

Effect of Yoga on Psychological Distress among Women Receiving Treatment for Infertility

Abstract

Background: Infertility among women has been associated with significant psychological distress, anxiety, and depression. Yoga therapy has been found to be useful in the management of anxiety, depression and psychological distress. **Aim:** To review studies on the effectiveness of yoga in reducing psychological distress and improving clinical outcomes among women receiving treatment for infertility. **Methodology:** PubMed, ScienceDirect, and Google Scholar databases were searched for studies using the following inclusion criteria: studies published in English, those published between 2000 and 2018, published in peer-reviewed journals, and those with Yoga as an intervention. Review articles, studies without any yoga interventions for infertility, and male infertility were excluded. The keywords included for the literature search were: Yoga, Mindfulness, Relaxation technique, Stress, Distress, Anxiety, Infertility, *In Vitro* Fertilization (IVF), and Assisted Reproductive Technology (ART). **Results:** Three studies satisfied the selection criteria. Two studies involved Hatha yoga intervention and one study used structured yoga program. The variables assessed in these studies were: (1) anxiety, (2) depression, (3) emotional distress, and (4) fertility-related quality of life. All the studies reported an improvement in the anxiety scores after yoga intervention. **Conclusion:** Yoga therapy may be potentially useful in improving anxiety scores among women suffering from infertility. More studies are needed in this area to establish role of yoga as an adjuvant during the treatment of infertility.

Keywords: Anxiety, depression, distress, infertility, yoga

Introduction

Infertility is defined as “a disease of the reproductive system characterized by failure to achieve clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.”^[1] Worldwide, 48.5 million couples are suffering from infertility. Of these, 19.2 million couples have primary infertility and 29.3 million couples have secondary infertility (14.4 million couples live in South Asia and 10 million live in Sub-Saharan Africa). When a woman is unable to ever bear a child, it is classified as primary infertility. Secondary infertility occurs when a woman is unable to bear a child, following either a previous pregnancy or a previous ability to carry a pregnancy to a live birth.^[2]

According to a systematic analysis of national health surveys in 2010, approximately 10.5% of women had secondary infertility throughout the world and roughly 2% had primary infertility.^[2]

In Demographic Health Survey comparative report (2002), the survey of all the developing countries revealed that more than 186 million women were diagnosed with primary and secondary infertility. This represented more than one-fourth population of married women in reproductive age.^[3]

Stress is an important factor which affects fertility as well as the success rate of *in vitro* fertilization. The prevalence of infertility-related stress is reported to be high among couples undergoing infertility treatments and also higher among women as compared to their male partners.^[4] Women with infertility have been reported to have poor psychological status in terms of trait anxiety and depressive symptoms compared to women without infertility.^[5]

Women with infertility often undergo *in vitro* fertilization (IVF) treatment. IVF itself may be perceived stressful as its outcome is unpredictable.^[6,7] Familial pressure and societal pressure also adds to

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the psychological stress which women undergo during in IVF/intracytoplasmic sperm injection treatments.^[8]

Women who have infertility-related psychological distress, anxiety, and depression often are reluctant to use psychotropics and seek nonpharmacological therapies.^[9] Traditional systems of healing such as Yoga have recently gained attention as a popular nonpharmacological treatment in management of common mental disorders such as anxiety and depression.^[10] Yoga is a holistic lifestyle-based intervention which focuses on regulating the lifestyle through mind–body practices. Major components of Yoga-based lifestyle are: asanas (physical postures), pranayama (breathing techniques), meditation (mindfulness), relaxation techniques (yoga nidra, instant relaxation technique, quick relaxation technique, deep relaxation technique), chanting (Om, A, U, M, AUM), and yogic counseling. Yoga has been found to be effective in treatment of anxiety, depression, and psychological distress (both as an adjuvant and as sole therapy).^[11] Yoga also has a positive effect on stress reduction in healthy adults.^[12] Similarly, mindfulness-based therapies have been found to be useful in anxiety and other mood disorders in the clinical population.^[13] Thus, the current paper focused on a narrative review to assess the effectiveness of yoga therapy in reducing psychological distress among women undergoing infertility treatment.

Methodology

Literature search was performed using three databases: Google Scholar, PubMed, and ScienceDirect. Keywords used included “yoga, distress, IVF,” “Yoga distress, infertility,” “yoga, stress, IVF,” “Yoga, stress, infertility,” “yoga, distress, assisted reproduction,” “meditation, stress, IVF,” “meditation, distress, infertility,” “relaxation technique, stress, infertility,” “relaxation technique, stress, IVF,” “yoga, anxiety, women infertility.” Inclusion criteria: studies with outcome measures of psychosocial factors in yoga-based intervention or yoga as an add on treatment among women receiving treatment for infertility, studies published in English, those published between 2000 and 2018, and published in peer-reviewed journals were included in the review. Database search was also performed in order to obtain relevant articles which appeared in the reference lists of articles generated through the previous search. Review articles, unpublished theses, studies without any yoga-related interventions for infertility, and those related to male infertility were excluded from the study.

