Effectiveness of Relaxation Therapy among Antenatal Mothers

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Abstract

During pregnancy, women undergo specific physiological changes in their bodies which may lead to stress and a rise in blood pressure which may be due to different etiological contributions. One way of reducing their blood pressure as well as stress is by encouraging those women to perform diaphragmatic deep breathing exercises. The current study aimed to investigate the effectiveness of relaxation therapy among antenatal mothers. True experimental pretest-posttest control group research design was conducted in the antenatal clinic of the host institution. The 60 antenatal mothers were recruited as study participants using a non-probability purposive sampling technique. All 60 antenatal mothers were randomly assigned to either the intervention group (Relaxation therapy) or the placebo group by using the lottery method, 30 in the interventional group and 30 in the placebo group. For the interventional group, On Day 1, demographic and clinical data were collected from the study participants, followed by a Diaphragmatic deep breathing exercise initiated for 20 minutes daily in the morning for about 28 days. For the placebo group, demographic and clinical data were collected from the study participants, followed by routine hospital care initiated for about 28 days. On Day 29, the study participants were re-assessed for the level of stress, blood pressure and proteinuria in both interventional and placebo groups. The study results concluded that diaphragmatic deep breathing exercise reduced the levels of stress (mean difference score on the level of stress was 37.10 and the calculated paired 't' test value of t = 10.460 was statistically significant at p<0.001 level), blood pressure (statistically significant difference at p<0.001 level between the post-test level of systolic BP between the two groups, there was a statistically significant difference at p<0.01 level between the post-test level of diastolic BP between the two groups), proteinuria (there was a statistically significant difference in the post-test level of proteinuria between the groups), there was no statistically significant difference at p<0.05 level between the post-test level of BMI between the two groups. Performing diaphragmatic deep breathing exercises enhanced, the reduction in the level of blood pressure, stress, BMI and proteinuria among our study participants.

Keywords: Antenatal Mothers, Blood Pressure, BMI, Diaphragmatic Deep Breathing Exercise, Proteinuria, Stress.

Introduction

The endeavours that women attain during their pregnancy period are very crucial [1]. The changes experienced by women differ in every part of pregnancy [2]. Universally, a notable portion of pregnancies is affected by various

factors in this current scenario [3]. This includes age, occupational status, maternal nutritional status, and lifestyle modifications like stress, physical activity, consumption of alcohol, smoking, beverages etc will hurt mothers' health during their antenatal period [4].

One of the most pleasant experiences in a woman's life is pregnancy, sometimes it is affected by various complications. One among them identified during pregnancy is a rise in blood pressure [5]. It is estimated that 7.7% of women of reproductive age develop hypertension. [6]. The prevalence rate of hypertension during pregnancy has been reported to be elevated from 10.3% to 28.1% [7]. In Indian rural communities, it has been reported that one in 14 antenatal mothers is afflicted with developing hypertension [8]. 1.5 deaths per 100,000 live births occur every year due to pre-eclampsia [9].

Hypertension that develops after 20 weeks of gestational age is referred to as PIH. It is classified into three categories which include Pre-eclampsia, eclampsia, and gestational hypertension [10]. Mothers with a previous history of systemic medical illness including diabetes mellitus, renal disorders, autoimmune diseases, chronic hypertension, with a history of hypertension disorders during previous pregnancies, BMI more than $\geq$ 35 kg/m [11] lack of exercise are identified to be some of the associated risk factors for developing hypertension during the antenatal period [12]. The occurrence of elevated blood pressure during the pregnancy period may be due to diminished placental perfusion instigating endothelial dysfunction due to the invasion of uterine arteries of the cytotrophoblastic cells [13]. Maternal stress during the prenatal period, and general life stress[14] mental stress are recognised to develop hypertension among antenatal mothers [15]. There will be an activation of sympathetic activity which induces the hypothalamus–pituitary–adrenal (HPA) axis thereby raising the corticosteroid

and catecholamine levels in the blood which causes stress among these pre-eclamptic women [16]. Excess proteins are excreted in urine among mothers with pre-eclampsia [17]. Damage to glomerular filtration integrity and hypo filtration causes a rise in the excretion of nonselective proteins [18].

