

A Comparative Clinical Study of the Effect of Yoga, Music, and Yoga with Music on Anxiety During Pregnancy

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Abstract: Purpose-stress, anxiety of mother can lead to adverse effects for the expectant mother and the unborn child. The present study investigates whether interventions like yoga, pranayama and classical music can improve anxiety, maternal as well as fetal well-being.

Methods- A total of 201 pregnant women took part in this comparative clinical study. Symptoms of anxiety were assessed by Hamilton anxiety scale and questionnaires before the intervention phase (from 18-20th weeks of pregnancy) and afterwards (up to labour). Additionally, immediate changes regarding experienced stress and mood from before until after the interventions were explored with questionnaires.

Results- Regarding immediate effects, both interventions showed positive effects on the emotional state, symptoms of anxiety. Additionally, the singing group showed a larger reduction in cortisol and a larger improvement in valence than the music group. Looking at more prolonged effects, significant effects on general self-efficacy and perceived closeness to the unborn child were found.

Conclusion -In the present study, promising effects of yoga with music and in particular depressive symptoms and on maternal well-being and perceived closeness during pregnancy appeared. Prenatal yoga and music interventions could be an easy to implement and effective addition to improve mood and well-being of the expectant mother and support mother-infant bonding.

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Keywords -pregnancy, yoga, classical music, antenatal care, anxiety, stress

Introduction

Pregnancy is one of the most significant events in the lives of women. Being pleasant, it is one of the most stressful events in a woman's life. Prevalence of anxiety disorder during pregnancy, in developed and developing countries are 10% and 25%, respectively²⁻³. The foetus is completely dependent on the mother during intrauterine life. As a result, the fetus's health is directly related to the mother's health. Maternal psychology, as well as maternal nutrition, has a significant impact on the health of both the offspring and the mother during pregnancy. Whatever emotions a woman experiences during her pregnancy are passed on to the foetus.⁴

Anxiety, depression, and stress during pregnancy are risk factors for adverse maternal and child outcomes. Anxiety during pregnancy is linked to shorter gestation, which has negative consequences for foetal neurodevelopment and child outcomes.⁵

It could be linked to the pathogenesis of ASD.⁶ Prenatal maternal stress has been linked to an increased risk of spontaneous abortion, preterm labour, foetal malformations, and asymmetric growth restriction in both animal and human studies.⁷

The use of anxiolytic drugs such as benzodiazepines by mothers has been related to the low-birth-weight baby, caesarean delivery, and neonatal ventilatory support. Preterm birth, minor neonatal respiratory interventions, and hypertensive diseases all have been linked to SRI use ⁸

As a result, interventions to reduce anxiety in pregnant women are extremely important.

Non-pharmacological interventions such as yoga and music are becoming increasingly popular because they are low cost, easily accessible, and have a high acceptability among users. It promotes maternal strength and reduces anxiety and stress in a diverse population. ⁹⁻¹⁰

Field et al. concluded that yoga exercises during pregnancy reduced anxiety, depression, back and pelvic pains, and resulted in infants being born at an appropriate gestational age and with normal birth weights ¹¹. The purpose of this research is to compare the effects of yoga, music, and yoga combined with music on anxiety during pregnancy.

Aim And Objective

Aim-

To study and compare the effect of yoga o, music alone and in combination with standard antenatal care on Anxiety in pregnancy

Objective-

1. To study the effect of certain aspects of yoga (*asana*, *pranayama*) ,music and combined yoga and music with standard antenatal care on anxiety in pregnancy

Material And Methods

201 pregnant women were selected randomly for study from OPD and IPD of Parul Ayurveda Hospital, Parul University Gujarat & Government Ayurveda Hospital, Jabalpur. MP

-It was an open randomized clinical trial

-Sample size- 201

-A detailed proforma was prepared with details of history taking, physical signs and symptoms, laboratory investigations as mentioned in classics and allied sciences.

Study Design:

A group of 201 pregnant women with singleton pregnancy having gestation period from 20 weeks up to delivery were selected and categorized into 3 groups group A, group B and group C

Group A-A group of 67 pregnant women was advised for yoga with standard antenatal care.

Group B- A group of 67 pregnant women was advised for music with standard antenatal care.

Group C- A group of 67 pregnant women was advised for combined yoga with music and standard antenatal care.

Expectant mothers of group A were advised for standard antenatal care, relaxation exercise, *pranayama* (breathing exercise) specifically *anuloma-viloma* and *bhramari*, trimesterwise *yogasana*(postures) in the morning.(*Asana*-.In 2ndtrimester-*Ardhakati chakrasana*, *ardhachakrasana*, *trikonasana*,*vajrasana*,*padmasana*, *baddhapadmasana*, *veerasana* and *shawasana* .In 3rd trimester-*ardhakatichakrasana*, *ardhachakrasana*, *vajrasana*, *malasana*, butterfly (only in 9th month), *badhhakonasana* (only during 9th month), *shawasana* (in lateral position).Yogasana advised to perform according to their strength.

