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Developing a Yoga-based Mindfulness Training Package and Evaluating its the Effectiveness of Yoga-Based Mindfulness on Reducing Anxiety in Pregnant Women

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Abstract

Pregnancy is considered a sensitive period in women's life, which is associated with many physical and psychological changes, and each person deals with it differently. Countless studies have confirmed the relationship between stress and anxiety during pregnancy and the mental and physical health of the child. Anxiety during pregnancy can cause premature birth or even delay the motor and brain development of the baby. Also, high anxiety can be a risk factor for other developmental problems of the baby. The purpose of this study is to investigate the effectiveness of yoga-based mindfulness on reducing anxiety in pregnant women. The research method is pre-test-post-test with a control group. The population and statistical sample includes 30 pregnant women who referred to the midwifery clinic of Iranian

mothers' health who were suffering from anxiety problems. The experimental group received 12 sessions of 75 minutes (weekly 3 sessions) under yoga practice. Data collection tools include demographic characteristics and Beck's anxiety questionnaire (1988). The collected data were analyzed by covariance analysis using spss-24. The findings showed that the effectiveness of yoga-based mindfulness treatment had a greater impact on reducing anxiety ($P=0/001$ $F=89/148$). The average anxiety in the experimental group was 17.4 ± 2.13 and in the control group was 18.07 ± 2.01 and after the intervention in the experimental group it was 10.53 ± 1.55 and in the control group it was 18.13 ± 1.84 . Based on research findings, mindfulness therapy based on yoga is effective in reducing anxiety of pregnant women.

Keywords: Mindfulness Based on Yoga, Anxiety, Pregnancy

1. Introduction

Pregnancy is a common event among women of reproductive age, but it is often considered a stressful period with physiological and psychological changes, and these changes can change a woman's ability to perform the usual roles of life ^[1]. Many changes occur during pregnancy in terms of physical, mental, and social health and overall, in the quality of life of pregnant women at different ages of pregnancy. Even in a normal pregnancy, these changes change a woman's ability to perform the usual roles of life ^[2].

Since women endure many physical and mental changes during pregnancy and their susceptibility to different anxieties of life increases during this period, this period becomes very important from a psychological point of view. At the beginning of pregnancy, a person has concerns related to the acceptance of pregnancy, physical health, loss of fitness, and changes in family and social roles, which causes anxiety, and the symptoms of this anxiety may appear directly and indirectly ^[3].

Antenatal anxiety has attracted a lot of attention due to its impact on birth outcomes and as a risk factor for depression. Several studies have simultaneously reported that prenatal psychological problems are the strongest risk factor for postpartum depression. Anxiety and stress experienced during pregnancy leads to premature birth and anxiety and stress after delivery is reduced ^[4]. Premature birth has adverse consequences for the development of the fetus and is the main cause of the consequences and complications and mortality of infants ^[5, 6].

One of the ways to reduce anxiety is mindfulness therapy ^[7, 8]. Although the roots of mindfulness go back to Eastern countries, the benefits of mindfulness and meditation have almost entered the mainstream of science, and the scientific community has confirmed a positive relationship between mindfulness and meditation with anxiety reduction ^[9]. Mindfulness based on yoga is a cognitive process in which a mindful person, without judgment and with acceptance, focuses on the experience of feelings and events that occur in him or around him at the present moment, and along with this focus on the present moment involves doing mental meditation and yoga exercises ^[10, 11].

On the other hand, the physical conditions during pregnancy can affect the intensity of anxiety of mothers, and the combination of mindfulness therapy with yoga is suitable for reducing this problem for these people, because research has shown that

performing gentle exercises and yoga techniques during pregnancy and breastfeeding Reduction helps during this period. According to the researcher's experience in providing services to these patients, this study was conducted with the aim of "the effectiveness of yoga-based mindfulness on reducing anxiety in pregnant women in reference clinics in Iran: a semi-experimental study".