It has been identified by the investigators, during their clinical experience in the antenatal clinic of the host institution numerous antenatal mothers during their second trimester reported complaints of stress while coming for their antenatal visit, while collecting the history of these clients and while performing clinical examinations, they had elevated levels of blood pressure associated with proteinuria which created interest in the investigators mind as a nurse midwife we have to alleviate the stress thereby reducing their blood pressure to minimise the complications for both mother and baby. After gathering various literature, the investigators were enthusiastic about initiating relaxation therapy (diaphragmatic deep breathing exercise) as a simple nursing intervention to minimise the sufferings and complications that occur during pregnancy among these antenatal women.

Research studies have reported that performing diaphragmatic deep breathing exercises reduces stress [19] and blood pressure [20]. Diaphragmatic deep breathing exercise plays a crucial role in the expansion of lung capacity thereby enhancing slow respiration [21]. The investigators were interested in implementing diaphragmatic deep breathing exercises for antenatal mothers who developed hypertension as a part of nursing care to verify the results among the South Indian population. Therefore, the objectives of the current study were. To assess and compare the Pre and posttest levels of stress, physiological and biochemical Parameters among antenatal mothers between the interventional and placebo group. 2. To determine the association between posttest levels of stress, and physiological and biochemical parameters among antenatal

mothers with their selected demographic variables.

Material and Methods

Study Design: A true experimental pretest-posttest control group research design was adopted to investigate the effectiveness of relaxation therapy among antenatal mothers. **Study Setting:** The current study was conducted for 3 months from February 2023 to April 2023 in the antenatal clinic of the host institution. **Ethical Approval:** After obtaining the ethical clearance from the Institutional Ethical Committee (IEC) of Saveetha Institute of Medical and Technical Sciences and formal permission from the departmental head of Obstetrics and Gynecology, the study was conducted. **Study Participants:** A total of 60 antenatal mothers who fulfil and meet the inclusion criteria were recruited as study participants. Primi gravida mothers who are attending the antenatal clinic regularly with 13-26 weeks of gestational age having blood pressure more than 140\90 mm of Hg with proteinuria 2+ (100mg/dl) and above experiencing moderate and severe stress, who are willing to participate and can read and speak Tamil or English were included in the present study. Unbooked 2nd-trimester primi gravida mothers, multigravida mothers who were in 1st and 3rd trimester, primi gravida mothers with bad obstetric history, gestational diabetes mellitus, multiple pregnancies, antepartum haemorrhage, severe maternal medical illness, bleeding disorders, psychiatric illness, non-co-operative were excluded. **Sampling Technique:** After recruiting the antenatal mothers through a non-probability purposive sampling technique, all 60 antenatal mothers were randomly assigned to either the intervention group (Relaxation therapy) or the placebo group by using the lottery method. 30 in the interventional group and 30 in the placebo group. **Informed Consent:** The purpose of the study was explained in-depth to each of the study participants and written informed consent was obtained from them. **Pre-Assessment:** The demographic and clinical information was gathered by using a self-structured questionnaire, followed by that, the stress level was assessed by using a perceived stress scale, the blood pressure was monitored by using a sphygmomanometer and the proteinuria level was assessed using a urine dipstick. **Intervention Details: For the Interventional group-** On Day 1 Antenatal mothers were asked to empty their bladder and be in a convenient position (sitting or lying). Diaphragmatic deep breathing exercise was initiated for 20 minutes daily in the morning for about 28 days. **Technique Of Diaphragmatic Deep Breathing Exercise:** For the interventional group, study participants were asked to relax their muscles including hands, different parts of the face, shoulders, and other parts as per the investigator's instructions and encouraged them to place **one** hand on the chest and one hand on the stomach and asked them to breathe in through the nose for about two seconds. Purse the lips, press gently on the stomach and exhale and were guided to perform 20 deep diaphragmatic respiration. **For the placebo group**, On Day-1 routine hospital care was initiated for about 28 days**. Post Assessment:** On Day 29**,** the study participants were reassessed for the level of stress, blood pressure and proteinuria in both interventional and placebo groups.