The pregnant women of second trimester were advised to listen raaga *bhupali*, *ageshri*, *kedar* and in third trimester *bhupali*, *malkans* and *kalyana* according to prescribed time of that particular raga. Source of music was 25 cm away from the abdomen in medium sound (between 50-60 dB).

Follow up-20,24,28,32,34,36,38 and 40 weeks of pregnancy Study duration Around 20-22 weeks up-to delivery.

Instrument

Anxiety was scored using Hamilton's anxiety scale The scale consists of 14 items designed to assess the severity of a patient's anxiety. Each of the 14 items contains a number of symptoms, and each group of symptoms is rated on a scale of zero to four, with four being the most severe. All of these scores are used to compute an overarching score that indicates a person's severity of anxiety . Each item is scored on a scale of 0 (not present) to 4 (severe),

with a total score range of 0–56, classification of symptoms-0-absent,1-mild,2-moderate,3-severe and 4-incapacitating. Where HAM-A score level of anxiety <17 indicates mild severity,17-24 moderate severity, and 25-30 moderate severe.

-The parameters were scored on the basis of standard methods and analysed statistically

Result

TABLE-1 group A- On day 1 62.68% with mild anxiety and 37.31% had moderate, on 2nd follow up and 65.67% with mild, 31.34 % moderate and 2.98% had no anxiety, on 3rd 65.67% with mild,22.38% moderate and 11.94% without anxiety on 4th 64.17% mild, 13.43% moderate, on 5th 52.23% mild, 10.44% moderate, on 6th 43.28% mild and 56.71% without anxiety , on 7th 74.37% without anxiety and 25.37% had mild .On 8th follow up 76.11% were without anxiety.

Table-1-Distribution Of Patients According To Anxiety

Anxiety	1	Follo wup 1	2	Follo wup 2	3	Follo wup 3	4	Follo wup 4	5	Follo wup 5	6	Follo wup 6	7	Follo wup 7	8	Follo wup 8
Abse nt	0	0	2	2.98	8	11.94	15	22.38	25	37.31	38	56.71	50	74.62	51	76.11
Mild	42	62.68	44	65.67	44	65.67	43	64.17	35	52.23	29	43.28	17	25.37	16	23.88
Mode rate	25	37.31	21	31.34	15	22.38	9	13.43	7	10.44	0	0	0	0	0	0
Total	67	100	67	100	67	100	67	100	67	100	67	100	67	100	67	100

TABLE-2 Group B-On day 1,1.49% diagnosed absent, 50.74% with mild, 47.76% with moderate on 2nd follow up 19.40% diagnosed absent, 56.71% with mild, 23.88% with moderate ,on 3rd follow up 59.70% diagnosed absent, 26.86% with mild, 13.43% with moderate on 4th follow up 79.10% diagnosed absent, 20.89% with mild, on 5th follow up 82.08% diagnosed absent, 17.91% with mild, on 6th follow up 91.04% diagnosed absent, 8.95% with mild, on 7th follow up 100% diagnosed absent, on 8th follow up 100% diagnosed absent.

Table-2-Distribution Of Patients According To Anxiety

Anxiety	1	Follo w up 1	2	Follo w up 2	3	Follo w up 3	4	Follo w up 4	5	Follo w up 5	6	Follo w up 6	7	Follo w up 7	8	Follo w up 8
Abs ent	1	1.49	3	19.40	40	59.70	3	79.10	5	82.08	1	91.04	7	100	7	100
Mil d	34	50.74	38	56.71	18	26.86	14	20.89	12	17.91	6	8.95	0	0	0	0
Mo drate	32	47.76	16	23.88	9	13.43	0	0	0	0	0	0	0	0	0	0
Tota l	67	100	67	100	67	100	67	100	67	100	67	100	67	100	67	100

TABLE-3-GROUP C-On day 1 2.98% diagnosed with no anxiety, 62.68% with mild, 34.32% with moderate on 2nd follow up 23.88% diagnosed absent, 61.19% with mild, 14.92% with moderate. On 3rd follow up 56.71% diagnosed absent, 41.79% with mild, 1.49 % with moderate. On 4th follow up 74.62% diagnosed absent, 25.37% with mild, on 5th follow up 85.07% diagnosed absent, 13.43% with mild, 1.49% with moderate, on 6th follow up

91.04% diagnosed absent, 8.95% with mild, on 7th follow up 100% diagnosed absent, on 8th follow up 97.01% diagnosed absent, 2.98% with mild. Anxiety.

Table-3 Distribution Of Patients According To Anxiety

Anxiety	1	Follo w up 1	2	Follo w up 2	3	Follo w up 3	4	Follo w up 4	5	Follo w up 5	6	Follo w up 6	7	Follo w up 7	8	Follo w up 8
Absent	2	2.98	6	23.88	8	56.71	0	74.62	5	85.07	6	91.04	7	100	6	97.01
Mild	4	62.68	4	61.19	2	41.79	1	25.37	9	13.43	6	8.95		0	2	2.98
Mod erate	2	34.32	1	14.92	1	1.49		0	1	1.49		0		0		0
Total	6	100	6	100	6	100	6	100	6	100	6	100	6	100	6	100

Table -4 -Data Was Analysed By Using An Independent T-Test

t test p valu e (A/B , B/C, A/C)	0.3113, 0.1055, 0.4977	0.0214, 0.2277, 0.0002	<0.0001, 0.4158, <0.0001	<0.0001, 0.5424, <0.0001	<0.0001, 0.8290, <0.0001	<0.0001, >0.9999, <0.0001	<0.0001, <0.0001	<0.0001, 0.1596, 0.0002
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p -value of less than 0.05 was considered statistically significant.