2. Materials and Methods

2.1 Study Setting and Participants

In this experimental research, 30 pregnant women who referred to the midwifery clinic of the health of Iranian mothers in the city of Mashhad from 1 April, 2022, to July, 2022. Inclusion criteria of pregnant women in this study was having a pregnancy that is identified by the Beck questionnaire and the 36-question SF questionnaire. Having a gestational age range of 14 to 32 weeks, age 19 to 40 years, and a back test score of more than ten are allowed to participate in the plan. Exclusion criteria include absence of more than three sessions and any problems in performing yoga or mindfulness movements that occur during the treatment and prevent the continuation of the work process.

2.2 Research Instrument

The study tool included demographic characteristics and Beck's anxiety questionnaire (1988). Demographic characteristics of North San; The level of education, type of pregnancy, etc.

Beck's anxiety questionnaire (1988)

This questionnaire has 21 items that list the symptoms of

anxiety and is more similar to a checklist. The Beck Anxiety Questionnaire is designed to measure anxiety in teenagers and adults, and each of its items measures one of the common symptoms of anxiety, namely mental symptoms, physical symptoms, and panic. The individual should read the list of symptoms and rate the severity of each symptom over the past week, rating their symptoms as none, mild, moderate, and severe. These options get zero, 1, 2, 3 points. Finally, the total anxiety score is broken down, with a score of 0 to 21 indicating very low anxiety, a score of 22 to 35 indicating moderate anxiety, and a score above 36 indicating high anxiety and requiring follow-up and treatment. This scale has a high internal consistency and the correlation of its items with each other includes a range from 0.30 to 0.71 (mean equal to 0.60) [12, 13]. This test was performed on 83 patients with an interval of one week for retesting and a high correlation (0.75) was obtained [14, 15]. Using factor analysis, 5 components were obtained that explained 58.54% of the variance of the questionnaire scores. Considering the value of validity, it seems that this tool is suitable for measuring clinical anxiety. Cronbach's alpha value calculated in this research was calculated as 0.87.

2.3 Intervention Method

After completing the quality-of-life questionnaire, yoga-based mindfulness training (Tab N.1) was given in 12 sessions for 75 minutes in each session, in the form of tags or groups of two and no intervention was done for the control group.