Results and Discussion

Demographic and Clinical Characteristics

In the interventional group, with regards to the demographic and clinical characteristics, majority of the antenatal women 13 (43.4%) belong to the age group above 30 years, 8 (26.7%) had primary and high school education,11 (36.7%) were housewives, 21 (70%) had a family income of above 20,000 per month, 17 (56.7%) belongs to the nuclear family, 18 (60%) had a non-consanguineous marriage,16 (53.3%) residing in an urban

area,20 (66.7%) had planned pregnancy,30(100%) had a regular antenatal checkup, In the placebo group, with regards to the demographic and clinical characteristics, majority of the antenatal women 12 (40%) belongs to the age group above 30 years, 8 (26.7%) had higher secondary education,11 (36.7%) were housewives, 21 (70%) had a family income of above 20,000 per month, 18 (60%) belongs to the nuclear family, 19 (63%) had a consanguineous marriage,19 (63.3%) residing in an urban area, 22 (77.3%) had planned pregnancy,30 (100%) had a regular antenatal check-up.
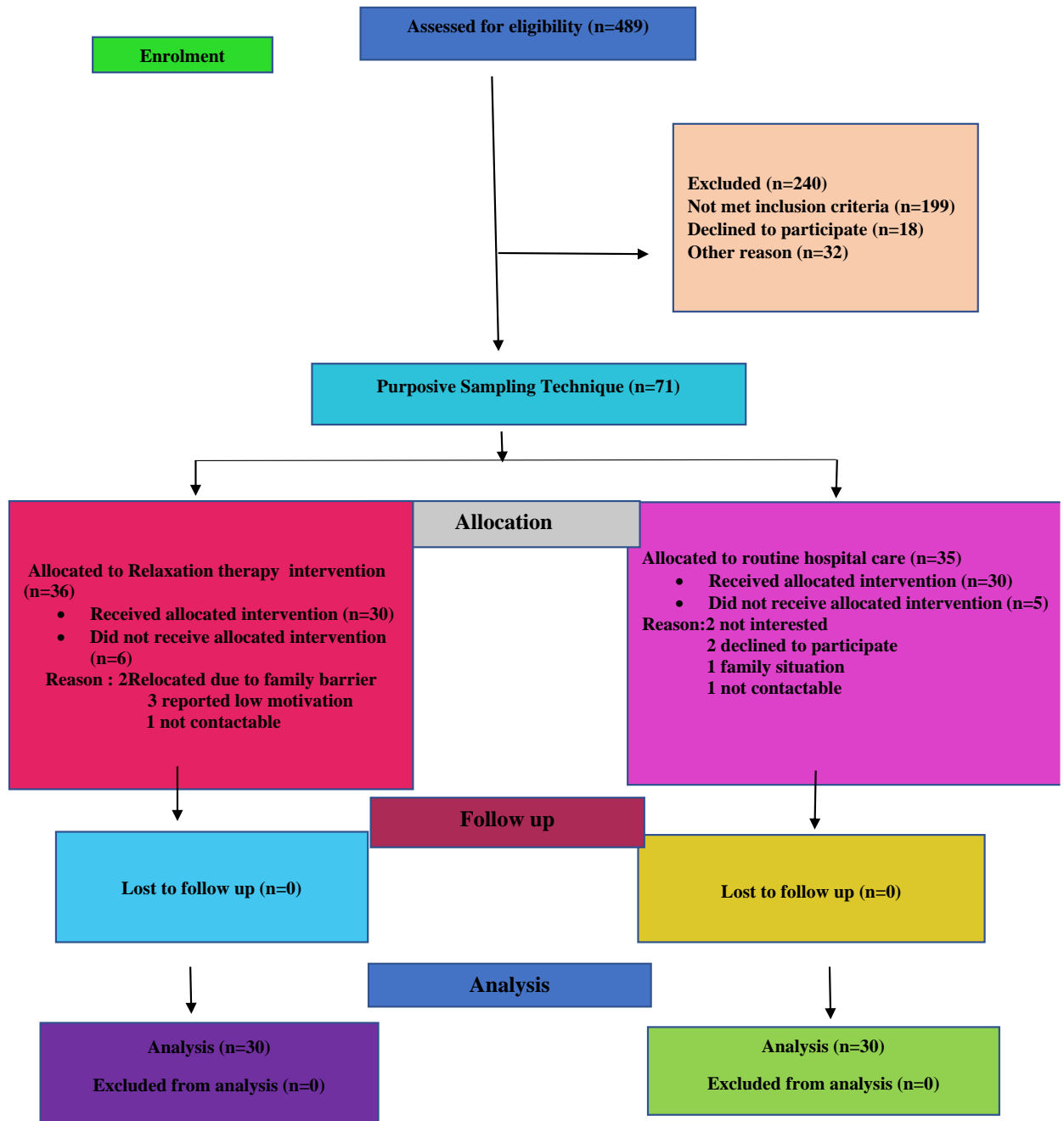

