RESEARCH
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IMPACT OF SOPHROLOGY TOWARDS PERINATAL STRESS MONITORED BY SERUM CORTISOL LEVEL AMONG PRIMIGRAVID WOMEN

Poongodi Chellapandian[1], Padmavathy Padmanaban[2], Dr. Anuradha.M[3], Kanniammal[4], Rajeshwari[5]
[1]Panimalar College of Nursing, Varadharajapuram, Poonamallee, ChennaiTamilnaduIndia
[2]Department of Obstetrics and Gynaecology,Panimalar Medical College Hospital &Research Institute,Varadharajapuram,Poonamallee,Chennai,Tamilnadu,India
[3]Department of Obstetrics and Gynaecology, SRM Medical College Hospital and Research Center, Kattankuluthur, Tamilnadu, India
[4]Department of Obstetrics and Gynaecology, SRM College Of Nursing, Kattankuluthur, Tamilnadu India
[5]Department of Obstetrics and Gynaecology, SRM College Of Nursing, kattankuluthur, Tamilnadu, India

ABSTRACT
Pregnancy is one of women's natural processes. Perinatal stress is prevalent during pregnancy which harms the fetus and neonate. When a mother has stress during her pregnancy stress hormones trigger the release of glucocorticoids stress hormone cortisol. Cortisol is secreted at higher levels during the body's stress response and is responsible for several stress-related changes in the body. Altered brain structure and its function are associated with perinatal stress. It has been found that changes in brain development will lead to changes in the child's fingerprint pattern. Sophrology techniques are an effective and simple method to reduce thecortisol secretion.
AIMS &OBJECIVES- The study aimed to assess the impact of sophrology on perinatal stress monitored by cortisol level among primiparous women.
METHODS. Participants were 20 Primigravid women 10 experimental and 10 control group at 28 weeks of gestation. In the pre-test, cortisol level was checked for both groups. On the day of the pretest, sophrology techniques were demonstrated to participants of the experimental group but the control group only standard hospital routine care. After 6 weeks of intervention i.e. at 34- 36th weeks of gestation cortisol level was checked for both groups.
RESULTS There were significant differences in the mean score of cortisol levels between the control and experimental groups (p=<0.001). The results of the study showed that the sophrology intervention reduced the cortisol level among primigravid women.

Keywords- Primigravid women, Perinatal stress, cortisol level, Sophrology

INTRODUCTION

Maternal stress during pregnancy is associated with increased occurrences of preterm birth, developmental delays, low birth weight, birth defects, and an increased risk for neurological and behavioral developmental impairments in the offspring.[1] However, much less is known about the effects of such stress in mothers Due mostly to hormonal changes, pregnant women will experience a wide range of mental problems. This will cause odd mood swings. One of the most unforgettable times in a woman's life is giving birth to a child. Most women are usually unable to enjoy childbirth due to their worries.[2]Anxiety, tension, and fear all have a noticeable impact on how labor progresses and how pain is perceived. Stress and anxiety during pregnancy, particularly in the last trimester, increase the risk of labor lasting longer than expected, increase the need for painkillers, increase the number of emergency cesarean sections, and increase the likelihood of the cortisol level, which directly affects the developing fetus.[3]The levels of cortisol in the mother and fetus are related. Maternal cortisol levels rising even little will result in significant increases in fetal cortisol levels. Stress throughout pregnancy affects the fetus's developing structures and determines its physical, mental, or behavioral result.[4] Just 10 minutes of Sophrology, either sitting on your chair during your lunch break or just before going to sleep, can make a difference to your mental and physical well-being as the months go by. Sophrology can help you learn the true art of relaxation and how to observe your thoughts without Judgment.5 These simple body awareness methods, as well as breathing and visualizations, will support you through your toughest months and will lead you to Feel more energized. Prenatal stress has been linked to altered brain structure and function. It has been discovered that alterations in brain development result in alterations in the fingerprint pattern of the offspring.[6]Mind-body medicine harnesses the power of one's thoughts and emotions to affect one's health. Hippocrates stated that greatest force in getting well is the natural healing force within each of us." Pseudomedical treatments known as "mind-body" interventions are predicated on the idea that the mind affects the body. Relaxation, hypnosis, visualization, meditation, yoga, positive affirmation, biofeedback, tai chi, qi gong, cognitive-behavioral therapy, group support, autogenic training, and spirituality are common.[7] Sophrology is a dynamic relaxation method that can strengthen the well-being of both your body and your mind. Practicing sophrology involves techniques such as breathing, mental imagery, gentle movement, meditation, and progressive muscle relaxation. You can manage stress well by using sophrology practices – enjoying a calm mind and relaxed body in any situation.[8] several approaches for stress reduction have been utilized successfully in pregnancy sophrology is a relaxation technique that has been statistically proven to be better for stress reduction and good adaption in the prenatal period. The present study evaluates the effectiveness of sophrology on perinatal stress among Primi gravid women.

