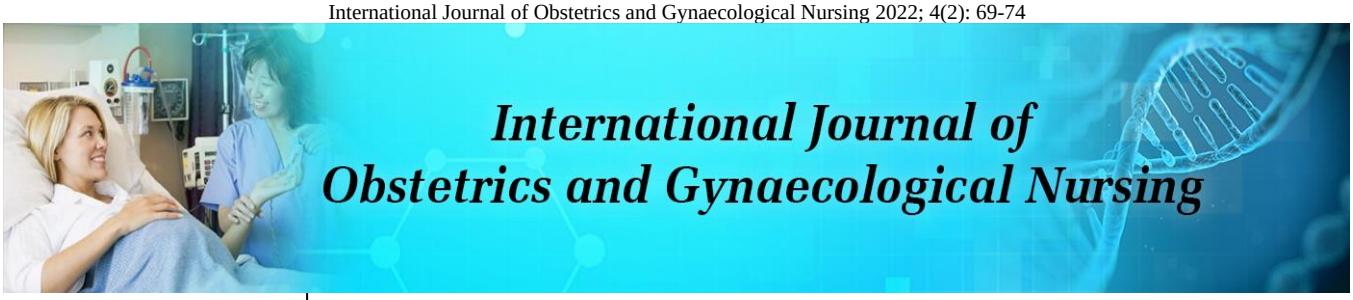

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A study to assess the effectiveness of music therapy and tranquilizing pranayama on physiological parameters among antenatal mothers with pregnancy induced hypertension

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Abstract
Pregnancy induced hypertension is one of the most important and common medical disorder during pregnancy and up to 10-13% of pregnancies are complicated by hypertension, increasing mortality and morbidity of both mother and baby. Pharmacological management though which is effective have their own side effect when it is used long term. So there is an urgent need for new and different methods of treating hypertension during pregnancy; in particular, non-pharmacological measure. There are many non-pharmacological measures among those music therapy and pranayama are cost effective and feasible interventions for practice. The main aim of the present study was to assess the effectiveness of music therapy and tranquilizing pranayama on physiological parameters among antenatal mothers with pregnancy induced hypertension. A pre experimental study with two group pre &posttest design was used. Among all antenatal mothers, 20 (10 for music therapy, 10 for tranquilizing pranayama) antenatal mothers with PIH were selected by using convenient sampling technique at Rajiv Gandhi Women and Children Hospital, Pondicherry. Demographic variables and physiological parameters were assessed in pretest. Administered music therapy to group I and tranquilizing pranayama to group II for four weeks, daily three times for 20 minutes. The results reveals that both intervention are effective and had positive influence on physiological parameters. While comparing music therapy with tranquilizing pranayama, tranquilizing pranayama shows more effectiveness on physiological parameters.

Keywords: music therapy, effectiveness, pranayama, antenatal mother with PIH

Introduction
Pregnancy is a unique, exciting and often joyous time in a woman's life, as it highlights the woman's amazing creative and nurturing powers while providing a bridge to the future. The growing fetus for all needs, depends entirely on its mother's health. Consequently, pregnant women must take steps to remain as healthy and well-nourished as they possibly can [1]. During pregnancy the women's body undergoes many physiological and psychological changes. Pregnancy is a dynamic process associated with significant physiological changes in the cardiovascular system. (P Soma-Pillay, 2016)These changes are reflects the body adaption to meet the increased metabolic demands of the mother and fetus and to ensure adequate utero-placental circulation for fetal growth and development. Insufficient hemodynamic changes can result in maternal and fetal morbidity, as seen in pre-eclampsia and intrauterine growth retardation. In addition, maternal inability to adapt to these physiological changes can expose underlying, previously silent, cardiac pathology, which is why some call pregnancy Nature's Stress Test [2] Pregnancy-induced hypertension (PIH) is a common pregnancy complication, affecting approximately 12-13% of pregnant women worldwide, and is one of the primary causes of death for pregnant mothers (WHO-2018) [3]. The onset of PIH typically occurs at 20 weeks of gestation and is marked by elevated blood pressure, albuminuria, edema and weight gains. Multiple organs dysfunction may occur it leads to endanger the life of the mother and fetus. There are various etiological factors for pregnancy induced hypertension. This is a disorder of hypothesis and affliction to involve all organs in the body. The potential causes of pregnancy induced hypertension are, abnormal placentation, Vasculopathy and inflammatory changes, Immunological factors, Genetic factors, Nutritional factors etc and sometimes it is idiopathic [4]. Management includes pharmacological as well as non-pharmacological modalities.