Figure 1. Consort Flowchart for the Patient's Recruitment Process

Assessment of Perceived Stress, Blood Pressure, Body Mass Index and Proteinuria among Antenatal Mothers in the Interventional and Placebo Group

In the interventional group, during the pretest majority of our study participants, 22(73.3%) had severe stress and 8(26.7%) had moderate stress whereas in the post-test, 21(70%) of our study participants had mild stress, 7(23.3%) had severe stress and 2(6.7%) had moderate stress. In the placebo group, during the pretest majority of our study participants, 23(76.7%) had severe stress and 7(23.3%) had moderate stress whereas in the post-test, 29(96.7%) had severe stress and 1(3.3%) had moderate stress. (as depicted in Table 1 and Figure 2).

Table 1. Frequency and Percentage Distribution of Pre-test and Post-test Levels of Perceived Stress among Antenatal Mothers in the Interventional and Placebo Group

N = 60(30+30)

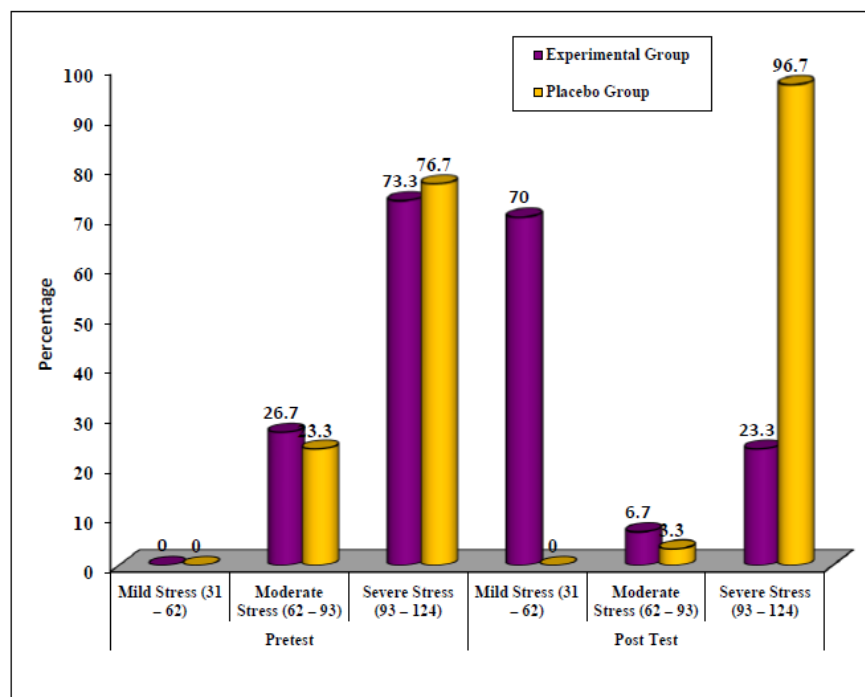| Level of Stress	Interventional Group				Placebo Group			
	Pretest		Post Test		Pretest		Post Test	
	F	%	F	%	F	%	F	%
Mild Stress (31 – 62)	-	-	21	70.0	-	-	0	0
Moderate Stress (62 – 93)	8	26.7	2	6.7	7	23.3	1	3.3
Severe Stress (93 – 124)	22	73.3	7	23.3	23	76.7	29	96.7

Figure 2. Percentage Distribution of Pre-Test and Post Test Level of Perceived Stress among Antenatal Mothers in the Interventional and Placebo Group