Table 1: Mindfulness sessions with emphasis on yoga

Meeting	Purpose and process of the meetings in the welfare organization (90 minutes)
First	A brief introduction to yoga - training in mindfulness and yoga - training in mindful breathing - body scan and paying attention to breathing - the first mindfulness exercise is eating raisins with mindfulness. Positions: Asanas: Tadasana-Tiriyakatadasana (standing side stretch) - Dandasana (how to sit correctly) - Butterfly position (work on the hips) - Balance boat position (work on the back of the legs and hips and back) - Bridge position (work on the back and shoulders) - simple twist (back release) - cradle (back release) - body warmers and movements.
Second	Freeing the body and mind from daily affairs - training to listen to the conscious mind - breathing technique - body scan and paying attention to breathing in a conscious way. Positions: Asanas: Tadasana (correct standing position) - simple backbend - warm-ups (cradle position) - balance position Dandasana (correct sitting position) - simple cat (work on the back of the neck) - head to knees A variation of bending forward) - sitting (working on the back with the spine) - a variation of the lying twist (working on the back and freeing the back) - a variation of the leg-locust stretch (working on the back) - a variation of the simple-warm twist spine.
Third	Calming the body and mind-teaching the concepts of emotions-bodily sensations and thoughts-breathing technique and body scan. Postures: asanas: Tadasana (right posture) - a variation of work on the knees and thighs - Tirikonasana (work on the back and sides) - Dandasana (the right way to sit) - rowing (work on the hips and back) - a variation of twist (work on the back) - Fish pose (back release, internal body massage) - Cradle-warmers (variation of work on the pelvis) - Cat with 4 knees (work on the back, neck and chest) - Work on the wrists and shoulders.
Fourth	Body watching and release practice - mindful breathing techniques and moving meditation tape practice - walking mindfully and experiencing body awareness in motion - body scan. Postures: asanas; Whole body stretch, a variety of forward bend - runner's position (hip and leg stretch) - lineman's position (work on the back, stomach, arms and legs) - cobra position (back bend: flexing the back and opening the chest and shoulder) - twist variation (back work) - warm-ups (lying butterfly: hip opening) back leg stretch variation - chest rotation - neck work.
Fifth	Liberation and body scanning - focusing attention on hearing - training to listen to the conscious mind (receptive sounds) - breathing technique - practicing mindfulness and observation. Postures: Asanas: Tadasana- Tirikonasana with more pauses - Forward bend in butterfly position - Balance position Nataraj Asana (work on concentration and resistance of the body) - Back work - Dandasana (how to sit correctly) - Hand mill (variation from bend to Front: flexibility of the hip and back of the leg and strengthening of the back muscles) - warm-ups (lying side stretch - work on the back of the leg - work on the stomach - spine twist)
sixth	Training to direct the awareness of the inner world (your body) and the world outside your body (the outer world) using the practice of going back and forth between the inner and outer world - focusing attention on the sense of hearing in a conscious way (expressive sounds) - breathing technique - Body scan and mindful breathing. Postures: Asanas: Tadasana - warm-ups - Pawan Mokat Asana (neck and back work) - shoulder warm-up - half-butterfly pose (hip flexion) - shoulder rotation (shoulder warm-up). Champion's pose 1 (work on the back, hips, shoulders and front of the thigh) - simple forward bend (relaxing the back - work on the hips and legs - Dandasana (how to sit correctly) - Ashtrasana (bend back - work on stretching the front of the body and back flexibility)-sajdah (relaxing the body).
Seventh	Practicing sitting meditation with conscious mind breathing - focusing attention on the sense of sight and hearing in a conscious mind - observation practice - body scan and liberation. Postures (asanas): Tadasana - Hero's pose 2 (opening the chest - working on