Complementary therapies are currently one of the most discussed and debated health care topics. There are many therapies like progressive muscle relaxation, Benson relaxation therapy, yoga, guided imagery, aromatherapy and music therapies were used for controlling the high blood pressure and reduce the stress & anxiety. These therapies are cost effective and have fewer side effects [5]. The main focus of this study was to assess the effectiveness of music therapy and tranquilizing pranayama on blood pressure control and to improve the physiological parameters of pregnancy induced hypertension in a cost effective and simple way.

Title of the study

Effectiveness of Music Therapy and Tranquilizing Pranayama on Physiological parameters among antenatal mother with Pregnancy Induced Hypertension

Aims & Objectives

The present study aimed to assess the effectiveness of music therapy and tranquilizing pranayama on physiological parameters among antenatal mother with Pregnancy Induced Hypertension

The objectives of the study were

1. To evaluate the level of physiological parameters among antenatal mothers with pregnancy induced hypertension in group I and II in pre-test
2. To evaluate the effectiveness of music therapy on physiological parameters among antenatal mothers with pregnancy induced hypertension in group I
3. To evaluate the effectiveness of Tranquilizing Pranayama on physiological parameters among antenatal mothers with pregnancy induced hypertension in group II
4. To compare the effectiveness of physiological parameters, maternal and fetal outcome among the antenatal mothers with Pregnancy Induced Hypertension between group I & II

Hypothesis

1. There is a significant difference between the Pre and Post-intervention level of Physiological parameters among antenatal mothers with Pregnancy Induced Hypertension in Intervention group I
2. There is a significant difference between the Pre and Post-intervention level of Physiological parameters among antenatal mothers with Pregnancy Induced Hypertension in Intervention group II
3. There is a significant difference between group I&II on physiological parameters among antenatal mothers with Pregnancy Induced Hypertension in post test

Methods and Materials

A Quantitative approach with two group pretest and post-test design was used. Institutional ethical committee permission obtained. After obtaining permission from concern authority, among all antenatal mothers with PIH, 20 samples who met inclusion criteria were selected by using convenient sampling technique at Rajiv Gandhi Government Women and Children Hospital, Puducherry. Mothers were explained with study purpose and got informed consent.Among all antenatal mothers, 20 antenatal mothers with pregnancy induced hypertension who met inclusion criteria are selected by convenient sampling technique. Samples are block randomized (day randomization) for intervention. Intervention I (music therapy) was administered on Monday, Wednesday and Friday. Intervention II (Tranquilizing pranayama) was administered on Tuesday, Thursday and Saturday. After sample selection antenatal mothers was gathered in a small group for explaining the study purpose and objectives. After getting written consent from individual samples. Pre-test was carried out by assessing the physiological parameters like blood pressure, edema, and proteinuria and uric acid level among selected antenatal mothers with pregnancy induced hypertension. Administered the Music therapy to group me and Tranquilizing pranayama to group II. For both groups follow up will be done through SMS alert, direct supervision by researcher. Iintervention was administered for 20 minutes, three times daily for four weeks. Post-test was carried out after 4 weeks of intervention, same physiological parameters were assessed. Collected data was analyzed by using descriptive and inferential statistics

Results

The data collected from samples were analyzed by using descriptive and inferential statistics, tabulated as below.