It has been reported that a higher level of stress was experienced among 1 in 10 pregnant women, and 40% of pregnant women experienced a moderately stressful life [22]. Research studies have identified and reported that antenatal stress causes diminished blood flow to the maternal uterine arteries which causes the release of cortisol across the placenta which ends up with complications for both mothers and raises behavioural problems in the newborn [23]. Similarly, in our current study, identified and the results have revealed that the majority of our study participants experienced severe levels of stress during their pregnancy

period but the investigators failed to identify the etiological factors that provoked stress among these clients. It has been proven that the initiation of diaphragmatic deep breathing exercises is beneficial for both physical and mental well-being by showing remarkable stress control among all humans by reducing the activity of the sympathetic nervous system [24]. Similarly, our current study also proved that performing diaphragmatic deep breathing exercises reduced stress levels among our study participants in the interventional group.

Effectiveness of Relaxation Therapy on Stress among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post-Test Levels of Stress in the Placebo Group

In the interventional group, the pretest mean score of stress was 96.56±18.94 and the post-test mean score was 59.46±9.69. The mean difference score was 37.10. The calculated paired 't' test value of t = 10.460 was statistically significant at p<0.001 level. This

clearly shows that after the administration of relaxation therapy among antenatal mothers the perceived stress was reduced significantly among the antenatal mothers in the interventional group. In the placebo group, the pretest mean score of stress was 98.96±16.43 and the post-test mean score was 98.80±16.46. The mean difference score was 0.16. The calculated paired 't' test value of t = 1.306 was not statistically significant. This infers that there was no statistically significant difference between the pretest and post-test levels of stress in the placebo group.

The calculated student independent 't' test value of t = 0.524 in the pretest shows that there was no statistically significant difference between the pretest level of stress between the two groups. The calculated student independent 't' test value of t = 11.277 in the post-test shows that there was a statistically significant difference between the post-test level of stress between the two groups. (as depicted in Table 2 and Figure 3)

Table 2. Effectiveness of Relaxation Therapy on Stress among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post-Test Level of Stress in the Placebo Group.

N = 60(30+30)

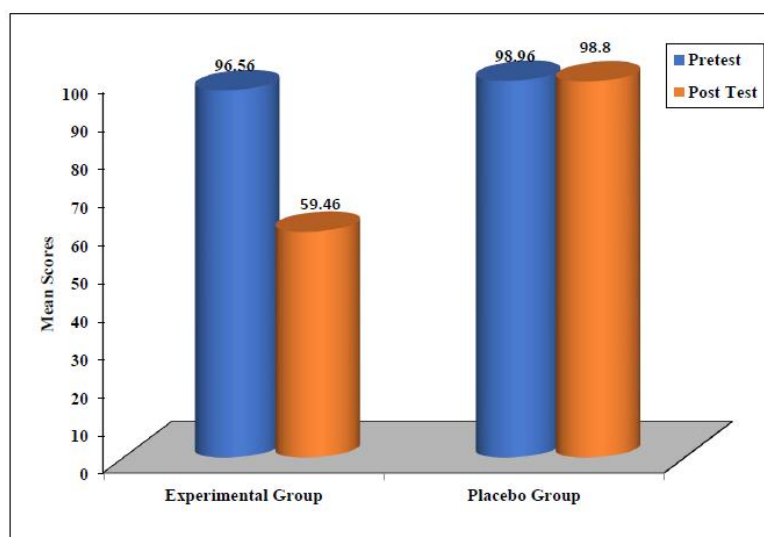| Group	Pretest		Post Test		Mean Difference Score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	96.56	18.94	59.46	9.69	37.10	t = 10.460 p=0.0001, S***
Placebo Group	98.96	16.43	98.80	16.46	0.16	t = 1.306 p=0.202, N.S
Mean Difference score	2.40		39.34		***p<0.001	
Student Independent 't' test value	t = 0.524 p=0.602 N.S		**t = 11.277 p=0.0001, S***		S – Significant N.S – Not Significant	

Figure 3. Comparison of Pretest and Post Test Level of Stress among Antenatal Mothers in the Interventional and Placebo Group

Assessment of Pretest and Post Test Level of Biophysiological Parameters among Antenatal Mothers in the Interventional and Placebo Group