Objectives

To assess the impact of sophrology on Perinatal stress monitored by serum cortisol level among primigravid women between control group and experimental group.

METHODS

Hypotheses: There will be a significant difference in cortisol level among primigravid women between control group and experimental group.

Research approach: An experimental Quantitative approach was used.

Design: The quasi-experimental research design –pretest posttest with control and experimental group was adopted for this study.

Study Setting: Study was conducted at Panimalar Medical College Hospital &Research Institute

Samples: The study population consists of Primigravid women who filled the inclusion criteria. Primi gravid women who attend the antenatal OPD at PMCH&RI

Sampling technique: Non – A probability purposive sampling technique was adopted to select the study participants. For the experimental group and control group.

Inclusion criteria

- Primi gravid women aged 18yrs to 35 years who were at 28 weeks of gestational age in antenatal OPD at PMCH & RI.
- Primi gravida women with a single fetus at 24 weeks of gestation who were attending antenatal OPD at PMCH&RI
- Primi gravida women with normal symptoms of pregnant according to indications of natural childbirth attending antenatal OPD at PMCH&RI

Exclusion criteria

- Primigravida women who were below 18 weeks of gestation attending antenatal OPD at PMCH&RI
- Primigravida women who had any obstetrical and morbidity complications in antenatal OPD at PMCH&RI
- Primigravida women with any other co-morbidity like heart diseases, Hypo (or) thyroid problems, Pregnancy Hypertension, GDM and are under treatment in antenatal OPD at PMCH&RI
- Primigravida women who had a history of abortion and threat-end premature labour at PMCH &RI
- Primigravida women with a history of any other complications during pregnancy like placenta previa, low-lying placenta, incompetent os, and history of respiratory diseases.at PMCH&RI.
- Primi gravid women who had a history of mental diseases at PMCH&RI

Sample size.

The total sample size was calculated at 20 subjects based on the findings of a previous study (17). The sample size for each group was calculated to be 20 subjects with a 10% attrition rate, resulting in a final sample size of 10 subjects in each group. (1) n = 20.Experimental group-10 & control group 10

$$n = \frac{2s^2\left(Z_{1-\alpha/2} + Z_{1-\beta}\right)^2}{\left(\mu_1 - \mu_2\right)^2}$$

$$= \frac{2 \times 0.26^2 (2 + 1.84)^2}{(2.6 - 2.43)^2}$$

Data collection Procedure The period of study was six months from July 2023 to December 2023. Formal permission was obtained from the Head of the Department of Obstetrics and Gynecology. It was first conducted for the control group and then the study group in PMCH&RI new block Chennai. Informed Consent was obtained from the subjects. Based on inclusion criteria, a non-probability purposive sampling technique was used. 20 samples for the control group and study group were used. Primigravid women with 28th week of gestation were selected for this study. Pre-test was done at the 28th week of gestation using a structured interview schedule for 15 minutes for each subject. In pre-test demographic data, clinical parameters, (Blood pressure, Urine for sugar and protein), and blood parameters (cortisol level) were collected Perinatal stress was assessed using the perceived prenatal maternal stress scale. The study group and control group received routine hospital care. For the study group, Sophrology was demonstrated by the investigator)., the Sophrology relaxation exercises training was conducted from 28 gestational weeks, 3–5 times per week, 30 min each time. until childbirth. Both the groups received routine hospital care. Doubts were clarified by the investigator subjects were asked to perform Sophrology exercises daily for 30 minutes at home till delivery, Sophrology exercises to relieve Perinatal stress on childbirth preparation pamphlets were provided to the study group for their self-references after completion of the sophrology practice session mobile number was given to the subjects. At 32 nd week of gestation, post-test -1 was done to assess the clinical parameters. At the 36th week of gestation, post-test –II was done to assess the level of Perinatal stress, clinical parameters, and blood parameters (cortisol level).

RESEARCH TOOLS

The tools which were used in this study are –Part-I-Demographic profile 1. Age in years, Education, Religion, occupation, monthly income of the family, place of residence, type of family, type of marriage, Part-II-Clinical parameters – Heart rate, systolic blood pressure, diastolic blood pressure, urine for protein, urine for sugar, blood cortisol level.

Part–III- **PERCEIVED PRENATAL MATERNAL STRESS SCALE-STATE STRESS INVENTORY TOOL TO ASSESS THE LEVEL OF STRESS OF PRIMIGRAVIDA WOMEN Scoring and interpretation. The question that assesses the stress level for primi gravid women consist of 20 items**

Positively worded questions are numbered 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20.

