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What are the effective psychosocial interventions for relieving anxiety in infertile women: A Systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

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Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 October 2024 and was last updated on 11 October 2024.

INTRODUCTION

Review question / Objective The specific patient, intervention, comparison, and outcome (PICO) criteria of this study are as follows. The study subjects (patients) were infertile women, and psychosocial interventions were mind-body therapy (meditation, yoga, relaxation and breathing tech-niques, tai chi, qigong, hypnosis, biofeedback, etc.), cognitive behavioral therapy (cognitive therapy, behavioral therapy), information provision and education, and counseling. The groups were a control group, a placebo group, and an alternative intervention group, and anxiety was the outcome.

Rationale It is reported that infertile women have high levels of negative emotions such as anxi-ety , Moreover, the anxiety and depression scores of infertile women are higher than those of patients with pulmonary hypertension. However, there is controversy over whether negative emotions such as anxiety and depression cause infertility, although it is clear that being diagnosed with infertility can cause negative emotions. Recent studies showed that psychological interventions reduced psychological distress in infertile women, and these psychological interventions tended to increase pregnancy rates. In par-ticular, anxiety is an important negative emotion, and previous studies have confirmed that improving anxiety through psychological intervention can increase the possibility of pregnancy. Consequently, relieving anxiety in infertile women can increase the preg-nancy rate and resolve the low birth rate problem.

Condition being studied In South Korea, where the total fertility rate is 0.72, it is very important to seek various solutions to solve the problem of infertility. Therefore, this study aimed to systematically review the literature on psychosocial interventions implemented for infertile women and to meta-analyze the effects of various interventions on anxiety relief. The interventions that are effective in relieving anxiety may relieve anxiety in

infertile women and improve preg-nancy rates. They could serve as one of the cornerstones for solving the low birth rate issue.

METHODS

Search strategy Collecting data was to analyze the effect of psychosocial interventions on anxiety in infer-tile women. Domestic studies were searched by using the Research Information Sharing Service (RISS), Korean Studies Information Service System (KISS), Korean Medical Data-base (KMbase), and National Center for Science and Technology Information (NDSL). Cochrane Library, PubMed, EMBASE, CINAHL (Cumulative Indexing Nursing & Allied Health Literature), and PsycARTICLES were used for foreign studies. Search word selec-tion and retrieval included both medical subject headings (MeSH) and life science term index (EMBASE TREE [EMTREE]). The search terms used as targets were “Infertili-ty”[Mesh], “Infertile women”, and “infetile*”, and the interventions were “Psychosocial”, “Psychoeducation”, “Psycho*”, “psychia*”, “Mind-body”, “Body-Mind-Sprit”, “Mind-fulness”, “Mindful*”, “Yoga”. “Meditation”, “Relaxation”, “Psychological”[Mesh], "breathing," "Tai chi," "qigong," "Hypnosis," "Biofeedback”, “Cognitive behavioral thera-py”[Mesh], “Cognitive behavioral”, “Cognitive”, “Behavioral”, “Cogniti*”, “Education”, and “Counselling”. The outcome variable was “Anxiety” [MeSH]. Each topic was searched by connecting words with an and function. This study targeted studies published after 2005, studies involving humans, and studies written in English.

Participant or population The study subjects (patients) were infertile women.

Intervention Psychosocial interventions were mind-body therapy (meditation, yoga, relaxation and breathing techniques, tai chi, qigong, hypnosis, biofeedback, etc.), cognitive behavioral therapy (cognitive therapy, behavioral therapy).

Comparator The groups were a control group, a placebo group, and an alternative intervention group, and anxiety was the outcome.

Study designs to be included RCT.

Eligibility criteria The selection criteria for the literature were (1) intervention studies that implemented psychosocial interventions for infertile women, (2) studies with anxiety as an outcome variable, (3) studies published in academic journals, (4) randomized controlled trials (RCTs), and (5) studies published after 2005. The exclusion criteria were (1) studies in which the subjects were not infertile women, (2) unpublished theses, (3) studies related to a medical and oriental medicine treatment, (4) literature reviews, (5) case studies, (6) pilot studies that did not lead to a main study, and (7) studies in which the mean and standard deviation of the outcome variables were not presented.

Information sources Data were collected from August 1, 2024, to August 31, 2024, and the main goal of collecting data was to analyze the effect of psychosocial interventions on anxiety in infer-tile women. Domestic studies were searched by using the Research Information Sharing Service (RISS), Korean Studies Information Service System (KISS), Korean Medical Data-base (KMbase), and National Center for Science and Technology Information (NDSL). Cochrane Library, PubMed, EMBASE, CINAHL (Cumulative Indexing Nursing & Allied Health Literature), and PsycARTICLES were used for foreign studies. Search word selec-tion and retrieval included both medical subject headings (MeSH) and life science term index (EMBASE TREE [EMTREE]).

Main outcome(s) Anxiety.

Quality assessment / Risk of bias analysis The quality of the selected studies was assessed using the Cochrane Collaboration's tool for assessing the risk of bias in randomized trials [Risk of bias (RoB) 2.0] [12]. RoB 2.0 consists of five areas: “Randomization process”, “Deviations from the intended interven-tions”, “Missing outcome data”, “Measurement of the outcome”, and “Selection of the re-ported result”, and risk outcomes are “a low risk of bias”, “a high risk of bias”, or “Some concerns” [12]. Studies were graded as follows: (1) “a low risk of bias” if all domains were judged to be at a low risk of bias; (2) “some concern” if at least one domain was judged to raise some concerns but no domain was at high risk of bias; and (3) “a high risk of bias” if at least one domain was at high risk of bias or there were some concerns in multiple do-mains that would be expected to substantially reduce our confidence in the results [12]. The quality of the selected studies was assessed independently by one researcher and two nursing professors. If there was a difference in the quality assessment results, the studies were re-examined and a meeting was held to reach an agreement.

Strategy of data synthesis The homogeneity and effect size of the interventions of the selected studies were ana-lyzed using the Cochrane Collaboration's review manager [RevMan] version

5.3. The di-rection of the effect and the confidence interval were analyzed using the forest plot. When examining the effect size for the outcome value, if it was a continuous variable, it was ana-lyzed using the standardized mean difference (SMD). The significance of the effect size was determined at alpha=.05, and the confidence interval was 95%.
Heterogeneity was determined using the chi-square null hypothesis test for major variables. I^2 = 0%, refers to low heterogeneity, $30 \leq I^2 \leq 60\%$ means moderate heterogeneity, and $75\% \leq I^2$ indicates high heterogeneity [12]. In this study, when heterogeneity was low, the effect size was calculated using the fixed-effects model, and when heterogeneity was high, the effect size was calculated and analyzed using the random-effects model. When heterogeneity was high, sensitivity analysis was also conducted to test the robustness of the results [14].
To check for publication bias, the degree of visual symmetry was checked through a funnel plot, Egger's regression analysis was performed, and additional analysis was per-formed using the trim-and-fill method to correct for bias.

Subgroup analysis Subgroup by: Intervention type, Session.

Sensitivity analysis Interventiontype.

Language restriction English.

Country(ies) involved Republic of korea/ Yongsan University.

Keywords Anxiety; psychosocial intervention; infertility; and meta-analysis.

Contributions of each author
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