In the interventional group, with regards to systolic BP, the pretest mean score was 148.33±7.48 and the post-test mean score was 121.70±7.05 whereas in the placebo group, the pretest mean score of systolic BP was 146.67±5.61 and the post-test mean score was 143.73±8.59 in the experimental group,

concerning diastolic BP the pretest mean score was 80.73±12.98 and the post-test mean score was 72.10±9.73 whereas in the placebo group, the pretest mean score of diastolic BP was 79.70±13.46 and the post-test mean score was 78.10±12.34. In the interventional group, with regards to BMI, the pretest mean score was 21.69±4.12 and the post-test mean score was 21.77±4.08 whereas in the placebo group, the pretest mean score of BMI was 24.11±5.07 and the post-test mean score was 24.16±5.04. (as depicted in Table 3)

Table 3. Assessment of Pretest and Post Test Level of Physiological and physiological Parameters Among Antenatal Mothers in the Interventional and Placebo Group

N = 60(30+30)

Parameters	Interventional Group				Placebo Group			
	Pretest		Post Test		Pretest		Post Test	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
Systolic BP	148.33	7.48	121.70	7.05	146.67	5.61	143.73	8.59
Diastolic BP	80.73	12.98	72.10	9.73	79.70	13.46	78.10	12.34
BMI	21.69	4.12	21.77	4.08	24.11	5.07	24.16	5.04

Effectiveness of Relaxation Therapy on Systolic BP among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Systolic BP in the Placebo Group

In the interventional group, the pretest mean score of systolic BP was 148.33±7.48 and the post-test mean score was 121.70±7.05. The mean difference score was 26.63. The calculated paired 't' test value of t = 19.646 was statistically significant at p<0.001 level. This clearly shows that after the administration of

diaphragmatic deep breathing exercises among antenatal mothers, the systolic BP was reduced significantly among our study participants in the interventional group. In the placebo group, the pretest mean score of systolic BP was 146.66±5.61 and the post-test mean score was 143.73±8.59 The mean difference score was 2.93. The calculated paired 't' test value of t = 1.943 was not statistically significant. This infers that there was no statistically significant difference between the pretest and post-test levels of systolic BP in the placebo group. The calculated student independent 't' test value of t = 0.976 in the pretest shows that there was no statistically significant difference between the pretest level of systolic BP between the two groups. The calculated student independent 't' test value of t = 10.852 in the post-test shows that there was a statistically significant difference at p<0.001 level between the post-test level of systolic BP between the two groups. (as depicted in Table:4 and Figure:4)

Table 4. Effectiveness of Relaxation Therapy on Systolic BP Among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Systolic BP in the Placebo Group.

N = 60(30+30)

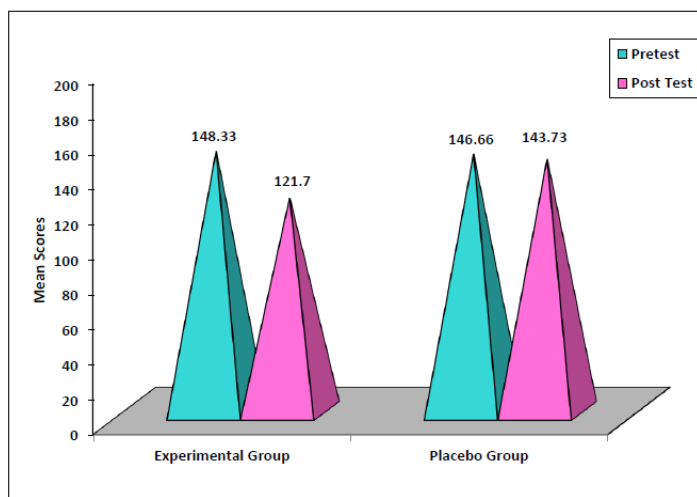| Group	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	148.33	7.48	121.70	7.05	26.63	t = 19.646 p=0.0001, S***
Placebo Group	146.66	5.61	143.73	8.59	2.93	t = 1.943 p=0.062, N.S
Mean Difference score	1.67		22.03		***p<0.001 S – Significant N.S – Not Significant	
Student Independent 't' test value	t = 0.976 p=0.334 N.S		t = 10.852 p=0.0001S***			

Figure 4. Comparison of Pretest and Post Test Level of Systolic BP Among Antenatal Mothers in The Interventional and Placebo Group