OPTIONS	SCORE
Not at all	4
Somewhat	3
Moderately So	2
Very much So	1

Negatively worded questions are as numbered 3, 4, 6, 7, 9, 12, 13, 14, 17 and 18.

OPTIONS	SCORE
Not at all	4
Somewhat	3
Moderately So	2
Very much So	1

Intervention methods for study group The study subjects at 28 weeks of gestation were placed in a comfortable and quiet environment and will be positioned in supine position on a comfortable bed, with soft music playing, relaxed the whole body, and adjusted their breathing. The investigator guided the patients by placing the patients' hands on the abdomen, imagining health and happy growth of the fetes and feeling fetal movement. During this time, women are trained on deep inspiration and expiration respiratory exercises as well as sophrologic relaxation techniques 3-5 times per week, 30min each time.

Analysis Frequency, percentage, mean, standard deviation, and independent and paired t-tests were used for data analysis. The analysis was conducted using SPSS software version 21. A significant level of 0.05 was considered statistically significant.

Ethical Considerations: Before data collection, written consent was obtained from the Primigravid women. Both groups received routine prenatal care at health centers. At the end of the study, sophrology relaxation techniques were given to the each group. This study was approved by the Ethics Committee of the Institutional human ethics committee of PMCH&RI.

RESULTS The results of the univariate analysis, which aims to determine the frequency of each variable studied, can be seen in the following table:

Table: I

Distribution of demographic variables among primigravid women in study group and control group.

Demographic Variables		Group				Chi Square Test
		Study (n=148)		Control (n=146)		
		n	%	n	%	
Age	18-22 years	4	40	3	30	
	23-27 years	3	30	3	30	
	28-32 years	1	10	3	30	
	28-32 years					0.688
Education	Non Literate	2	20	3	30	
	Primary school	2	20	4	40	
	Higher Secondary School	2	20	2	20	
	Graduate	4	40	1	10	
	Post Graduate					
	Professional					0.446
Religion	Hindu	7	70	4	40	
	Muslim	1	10	6	60	
	Christian	2	20			0.041
Occupation	House Wife	2	20	3	30	
	Skilled Worker	5	50	3	30	
	Unskilled Worker	3	30	4	40	
	Professional					0.656
Monthly income of Family	Rs.5001 - 10000	4	40	4	40	
	Rs.10000 - 15000	3	30	4	40	
	> Rs.15000	3	30	2	20	0.831
Place of residence	Urban	3	30	4	40	
	Semi urban	7	70	6	60	
	Urban - Slum					
	Rural					0.639
Type of marriage	Non consanguineous	6	60	4	40	0.371
	consanguineous	4	40	6	60	
Type of Family	Nuclear Family	9	90	5	50	
	Joint Family	1	10	5	50	0.051

It shows that most respondents in group aged 18-22years amounted to 4people (40%), and respondents aged 23- 27years amounted to 3 (30%) people. Majority of respondents' education level is low education as much as 20%, and the dominant occupation of respondents is skilled worker as much as 50%.

TABLE: II
Comparison of pre test and post test level of perinatal stress among primigravid women between study group and control group

Pretest at 28 th weeks of gestation	Level of stress	Study group N=10	%	Control Group N=10	%	Chi square Test
	Low	-		-	-	X^2 =0.952 P=0.3292 NS
	Medium	2	20	20	40	
	High	8	80	80	60	
	Total	10	100	10	100	
Posttest at 28 th weeks of gestation	Level of stress	Study group N=10	%	Control Group N=10	%	Chi square Test
	Low	8	80	1	10	X^2=9.898
	Medium	2	20	9	90	P=0.001**
	High	-	-	-	-	S
	Total	10	100	10	100	

Table II show that 8(80.0%) respondents experienced high level stress during pregnancy, 2 (20.0%) respondents experienced low level of stress and did not experience stress after sophrology relaxation exercises. The analysis of the influence of sophrology relaxation exercises on the stress level of pregnant women in post test at 36 th week of gestation obtained a p-value = 0.0017 (p <0.05). These test results show that sophrology relaxation exercises affects the stress level of Primigravid women in PMCH&RI.

TABLE: III Comparison of pre test and post test of clinical parameters on level of perinatal stress among primigravid women between study group and control group