	the thighs) - balancing pose (concentration - calming the mind - working on the legs) - Dandasana - the reverse position of Adamukhaswan Asana (stretching and flexing the back of the legs and Strengthening the back muscles - blood supply to the head) - Spinal twist (back release) - Cobra position with more pause - Supta Toe position (leg stretching - back and lower back massage) - Warmers (warming the pelvis and legs) and back) - warming the shoulders - cold facial massage (releasing facial contractions).
Eighth	Emancipation of the mind and body and observing breathing in a conscious way - focusing attention on the sense of sight and hearing - performing loving kindness meditation - scanning and physical liberation. Positions (asanas): Tadasana - work on the hips and knees, Parsha Utan Asana (a variation of forward bend - work on the back of the legs) - back muscles - pelvic flexibility - tree balance position (work on concentration - being in the moment - work on the knees and legs and pelvis) Dandasana - forward bend with open legs - a variation of the bridge pose (bending the back - strengthening the back muscles - opening the chest) - cradle pose (calming the back) - simple twist - warm-ups - lying tree pose (body stretching and working on the pelvis) - back stretching - bending forward with 4 knees (opening the back and pelvis) - side stretching - prayer position (with explosive exhalation - emptying the lungs - working on the knees and thighs).
ninth	Body Scan and Release - Focusing attention on the sense of touch in a mindful way - Focusing and mindfulness on natural breathing and practicing White Room Meditation (allowing thoughts to enter awareness and observing them instead of fighting them). Positions: warm-ups (overall stretch - lying butterfly position (work on the lower back and pelvic flexibility) - rotation of the hip joint - finger counter - cobra position - prostration - half butterfly - tiger position (work on the back and legs) - Working on the eyes (freeing the eyes from fatigue, strengthening the eye muscles - Dandasana - bending on the side with open legs (stretching the sides - opening the chest - strengthening the back muscles) - bow and arrow position (working on stretching the back leg and hip flexion) - position Boat.
Tenth	Mental release with body scan - training to smell the conscious mind - breathing technique practice in 3 stages - breathing monitoring - body scan and release. Positions: Asanas - Tadasana - Chair position (working on the thighs and knees) - Parshwvatan Asana (variation from bending forward - working on stretching the back of the legs and strengthening pelvic flexibility - Adamukha Asana or Downward Dog position (working on the back muscles - blood Bringing to the head - stretching the back of the leg) Prostrate position (relaxing the back) - a variety of twists of the spine - warm-ups (rotation of the ankles - warm-up for the knees) - cradle position - warm-up of the back of the spine - grasshopper position Working on back flexibility and strengthening back muscles and sciatica).
Eleventh	Practicing being in the moment and observing - doing the moving tape exercise - doing the memory versus observation exercise that facilitates the movement from the past to the present and explaining about the types of thoughts (observative, judgmental, prospective or predictive, explanatory or narrative) - Release and body scan. Positions: Asanas (Tadasana) - Parshwakonasana position with the wall (work on thighs and knees - work on pelvic flexibility and shoulders) Eagle balance position (calming the mind - work on pelvic flexibility and strengthening leg muscles - shoulder flexibility - raising concentration and release of the mind) - Dandasana position (how to sit correctly) - prayer position (removal of carbon dioxide from the lungs - receiving more oxygen - pelvic flexion) - twist position in the squat position - warm-ups (turning the hip and pelvis joints) (hip warm-up) - stretching the back of the leg (opening the back of the leg and working on the back muscles) - stretching the sides - working on the shoulders - simple cobra movement until the stage of prostration (working on the flexibility of the back and strengthening the back muscles).
twelfth	Release and body scan - review of all mindfulness exercises taught - Sitli breathing technique - release state and body scan. Positions (asanas): Tadasana - palm position (variation of stretching the sides) - simple back bend (work on the flexibility of the back, chest and shoulders) - Paschi Mutan position (full forward bend) - Dandasana (correct posture) sitting) cat position: ruler position (work on the muscles of the arms, back of the abdomen and legs until the stage of prostration) - a variation of the bridge position (a kind of backward bend) - cradle position - warmers (a variation of pelvic warming - work on the stomach - full body stretch) - fish pose (work on the back and internal organs of the abdomen) - lizard pose (warming up the back) - work on back flexibility - opening the chest - full twist pose (more advanced) - two-person boat pose.

2.4 Ethical Considerations

All participants were informed about the aims and methods of the study. They were also informed that participation in the study was voluntary, so they could refuse to participate or withdraw from the study at any time. Finally, those who agreed to participate in the study were asked to sign a written consent form.

2.5 Data Analysis

Data analyses were performed by descriptive statistics (tables, graphs, mean, and standard deviation) and inferential statistics. SPSS for Windows 24.0 (SPSS Inc., Chicago, IL, USA) was used in this study and *P* values less than 0.05 were considered significant.

3. Results

Table 2 shows that 46.6% in the experimental group were in the age range of 34-40 years and 33.2% in the control group were in the age range of 29-33 years. In terms of education, 54.4% in the experimental group and 54.4% in the control group.

The average anxiety in the experimental group was 17.4 ± 2.13 and in the control group was 18.07 ± 2.01 and after the intervention in the experimental group it was 10.53 ± 1.55 and in the control group it was 18.13 ± 1.84 . The results ANCOVA analysis in Table 3 showed that mindfulness therapy based on yoga is effective in reducing anxiety in pregnant women.