Table 1: Frequency and Percentage wise Distribution of demographic variables N=20(10+10)

Demographic Variables	Group-I		Group-II	
	N	%	N	%
AGE in years				
18-22	1	10	0	0
23-26	5	50	1	10
27-30	3	30	5	50
31-34	1	10	3	30
35 & above	0	0	1	10
	10	100	10	100
Weight				
Below 46	0	0	0	0
46-55kg	0	0	0	0
56-65kg	4	40	2	20
66-75kg	5	50	4	40
Above 75kg	1	10	4	40
	10	100	10	100
Height				
130-140 cm	0	0	0	0
141-150 cm	1	10	2	20

151-160 cm	7	70	6	60
161-170 cm	2	20	3	30
BMI				
Less than 18.5(Underweight)	0	0	0	0
18.5-24.5 (Normal)	1	0	0	0
25-29.9 (Overweight)	7	70	6	60
30 and above (Obese)	2	20	4	40
Gravida				
Primigravida	6	60	6	60
Multigravida	4	40	4	40
Gestational week				
32-34wks	0	0	0	0
34-35wks	6	60	5	50
36-38wks	4	40	5	50
39-40wks	0	0	0	0
Region				
Urban	5	50	6	60
Rural	5	50	4	40
Education				
Primary	0	0	0	0
Middle school	1	10	0	0
High school	0	0	3	30
Higher secondary	3	30	5	50
Undergraduate	5	50	2	20
Postgraduate &above	1	10	0	0
Religion				
Hindu	8	80	8	80
Christians	2	20	2	20
Muslims	0	0	0	0
Type of pregnancy				
Planned	9	90	7	70
Unplanned	1	10	3	30
Family				
Nuclear family	7	70	5	50
Joint family	3	30	5	50
Income per month				
10000-20000	0	0	0	0
20000-30000	7	70	4	40
30000-40000	1	10	4	40
40000 & above	2	20	2	20
Working pattern				
Skilled	3	30	1	10
Unskilled	1	10	2	20
Housewife	6	60	7	70

Group I-Music therapy Group II -Tranquilizing pranayama

Fig 1: Level of blood pressure in Pre & Post-test between Group I and group II

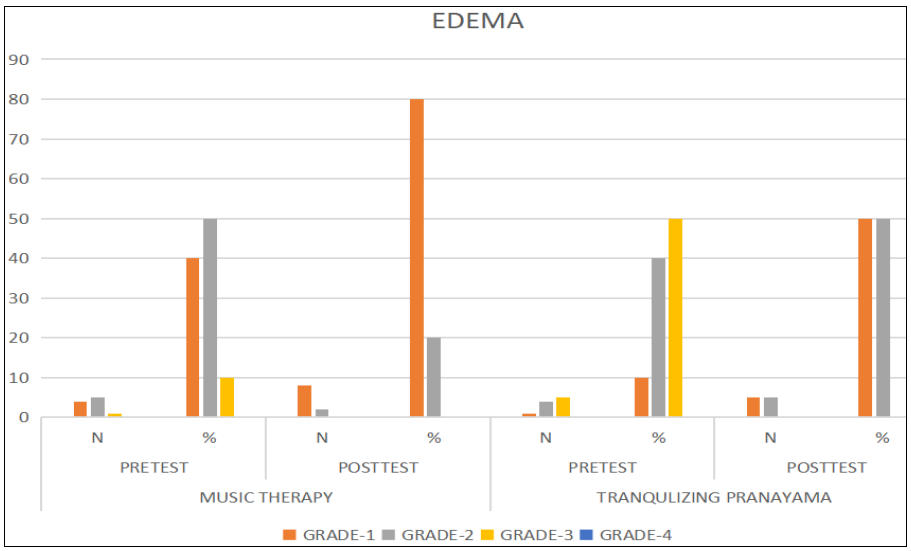

Fig 2: Illustrate the degree of edema in Pre & Post-test between Group I and group II