Group B showed significantly greater improvement in anxiety than groups A and C. The sixth follow-up revealed no signs of anxiety. It was absent during the eighth follow-up in group B, 97.01% in group C, and 76.11% in group A. The overall effect of Anxiety was 0.0001, which is significant because the P-value is less than 0.05.

Discussion-

The present study conducted to compare the effect of yoga ,music alone and combined yoga with music along with standard antenatal care according to WHO on anxiety in pregnant women. Stress and anxiety are linked with other mental health problems. There is a high comorbidity between depression and anxiety, with 9.5% of women who reported having anxiety also reported having depression during their pregnancy.¹²

Studies show that the high level of maternal anxiety has a significant relation with mental disorders, emotional problems, lack of concentration, hyperactivity and impaired cognitive development of children¹³⁻¹⁴

It's mentioned that increased stress hormones like corticotrophin particularly cortisol and androgens which induce anxiety could lead to cognitive changes, like changes in language development, ability to classify the contents and speech in girls .Extreme anxiety in pregnancy will be accompanied with proliferation of too neuroblasts and also schizophrenia and dyslexia¹⁵increased cortisol level is associated with reduced brain growth¹⁶. Cortisol has been linked to the growth of two sides of the hippocampus, particularly the right side, in the first six months of an infant's life. Severe anxiety affects new-born biological indicators such as height, weight, and head circumference significantly.¹⁷

Prenatal depressive symptoms are also linked to low oxytocin levels and lower infant birth weight during pregnancy, according to research.¹⁸ Oxytocin is a hormone that is produced in the hypothalamus and has both peripheral and central effects. Oxytocin plays important roles both before and after childbirth, acting on the uterus during labour and stimulating lactation. Centrally, oxytocinergic systems are thought to influence a wide range of complex human social behaviours, including pair bonding, attachment and social memory, emotional empathy,

trust and generosity, and anxiety suppression. Oxytocin and music can both benefit the cardiovascular and immune systems, and it is argued that a better understanding of the oxytocinergic system's multiple actions may lead to its synergistic use with music in a variety of therapeutic applications in psychology and neurology. The multiple actions of the oxytocinergic system may lead to its synergistic use with music in a range of therapeutic applications in psychology and neurology.¹⁹

Moderate-to-severe anxiety, during pregnancy, has a significant effect on children's cognitive and psychiatric disorders, which are, sometimes, stable and seriously endanger the health of children²⁰. In this study The non pharmacological treatment like yoga and music are found to be effective to reduce anxiety in pregnant women.

Yoga practices includes physical posture, breathing techniques which minimize the complication of pregnancy, like pre-term delivery, intrauterine growth retardation, pregnancy induced hypertension. Antenatal yoga lowered state of anxiety and cortisol level, and pranayama practices relaxes the mind refocuses.²¹ It harmonises the mind and body to provide an ideal neuroglandular adjustment within the individual and may stimulate GH and DHEAS secretion. DHEAS, which is secreted by the adrenal cortex, functions in the human body as a neurosteroid, cardioprotective, anti-diabetic, anti-obesity, and immunostimulant. It is additionally known as youth hormone.²²⁻²³

Erect posture of the spine in meditative asanas, such as Padmasana and Vajrasana, eliminates the possibility of abdominal visceral compression and also frees the mind from the burden of the body. Richer blood supply to the pelvic region and minimal production of carbon dioxide in the body due to lesser muscular involvement produce parasympathetic dominance, which may indirectly influence the GH and DHEAS basal levels in the body.²⁴

In the human body's machinery, an adequate supply of oxygen to the circulating blood is essential for an individual's health. Pranayama (scientific breathing practises) improves this supply significantly. This increased blood supply to the endocrine glands improves their health²⁵. Regular practise of various forms of Pranayama improves psychophysiological relaxation by quieting and calming the mind, decreases sympathetic tone, and increases parasympathetic activation²⁶⁻²⁷, all of which may have a positive effect on the basal level of GH and DHEAS concentration in blood. Similarly, music interventions affect vital sign values, foetal movements, and reduce the state and trait anxiety levels of pregnant women.²⁸⁻²⁹

In the present study, we conducted clinical study on the non pharmacological interventions and their comparison that provides the basis for this positive influence focusing only on anxiety of pregnant mothers.

Conclusion

The study findings suggest benefit of using music as an alternative intervention to improve the quality of maternal and child health care. This study provides ideas for future research on integrating the yoga, music, philosophy in caring for pregnant women with general as well as mental health conditions. In addition, further investigations are necessary to replicate the beneficial findings of this program in larger populations and to better elucidate physiological mechanisms underlying mental status during pregnancy.

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