Results

The search produced a total of 4613 articles (4500 in Google Scholar, 8 in PubMed, and 105 in ScienceDirect), of which 73 were relevant articles. Of these 68 articles were excluded because they did not meet our selection criteria. Of the five remaining articles, two were excluded as they did not mention about yoga and used mindfulness

and relaxation therapy. Three articles could be finally included in the review. Figure 1 depicts the details of the search. Our literature search did not reveal any articles in other languages which satisfied the selection criteria of the study.

All three studies were quantitative and study designs included prospective single-group studies (two in number) and a prospective feasibility study [Table 1]. The studies represented a diverse group of women and were conducted worldwide: one each in Canada, the United States of America, and Italy, respectively. The forms of yoga used varied: two studies used Hatha yoga intervention, whereas other one used yoga program (based on Pulling Down the Moon Yoga for Infertility Program) including asanas, breathing, and meditation. The duration of yoga therapy intervention varied between 6 weeks and 3 months with session duration ranging between 30 min and 2 h. The sample size in the studies varied between 49 and 120, and two studies were conducted during the waiting period for infertility treatment. None of the studies included randomization and women were asked if they were willing to be part of the yoga

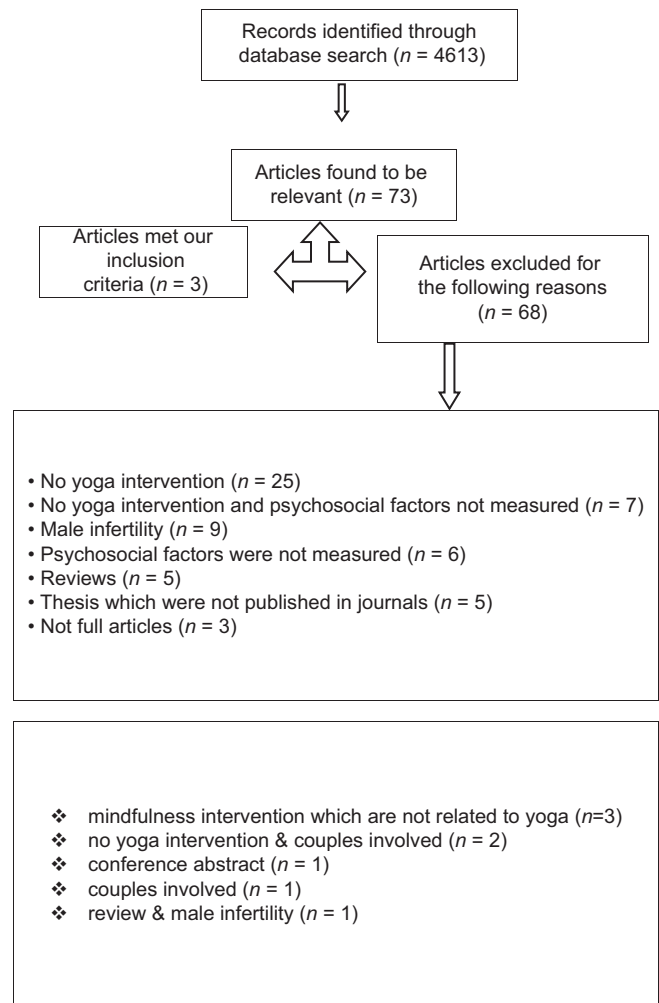


Figure 1: Flow diagram of literature reviewed

Table 1: Characteristics and summary of studies reviewed

Authors and year	Title of the study	Design/type of the study	sample size	Type of yoga	Outcome measures/tools	Results	Comments
Valoriani <i>et al.</i> (2014) Italy ^[14]	Hatha-yoga as a psychological adjuvant for women undergoing IVF: A pilot study	Pilot cohort study	n=120 n=45 yoga group n=75 control group	Hatha yoga	Anxiety: State-trait anxiety inventory - Y1 Depression: EDS Distress: General Health Questionnaire (GHQ)-12	At baseline (T1), EDS and GHQ-12 scores were significantly higher in yoga group than in control group A significant T1-T2 (after 3 months) reduction was observed in yoga group	
Oron <i>et al.</i> (2015) Canada ^[15]	A prospective study using Hatha yoga for stress reduction among women waiting for IVF treatment	Observational prospective single-center study	n=49 women with infertility	Hatha yoga for 6 weeks (2 h session)	FERTIQOL: FERTIQOL couple adjustment: Dyadic adjustment scale Anxiety: State-Trait Anxiety Inventory (STAI) depression: BDI	Yoga was found to improve the overall QOL related to infertility, anxiety, and depression	Women was instructed not to use additional stress reduction methods during the study period (2013)
Jasani <i>et al.</i> (2016) Chicago USA ^[16]	Impact of a structured yoga program on anxiety in infertility patients - A feasibility study	A prospective feasibility study	n=79 n=55 in intervention group n=24 in control group	Pulling down moon yoga (kosha model from traditional yoga therapy)	Anxiety: State-Trait Anxiety Inventory depression: BDI	Mean state and trait anxiety levels were significantly lower after a structured 6 weeks yoga intervention in patients with infertility	