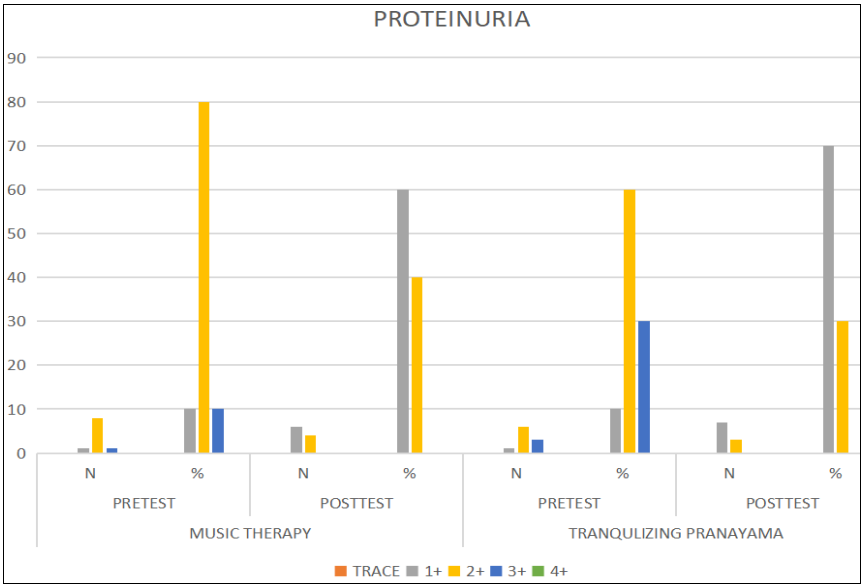

Fig 3: Level of Proteinuria in Pre & Post-test between Group I and group II

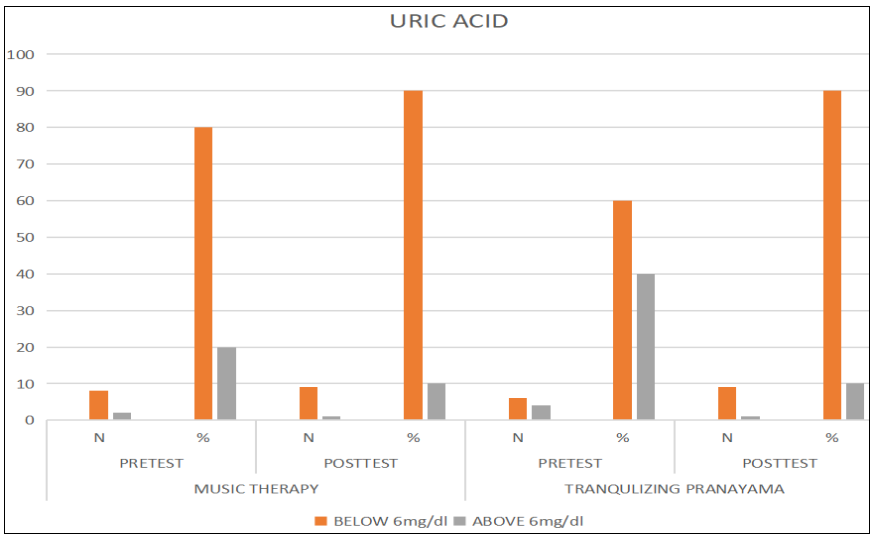

Fig 4 Level of Uric acid in Pre & Post-test between Group I and group II

Table-1 shows that in group I 50% of antenatal mothers with PIH were in 23-26 years, whereas in group II 50% of them were in the 27-30 years. In weight distribution, 50% of them had 65-70 kg in group I and group II 40% of antenatal mothers belongs to the 65-70 kg. 70% of them in group I and 60% of them in group II were in 151-160 cm and 70% of mothers in group I and 60% of mothers in group II had overweight. 60% of antenatal mothers belongs to primigravida in both group. 60%of them in group I were belongs to 32-34 weeks of gestation whereas group II 50% of mothers were in 32-33weeks of gestation. In group I 50% had completed undergraduate and in group II 50% had higher secondary. 90% of mothers planned their pregnancy and in group II 70% had planned pregnancy. In group I 70% and group II 50% were belongs to nuclear family.60%of them in group I 70% of them in group II were housewife. In group I 70% of antenatal mother belongs monthly family income of Rs 20000-30000 whereas in group II which was 40%. N=20 Figure 1 to 4 shows the Frequency and Percentage wise Distribution of physiological parameters.

Group I -In pretest 70% antenatal mothers had moderate blood pressure, 30% had mild blood pressure. In post test40% had normal blood pressure and 50% had mild blood pressure.40% of them had grade one edema, 50% had grade two edema and 10% had grade three edema in pre-test whereas in post-test 80% had grade one and 20% had grade two edema. 80% had 2+ level of proteinuria, 10% had 1+ and 10% had 3+ level of proteinuria in pretest. In post-test 60% had 1+, 40% had 2+ level of proteinuria? Both group I&II, uric acid level in pre and post-test 80% of the antenatal mother had below 6mg/ dl