Table 2: Demographic characteristics of pregnant women participating in the research in two groups

	Variable	Control	Intervention (Case)
Age	19-23	20	6.6
	24-28	33.3	19.8
	29-33	26.4	26.4
	34-40	20	46.6
Education	Diploma	40	13.4
	Bachelor's degree	40	53.4
	Masters degree and higher	20	23.4
Job	Free	20	13.4
	Employee	6.6	6.6
	housewife	73.4	80
Gravida	First pregnancy	53.4	80
	Second pregnancy	33.3	13.4
	Third pregnancy	13.4	6.6
Pregnancy status	wish	60	80
	unwanted	40	20

Table 3: The results of the ANCOVA analysis in the MANKOVA text on the average post-test score of the anxiety variable

Research steps	The dependent variable	The sum of the squares	DF	mean of the squares	F	Significance level
Post-Test	Anxiety	372.347	1	372.347	405.86	0.001

4. Discussion

This study was conducted with the aim of investigating the effectiveness of yoga-based mindfulness therapy on anxiety of pregnant women. The results are in line with the research of Schut *et al* (2017), Perestelo-Perez *et al* (2017), and Eivazi *et al* (2019), respectively [16, 17, 18].

Performing mindfulness exercises based on yoga increases the ability of self-awareness and self-acceptance in pregnant women. Using relaxation training in a wide way and emphasizing it as a valuable anxiety management skill during sessions becomes a stable part of coping skills. Self-regulation of attention, through yoga-based mindfulness, affects the emotional, sensory, and physical components of the body. Regular hatha yoga practice increases musculoskeletal flexibility, strength and balance and helps one experience states of deep relaxation and awareness.

The results of this study showed that mindfulness therapy based on yoga is effective in reducing anxiety in pregnant women. Since pregnant women face stressful situations many times during pregnancy and this may cause anxiety and reduce their quality of life, the way of living can be designed in such a way that through exercise and physical activities Especially mindfulness-based yoga reduced the level of anxiety in people and improved the quality of life. Mindfulness-based yoga offers a proven method to achieve wellness in the body by transcending the level of mind and emotion. Mindfulness-based yoga is not just an exercise method that emphasizes only some physical movements, but a set of physical exercises and stretches and mindfulness exercises, along with exercises to release mental energies [19, 20].

In yoga-based mindfulness sessions, there is a strong focus on breathing, starting with more active postures and moving gradually to calmer and meditative postures [21, 22]. Emphasis on meditative breathing and gradual relaxation of posture reduces the speed of the physiological stress response and the speed of thoughts, and this physiological and psychological relaxation is incompatible with anxiety and worry. Meditation and mindfulness components of the yoga intervention increase the state of relaxation as the main feature of the intervention. Since yoga-based mindfulness exercises are more exercise-based, participation in these

programs reduces the embarrassment of receiving counseling services [23, 24].

The limitations of this study include the inability to control all disturbing variables such as intelligence, other comorbidities such as disorder and medical assistance before participating in the research, problems related to regularly holding classes due to the special physical conditions of women, the presence of a spouse or companion on honesty in answering and... while completing the questionnaire, one of the limitations of the research was the inability to use the pregnancy anxiety test.

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6. Conflicts of Interest

The authors declare that they have no conflict of interest.

7. References

- Bari M, Battista N, Pirazzi V, Maccarrone M. The manifold actions of endocannabinoids on female and male reproductive events. *Front Biosci.* 2011; 16(498):e516.
- Sarkar N. The impact of intimate partner violence on women's reproductive health and pregnancy outcome. *Journal of Obstetrics and Gynaecology.* 2008; 28(3):266-271.
- Greutmann M, Pieper PG. Pregnancy in women with congenital heart disease. *European Heart Journal.* 2015; 36(37):2491-2499.
- Grant KA, McMahon C, Reilly N, Austin MP. Maternal sensitivity moderates the impact of prenatal anxiety disorder on infant mental development. *Early Human Development.* 2010; 86(9):551-556.
- Lima FV, Yang J, Xu J, Stergiopoulos K. National trends and in-hospital outcomes in pregnant women with heart disease in the United States. *The American Journal of Cardiology.* 2017; 119(10):1694-1700.
- O'Connor TG, Heron J, Golding J, Beveridge M, Glover V. Maternal antenatal anxiety and children's