Effectiveness of Relaxation Therapy on Diastolic BP Among Antenatal Mothers in The Interventional Group and Comparison of Pretest and Post Test

Level of Diastolic BP in the Placebo Group

In the interventional group, the pretest mean score of diastolic BP was 80.73±12.98 and the post-test mean score was 72.10±9.73. The mean

difference score was 8.63. The calculated paired 't' test value of t = 3.969 was statistically significant at p<0.001 level. This clearly shows that after the administration of relaxation therapy among antenatal mothers the diastolic BP was reduced significantly among the antenatal mothers in the interventional group. In the placebo group, the pretest mean score of diastolic BP was 79.70±13.46 and the post-test mean score was 78.10±12.34 The mean difference score was 1.60. The calculated paired 't' test value of t = 1.884 was not statistically significant. This infers that there was no statistically significant difference between the pretest and post-test levels of diastolic BP in the placebo group.

The calculated student independent 't' test value of t = 0.303in the pretest shows that there was no statistically significant difference between the pretest level of diastolic BP between the two groups. The calculated student independent 't' test value of t = 2.090 in the post-test shows that there was a statistically significant difference at p<0.01 level between the post-test level of diastolic BP between the two groups. As depicted in Table 5 and Figure 5).

Table 5. Effectiveness of Relaxation Therapy on Diastolic BP among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Diastolic BP in the Placebo Group.

N = 60(30+30)

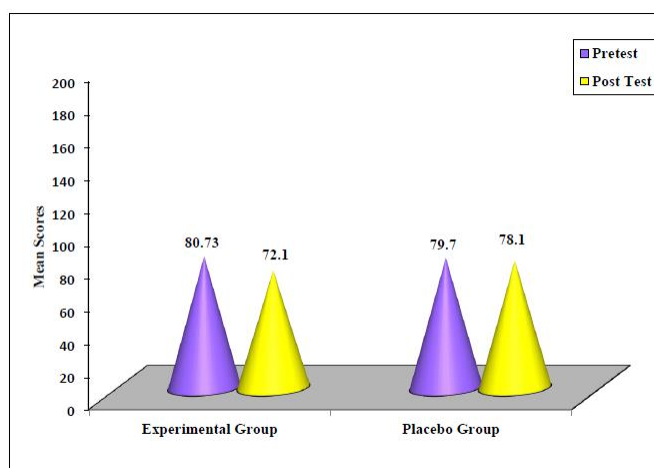| Group	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	80.73	12.98	72.10	9.73	8.63	t = 3.969 p=0.0001, S***
Placebo Group	79.70	13.46	78.10	12.34	1.60	t = 1.884 p=0.070, N.S
Mean Difference score	1.03		6.0		***p<0.001 S – Significant N.S – Not Significant	
Student Independent 't' test value	t = 0.303 p=0.763 N.S		t = 2.090 p=0.041, S*			

Figure 5. Comparison of Pretest and Post Test Level of Diastolic BP among Antenatal Mothers in the Interventional and Placebo Group

Prevalence of PIH constitutes about 6-10% among all pregnant women. When there is an elevation of blood pressure above 140/90 mm of Hg then it is referred to as PIH [25]. During pregnancy, it has been identified that there is a rise in cardiac output which causes damage to

the epithelial cells of arteries which diminishes the blood vessels' responsiveness thereby vasoconstriction and a rise in blood pressure [26]. Research studies have reported in general that, performing diaphragmatic breathing exercises has shown a remarkable decrease in the level of blood pressure and possibly reveals enormous health benefits [27]. Diaphragmatic breathing exercise when initiated in humans causes the activation of the parasympathetic nervous system causing dilation of blood vessels, maintaining heart rate and lower blood pressure [28]. This exercise involves deep breathing and expansion of the lungs into the diaphragm which enhances the vagal activity thereby reducing the heart rate, pulse rate and blood pressure by improving the blood flow [24].

Similarly in our present study, it is evident that the rise in blood pressure among our study participants during the second trimester of pregnancy may be due to certain factors that altered physiological mechanisms in the cardiovascular system in their body, but the investigators could not identify the etiological contribution that provoked hypertension among these clients. However, initiating diaphragmatic deep breathing exercises for about 20 minutes every day over 4 weeks has proven to and significant reduction in their blood pressure levels as well as promoting relaxation among these individuals.