EDS=Edinburgh Depression Scale, IVF=*In vitro* fertilization, QOL=Quality of life, FERTIQOL=Fertility related QOL, BDI=Beck Depression Inventory, GHQ=General Health Questionnaire

group or the control group. Spielberg State-Trait Anxiety Inventory (STAI) was the tool used to measure anxiety among all three studies and Beck's Depression Inventory (BDI) and Edinburgh Depression Rating scale (EDS) were used for depression in two studies. Only one study assessed marital adjustment as well as specific measure of the quality of life. It was also observed that the effect sizes for the interventions varied across all the three studies. Effect sizes for Hatha yoga intervention in one study were 0.35 (STAI) and 0.49 (BDI) for anxiety and depression, respectively,^[15] and in another Hatha yoga study, they were 0.59 (STAI) and 0.51 (EDS) for anxiety and emotional distress, respectively.^[14] For structured yoga therapy intervention (based on Pulling Down the Moon Yoga for Infertility Program), it was 0.82 (STAI) for anxiety.^[16] This shows that all the different yoga-based techniques were useful in improving anxiety scores.

Discussion

This review highlights the current state of evidence on the effect of yoga therapy on reducing the psychological distress among women undergoing infertility treatment. All

the reviewed studies reported improvement in the anxiety levels. It was observed that Hatha yoga intervention improved the quality of life related to infertility and also reduced negative thoughts or feelings associated with infertility. Participating in this intervention also reduced anxiety and depression in women undergoing IVF treatment.^[15] Structured yoga intervention of 6 weeks duration also lead to 20% reduction in state anxiety and 12% reduction in trait anxiety scores.^[16]

It is important to note that the types and duration of yoga interventions used in these studies were not uniform. Two studies used Hatha yoga (which emphasizes on physical postures and dynamic practices) and one study used "Pulling Down the Moon Yoga for Fertility Program," i.e., traditional yoga therapy (which uses components of body-, breath-, and mind-related practices together). As described in the results section, the effect sizes across different interventions in all the five studies varied from 0.35 to 0.82 for various psychological variables. This shows that all the different techniques of yoga were effective for anxiety and stress reduction. However, it is not known whether a combination of these therapies

would have a synergistic effect or not. Furthermore, it needs to be explored in future whether the response to the practice of yoga follows a dose–response curve. It is important to standardize the intervention, so that the future studies are able to replicate them to establish their clinical validity.

All studies had smaller sample sizes and the duration of intervention was short (6 weeks–3 months). Long-term follow-up studies are lacking in this area. It is interesting to note that studies were carried out in different countries across women with varying sociocultural background.

The observation that yoga was found useful in improving anxiety in all the studies points toward the global utility of yoga as a therapeutic science.

Studies have shown that physical exercises are generally useful in reducing stress and enhancing well-being.^[17] Although there are many researches which show beneficial effects of lifestyle modification (majority of them include dietary, physical activity, and behavior-related modifications) in improving psychological health in females suffering from infertility,^[18-20] we did not come across any study which used only physical exercise as the intervention. We also did not come across any study which compared physical exercise with yoga intervention in this population. In general, both complete lack of physical activity as well as excessive physical activity (as observed in athletes) are not considered conducive for female reproductive health.^[21,22]

Overall, this review revealed that yoga therapy has a potential positive impact on mental health of women undergoing infertility treatment. Due to the heterogeneity of methodology and intervention, it is difficult to draw any definite conclusions from this review. However, there seems to be a reduction in anxiety after yoga intervention. The current study has a limitation that the literature search was restricted to only three databases, as we had access only to those databases. Future studies should use standardized validated (generic) yoga programs as the intervention, should include larger sample sizes, and should look at the effects of yoga with long-term follow-up.

Conclusion

Yoga therapy may be potentially useful in improving psychological distress among women suffering from infertility. More studies are needed in this area to establish the role of yoga as an adjuvant during the treatment of infertility.

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Conflicts of interest

There are no conflicts of interest.

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