- behavioural/emotional problems at 4 years: Report from the Avon Longitudinal Study of Parents and Children. *The British Journal of Psychiatry*. 2002; 180(6):502-508.
7. Krisanaprakornkit T, Sriraj W, Piyavhatkul N, Laopaiboon M. Meditation therapy for anxiety disorders. *Cochrane Database of Systematic Reviews*. 2006; 1.
 8. Hofmann SG, Gómez AF. Mindfulness-based interventions for anxiety and depression. *Psychiatric clinics*. 2017; 40(4):739-749.
 9. Williams JMG, Duggan DS, Crane C, Fennell MJ. Mindfulness-Based cognitive therapy for prevention of recurrence of suicidal behavior. *Journal of Clinical Psychology*. 2006; 62(2):201-210.
 10. Turner K. Mindfulness: The present moment in clinical social work. *Clinical Social Work Journal*. 2009; 37:95-103.
 11. Dimidjian S, Kleiber BV, Segal ZV. Mindfulness-based cognitive therapy. *Cognitive and behavioral theories in clinical practice*, 2010, 307-331.
 12. Gillis MM, Haaga DA, Ford GT. Normative values for the Beck anxiety inventory, fear questionnaire, Penn state worry questionnaire, and social phobia and anxiety inventory. *Psychological Assessment*. 1995; 7(4):450.
 13. Osman A, Kopper BA, Barrios FX, Osman JR, Wade T. The Beck Anxiety Inventory: Reexamination of factor structure and psychometric properties. *Journal of Clinical Psychology*. 1997; 53(1):7-14.
 14. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: Psychometric properties. *Journal of Cognitive Psychotherapy*. 1998; 12(2):p163.
 15. Beck AT, Steer R. Beck anxiety inventory (BAI). Überblick über Reliabilitäts- und Validitätsbefunde von klinischen und außerklinischen Selbst- und Fremdbeurteilungsverfahren. 1988; 7.
 16. Schut DM, Boelen PA. The relative importance of rumination, experiential avoidance and mindfulness as predictors of depressive symptoms. *Journal of Contextual Behavioral Science*. 2017; 6(1):8-12.
 17. Perestelo-Perez L, Barraca J, Penate W, Rivero-Santana A, Alvarez-Perez Y. Mindfulness-based interventions for the treatment of depressive rumination: Systematic review and meta-analysis. *International Journal of Clinical and Health Psychology*. 2017; 17(3):282-295.
 18. Eivazi S, Karami J. Effectiveness of yoga-based mindfulness in reducing anxious women's rumination. *Rooyesh-e-Ravanshenasi Journal (RRJ)*. 2019; 8(6):87-94.
 19. Beddoe AE, Lee KA, Weiss SJ, Powell Kennedy H, Yang C-PP. Effects of mindful yoga on sleep in pregnant women: A pilot study. *Biological research for nursing*. 2010; 11(4):363-370.
 20. Rakhshani A, Maharana S, Raghuram N, Nagendra HR, Venkatram P. Effects of integrated yoga on quality of life and interpersonal relationship of pregnant women. *Quality of life Research*. 2010; 19:1447-1455.
 21. Siegel RD, Germer CK, Olendzki A. Mindfulness: What is it? Where did it come from? *Clinical handbook of mindfulness*, 2009, 17-35.
 22. Varma C, Raju P. *Yoga Therapy in Pediatrics*, 2012.
 23. Jayashree R, Malini A, Rakhshani A, Nagendra H, Gunasheela S, Nagarathna R. Effect of the integrated approach of yoga therapy on platelet count and uric acid in pregnancy: A multicenter stratified randomized single-blind study. *International Journal of Yoga*. 2013; 6(1):p39.
 24. Kepner J, Devi NJ, Le Page J, Le Page L, Kraftsow G, Lee M. The differences between yoga teacher training and yoga therapist training and the distinction between yoga teaching and yoga therapy. *International Journal of Yoga Therapy*. 2014; 24(1).