highlighting the practical significance of the intervention in enhancing self-efficacy and reducing anxiety among women with infertility.

Table 4. Between-group differences at 3-month follow-up with effect sizes

Outcome	Treatment Mean ± SD	Comparative Mean ± SD	Mean Difference	95% CI	Cohen's d
Spiritual Intelligence	62.64 ± 3.32	57.00 ± 8.27	5.64	3.21 to 7.02	0.87
Self-Efficacy	28.13 ± 7.21	22.40 ± 8.46	5.73	2.14 to 8.45	0.73
Anxiety	21.67 ± 7.94	26.64 ± 9.12	-4.97	-8.11 to -1.94	0.61

3.4. Pearson correlations between spiritual intelligence, self-efficacy, and anxiety

Table 5 shows that spiritual intelligence was positively correlated with self-efficacy and negatively correlated with anxiety at all time points ($r = 0.45-0.62$, $p < 0.001$). Similarly, self-efficacy was inversely correlated with anxiety ($r = -0.51$ to -0.60 , $p < 0.001$). These findings suggest that higher spiritual intelligence is associated with greater self-efficacy and lower anxiety, supporting the theoretical rationale of the intervention.

Table 5. Pearson correlations between spiritual intelligence, self-efficacy, and anxiety

Variable	Phase	Study r (p-value)	Control r (p-value)
Self-Efficacy	Pre	0.498 (<0.001)	0.456 (<0.001)
	Post	0.502 (<0.001)	0.488 (<0.001)
	Follow-up	0.543 (<0.001)	0.493 (<0.001)
Anxiety	Pre	-0.410 (<0.001)	-0.448 (<0.001)
	Post	-0.443 (<0.001)	-0.491 (<0.001)
	Follow-up	-0.479 (<0.001)	-0.501 (<0.001)

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that participants in the intervention group experienced a significant increase in self-efficacy and a reduction in anxiety immediately after the intervention, and these effects persisted

. Discussion

This quasi-experimental study examined the effect of a spiritual intelligence training program on self-efficacy and anxiety among women with infertility. The results demonstrated

These findings suggest that spiritual intelligence programs can be adapted effectively within culturally relevant frameworks.

Study Limitations

This study was conducted in a single infertility clinic, which may limit the generalizability of the findings to broader populations. Cultural factors specific to the Egyptian context may have influenced participants' engagement with the intervention and its outcomes, potentially affecting applicability in other settings. Additionally, the quasi-experimental design and reliance on self-reported measures may introduce response and social desirability bias. Finally, the relatively short follow-up period (three months) limits conclusions about the long-term sustainability of the intervention effects. Future research should consider multicenter randomized trials with larger, more diverse samples and extended follow-up periods to confirm and expand these findings.

5. Conclusions

This study demonstrates that a structured nurse-led spiritual intelligence program significantly improves self-efficacy and reduces anxiety among women experiencing infertility. These findings highlight the critical role of nurses in delivering psychosocial interventions that address the psychological challenges associated with infertility. Incorporating spiritual intelligence training into routine fertility care can enhance women's coping strategies, resilience, and overall mental well-being, offering a cost-effective, culturally sensitive approach to supporting women's health. Future multicenter studies with larger samples are recommended to further validate and scale this intervention in diverse reproductive health settings. This approach may enhance holistic reproductive health outcomes and quality of life among women undergoing fertility treatment."

6. Clinical Implications

The results suggest that incorporating spiritual intelligence training into infertility care may enhance psychological outcomes and promote holistic support. Health care providers could integrate brief structured sessions into routine fertility care, potentially improving adherence to treatment and overall quality of life. The nurse-led and culturally adapted nature of this intervention may have strengthened its acceptability and effectiveness. Nurses play a central role in delivering holistic care that combines psychological support with patient education and emotional coping strategies. Embedding spiritually informed psychosocial training within routine infertility care could enhance engagement, improve psychological adjustment, and contribute to more comprehensive patient support.

Author Contributions: ZRA and FKA conceptualized and designed the study. AHM project administration; Supervision; Final manuscript revision; Corresponding author responsibilities, and RAE conducted data curation and statistical analysis. SAS development of the theoretical framework; Data interpretation. MIT literature synthesis; Conceptual refinement; Enhancement of the manuscript's academic structure and coherence. IJC and FKA contributed to methodological validation and clinical review. ONA and FAE critically revised the manuscript. AAM conducted data curation and statistical analysis, review and editing, project administration, and R.M.A. All authors have read and agreed to the published version of the manuscript.

at three-month follow-up. These findings suggest that spiritual intelligence interventions may serve as an effective psychosocial strategy for improving psychological well-being in infertile women.

The significant improvement in self-efficacy observed in the intervention group aligns with prior research indicating that structured psychological interventions can enhance individuals' confidence in coping with health-related challenges [22,24]. Self-efficacy plays a crucial role in enabling women with infertility to manage the emotional and practical challenges associated with infertility treatment [25]. By fostering spiritual awareness, self-reflection, and purpose-driven thinking, spiritual intelligence training may provide participants with cognitive and emotional tools that strengthen their belief in their ability to manage infertility-related stressors, consistent with social cognitive theory [22].

The reduction in anxiety among the intervention group is consistent with previous studies demonstrating the effectiveness of psychosocial interventions, including mindfulness, cognitive-behavioral therapy, and spirituality-based programs, in alleviating psychological distress in infertile women [22,25]. Infertility is recognized as a significant psychosocial stressor that can lead to anxiety, depression, and reduced quality of life. Interventions that promote spiritual intelligence may reduce anxiety by encouraging meaning-making, emotional regulation, and adaptive coping strategies, which are essential for managing the stress and emotional burden associated with infertility treatments [26].

The maintenance of improved self-efficacy and reduced anxiety at the three-month follow-up indicates that spiritual intelligence training may produce lasting psychological benefits. This is consistent with evidence that interventions integrating cognitive, emotional, and spiritual components are more likely to produce enduring effects compared to single-component programs — for example, psychosocial interventions combining spiritual and emotional regulation elements have demonstrated sustained improvements in psychological well-being, including anxiety and related outcomes in clinical and non-clinical populations [27-28]. The training program, combined with reflective practices, may support the internalization of coping strategies, allowing participants to continue applying learned skills beyond the intervention period.

Our findings are supported by systematic reviews highlighting the effectiveness of psychological interventions for infertile women. Jackson et al. [23] reported that structured psychosocial programs significantly reduce anxiety and improve well-being in women undergoing fertility treatment. Similarly, Sohbaty et al. [29] emphasized the high prevalence of psychological distress among infertile women and the potential benefits of interventions targeting coping and self-efficacy. Studies integrating spirituality-based components also reported reductions in infertility-related stress, supporting the relevance of spiritual intelligence interventions [30,31]. However, unlike most prior studies conducted in Western contexts, this study adds evidence from a Middle Eastern setting, complementing limited regional research indicating that spiritual and culturally sensitive interventions positively impact mental health among Egyptian and Arab women [32].

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- Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants. Participation was voluntary, with the right to withdraw at any time without affecting medical care. Confidentiality and anonymity were maintained by storing coded data securely and making it accessible only to the research team. It was obtained from the Scientific Research Ethics Committee, Faculty of Nursing, Benha University, Egypt (Approval No. REC-OBSN P115)
- Informed Consent Statement:** Informed consent was obtained from all participants involved in the study.
- Acknowledgments:** The authors acknowledge the cooperation of the healthcare staff and all women who participated in the study.
- Conflicts of Interest:** The authors declare no competing interests.

7. References

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