Group II-In Pretest 90% antenatal mother had mild blood pressure and 10% had moderate blood pressure, while post-test 40% had normal blood pressure and 60% had mild blood pressure. In Pre-test 50% had grade three edema, 40% had grade two edema and one 10% had grade one edema, in case of post-test 50% had grade two and 50% had grade one edema. In pretest 60% had 2+ proteinuria, 30% had 3+ proteinuria and 10% had 1+ proteinuria. In post-test 70% antenatal mothers had 1+ and 30% had 2+ proteinuria.60% had uric acid level below 6mg/dl and 40% had above 6mg/dl in pretest. In post-test 90% antenatal mother had uric acid level below 6mg/dl and 10% had above 6mg/dl.

Table 2: Effectiveness of the Music therapy and tranquilizing pranayama on physiological parameters among antenatal mother with Pregnancy Induced Hypertension N=20(10+10)

	Test	Mean	Standard deviation	Mean difference	't' value Paired t test	df	'p' value
Systolic blood pressure							
Group I	Pre-test	151.20	5.594	1.933	5.483	9	0.000* S
	Post-test	140.60	6.328				
Group II	Pre-test	152.60	3.658	1.579	8.486	9	0.000* S
	Post-test	139.20	4.826				
Diastolic blood pressure							
Group I	Pre-test	98.20	4.566	1.618	4.540	9	0.001* S
	Post-test	90.00	4.422				
Group II	Pre-test	101.20	5.007	1.438	9.043	9	0.000* S
	Post-test	88.20	5.029				
Edema							
Group I	Pre-test	3.000	1.054	1.457	2.753	9	0.022* S
	Post-test	2.200	0.421				
Group II	Pre-test	3.900	1.197	0.372	4.025	9	0.003* S
	Post-test	2.400	0.699				
Proteinuria							
Group I	Pre-test	0.320	0.131	0.290	3.597	9	0.006* S
	Post-test	.1500	0.052				
Group II	Pre-test	.4700	0.221	0.068	4.392	9	0.002* S
	Post-test	.1700	0.067				
Uric acid							
Group I	Pre-test	3.520	1.658	0.177	6.044	9	0.000* S
	Post-test	2.450	1.609				
Group II	Pre-test	4.330	1.980	0.252	5.383	9	0.000* S
	Post-test	2.970	1.658				

p>0.05 Group I-Music therapy Group II -Tranquilizing pranayama NS-Not significant S-Significant

Table 2 depicts the effectiveness of music therapy group and tranquilizing pranayama on physiological parameters among antenatal mother with PIH. Both music therapy and tranquilizing pranayama is significant in reducing systolic blood pressure and diastolic blood pressure with p>0.05.There is no reduction in degree of edema in both intervention group. Tranquilizing pranayama had the significant difference in pre and post-test value of proteinuria with p>0.05. Both music therapy and tranquilizing pranayama had significant reduction in uric acid level with p>0.05.

Table 3: Between group Comparison of Effectiveness of Music Therapy group and Tranquilizing Pranayama on physiological parameters N=20(10+10)

	Group	Mean	Standard deviation	Mean difference	't' value Un Paired t test	df	'p' value
Systolic blood pressure							
Pre-test	Group I	151.20	5.594	1.400	0.662	18	0.238 NS
	Group II	152.60	3.658				
Post-test	Group I	140.60	6.328	1.400	0.556	18	0.331 NS
	Group II	139.20	4.826				
Diastolic blood pressure							
Pre-test	Group I	98.20	4.566	3.000	1.400	18	0.731
	Group II	101.20	5.007				
Post-test	Group I	90.00	4.422	1.800	0.850	18	0.407
	Group II	88.20	5.029				
Edema							
Pre-test	Group I	3.0000	1.05409	0.90000	1.784	18	0.192 NS
	Group II	3.9000	1.19722				
Post-test	Group I	2.2000	0.42164	0.20000	0.775	18	0.036* S
	Group II	2.4000	0.69921				
Proteinuria							
Pre-test	Group I	.3200	.13166	0.1500	1.842	18	0.240 NS
	Group II	.4700	.22136				
Post-test	Group I	.1500	.05270	0.0200	0.739	18	0.569 NS
	Group II	.1700	.06749				
Uric acid							
Pre-test	Group I	3.5200	1.65851	0.81000	0.992	18	0.154 NS
	Group II	4.3300	1.98049				
Post-test	Group I	2.4500	1.60918	0.52000	0.712	18	0.595 NS
	Group II	2.9700	1.65801				

p>0.05 Group I-Music therapy Group II- Tranquilizing pranayama NS-Not significant S-Significant

Table 4 shows the Comparison of Effectiveness of Music Therapy Vs Tranquilizing Pranayama on physiological parameters among antenatal mother with PIH. There was no significant difference between the two intervention on physiological parameters at $p>0.05$. Both intervention were effective and had positive impact.