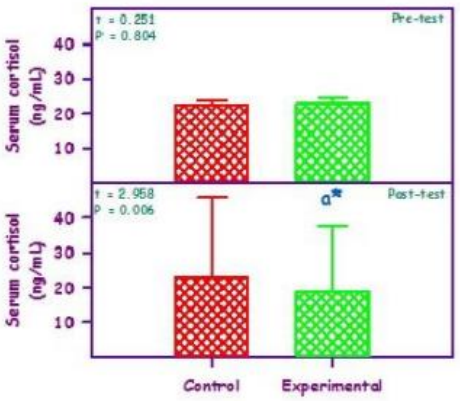
Clinical Parameter	Pre test at 28th week of gestation				Two sample binomial	Post test at 32nd week of gestation				Two sample binomial	Pre test at 36th week of gestation				Two sample binomial proporation test
	Study Group		Control group			Study Group		Control Group			Study Group		Control Group		
	BP measured in mm Hg					BP measured in mm Hg					BP measured in mm Hg				
Systolic Blood	<140	>=140	<140	>=140	Z=0.00 P=1.00	<140	>=140	<140	>=140	=0.46 P=0.6	<140	>=140	<140	>=140	z=1.80p=0.07
	10	0	10	0		9	1	7	3		10	0	10	0	
Diastolic Blood	<90	>=90	<90	>=90	=0.00 P=1.0	<90	>=90	<90	>=90	=0.46 P=0.6	<90	>=90	<90	>=90	z=1.80p=0.07
	10	0	10	0		8	2	7	3		7	3	9	1	

It shows that two binomial proportion test was used for assessing blood pressure. It was inferred that, at pre and post test, there was no significant difference in clinical parameters between study group and control group.

Table: III Effectiveness of sophrology on serum cortisol by using parametric test

GROUP	MEAN SE	Significant For Paired "T" Test And Unpaired "T "Test			
		Con-pre-posttest	Exp pre-posttest	Con Pretest-Exp Posttest	Con ost test-Exp Posttest
Control Pretest	22.68=+_1.05	T=1.22 P=0.241		t=0.251 P=0.804	t=2.958 P=0.006
Control Posttest	22.68=+_0.97				
Experimental Prettest	22.11=+_1.33		T=6.59 P=<0.001		
Experimental Posttest	18.85=+_1.03				

It shows the effectiveness of sophrology relaxation techniques on serum cortisol by using paired't' test and unpaired 't' test (parametric test). The mean ± SE of serum cortisol of control group and experimental group were given. The mean values of control group pre-test and post-test were 22.68, 23.03. The experimental group of mean values for pre-test and post-test were 23.11, 18.85 respectively. Paired t test shows the statistical significant between pre-test and post-test of experimental group (t =6.59, p<0.001)Unpaired t test shows that there was also a statistical significant difference between post-tests of control and experimental groups (t=2.958, p=0.006). The findings proved that the sophrology relaxation technique has significantly decreased the serum cortisol level.



DISCUSSION

The present study resultinterpreted that the level of Perinatal stress level among antenatal mothers who received sophrology relaxation exercises was significantly higher than the mothers in the control group. The result ofthe present study is supported by a quasi-experimental study conducted by Jacobs,saron. Thestudy found sophrology excercises is effective on stress and coping among20 Primigravid women at PMCH&RI in Chennai. Anotherstudy bySimi Paramban et al also consistent with the current study results. While examining the associationof the present study shows that out of eight variables, only one variable that is spouse occupation shows a significant association with pre-test prenatalanxiety score significantat the levelp = 0.0024. In contrastwith theresults AliNS (2013) conducted a hospital-based cross-sectional study on the frequency and associated factors foranxiety and depressionin pregnant women with a sample size of 165 antenatal women selected hospital Pakistan. Out of165 pregnant women about70 percent of them were anxious. Prenatal anxiety was associated with husband unemployment (p = 0.003), lower economic status (p = 0.0027), having 10 or more years of formal education (p = 0.002), afirst (p = 0.002) and unwanted pregnancy (p <0.001).7The present study has been limited to a sample size of thirty and the antenatal mothers were recruited into the study during their third trimester only.

Perinatal stress in maternity mothers is related to the length of labour which results in complications in childbirth. One of the causes of prolonged labor is the stress response, and this ranks at the top among other causes. Based on the study results, it is known that there are three categories of stress levels experienced by pregnant women during pregnancy. Stress is the body's reaction to situations that cause pressure, change, emotional tension, and others. Stress is universal; that is, all people can feel it, but the way it is expressed is different. According to individual characteristics, the response is different for each person. Stress in pregnant women harms themselves and their babies. Moreover, if the stress is ongoing and chronic, it can have implications for recurring anxiety, frustration, or fear that has been suffered for a long time and can have adverse health effects.

CONCLUSION: Perinatalstressare commonduring the pregnancyperiod and have a significant impact on quality of life. Relaxing reduces perinatal stress and is vital in physiological, psychological,and social function. The study sought to determine the efficacy of the sophorology relaxation technique on Perinatal stress in pregnant women. The present study demonstrates that sophrology relaxation therapy is beneficial in lowering stress among pregnant women. As a result, it concludes that this intervention is simple, effective, and takes a mind-body-spirit approach to healing.

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Conflict of interest: None declared.

Ethical approval: The study was approved by the Institutional human Ethics Committee of PMCH&RI.

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