Discussion

The present study was conducted among 20 antenatal mothers with PIH between 32-34weeks of gestation. Convenient sampling technique was used to select the antenatal mothers. 10 mothers were in group I and 10 were in group II.

The findings as follows

Group I 70% antenatal mothers had moderate blood pressure, 30% had mild blood pressure in pretest, whereas in post test40% had normal blood pressure and 50% had mild blood pressure.40% of them had grade one edema, 50% had grade two edema and 10% had grade three edema in pre-test whereas in post-test 80% had grade one and 20% had grade two edema. 80% had 2+ level of proteinuria, 10% had 1+ and 10% had 3+ level of proteinuria in pretest. In post-test 60% had 1+, 40% had 2+ level of proteinuria? Both group I&II, uric acid level in pre and post-test 80% of the antenatal mother had below 6mg/ dl. The present study findings were supported by an Quasi experimental study evaluate the effectiveness of music therapy among PIH mothers in Guru Gobind Singh Medical College and Hospital, Faridkot, and Guru Nanak Dev Hospital, Amritsar. The result shows that in experimental group, mean and SD during the pre-interventional assessment are 6.04±2.05 and during the post-interventional assessment are 3.8±1.38 respectively. In the Control group, values of mean±SD during the pre-interventional assessment was 5.4 and 1.8 and during the post-interventional assessment was 5.12±1.81respectively. In a paired t-test, the experimental group showed a significant decrease in the level of stress and blood pressure at 0.05 level of significance after two days of intervention (Meenakshi Sharma, 2019**)** [6] Group II 90% antenatal mother had mild blood pressure and 10% had moderate blood pressure in pre test, while post-test 40% had normal blood pressure and 60% had mild blood pressure. In Pre-test 50%had grade three edema, 40% had grade two edema and one 10% had grade one edema, in case of post-test 50% had grade two and 50% had grade one edema. In pretest 60% had 2+ proteinuria, 30% had 3+ proteinuria and 10% had 1+ proteinuria. In post-test 70% antenatal mothers had 1+ and 30% had 2+ proteinuria.60% had uric acid level below 6mg/dl and 40% had above 6mg/dl in pretest. In post-test 90% antenatal mother had uric acid level below 6mg/dl and 10%had above 6mg/dl. The present study findings were supported by a quasi-experimental study to assess the effectiveness of alternate nostril breathing on blood pressure among hypertensive clients at Unicare Hospital, Rajkot, India. About 40 samples were selected by Purposive sampling technique (20 were allotted to the Experimental group and 20 for the Control group). The obtained "t" value for systolic blood pressure was 31.2*** and for diastolic blood pressure was 29.8*** which is greater than the tabulated "t" value 3.8 which was highly significant at 0.001. The findings of the study reveal that alternate nostril breathing helps in reducing high blood pressure among hypertensive clients (Salivendra Dileep, 2016) [7]

Both group I and II is significant in reducing systolic blood pressure and diastolic blood pressure at p>0.05. There is no significant difference in degree of edema in both intervention group I&II.Tranquilizing pranayama had the significant difference in Pre and post-test value of proteinuria with p value 0.002. Both Music therapy and Tranquilizing pranayama had significant difference in uric acid level with p value 0.000 there was no significant difference between the two interventions on physiological parameters. Both are having same effect.

Conclusion

The present study findings conclude that both music therapy and tranquilizing pranayama were equally effective in reducing blood pressure, edema, proteinuria and uric acid level. Music therapy is easy to practice at bedside compared to tranquilizing pranayama. Both interventions are cost effective and simple to practice which had positive influence on physiological parameters without side effect

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