Hence it was concluded and identified that as a part of nursing care all nursing midwives can implement diaphragmatic deep breathing exercises as an effective nursing intervention for all antenatal mothers who are suffering from hypertension aiming to prevent both maternal and neonatal complications.

Effectiveness of Relaxation Therapy on BMI among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post-Test Levels of BMI in the Placebo Group

In the interventional group, the pretest mean score of BMI was 21.69±4.12 and the post-test mean score was 20.68±3.93. The mean difference score was 1.01. The calculated paired 't' test value of t = 8.267 was statistically significant at p<0.001 level. This clearly shows that after the administration of relaxation therapy among antenatal mothers the BMI was reduced significantly among the antenatal mothers in the interventional group. In the placebo group, the pretest mean score of BMI was 21.73±4.18 and the post-test mean score was 21.83±4.26. The mean difference score was 0.10. The calculated paired 't' test value of t = 1.843 was not statistically significant. This infers that there was no statistically significant difference between the pretest and post-test levels of BMI in the placebo group. The calculated student independent 't' test value of t = 0.031 in the pretest shows that there was no statistically significant difference between the pretest level of BMI between the two groups. The calculated student independent 't' test value of t = 1.079 in the post-test shows that there was no statistically significant difference at p<0.05 level between the post-test level of BMI between the two groups. (as depicted in Table 6 and Figure 6).

Table 6. Effectiveness of Relaxation Therapy on BMI among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post-Test Levels of BMI in the Placebo Group

N = 60 (30+30)

Group	Pretest		Post Test		Mean Difference score	Paired 't' test & p-value
	Mean	S.D	Mean	S.D		
Interventional Group	21.69	4.12	20.68	3.93	**1.01**	**t = 8.267 p=0.0001, S*****
Placebo Group	21.73	4.18	21.83	4.26	0.10	t = 1.843

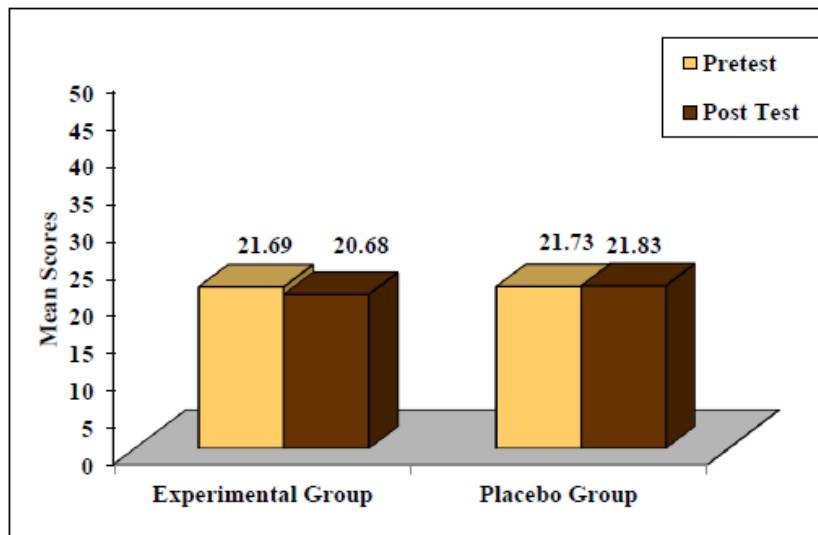|				p=0.070, N.S
Mean Difference score	0.04	1.15	***p<0.001	
Student Independent 't' test value	t = 0.031 p=0.975 N.S	t = 1.079 p=0.285, N.S	S – Significant N.S – Not Significant	

Figure 6. Comparison of Pretest and Post Test Level of BMI among Antenatal Mothers in the Interventional and Placebo Group

Effectiveness of Relaxation Therapy on Proteinuria among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Proteinuria in the Placebo Group

The comparison of pretest level of proteinuria among antenatal mothers between the groups. The calculated chi-square value shows that there was no statistically significant difference in the pretest level of proteinuria between the groups. The comparison of post-test levels of proteinuria among antenatal mothers between the groups. The calculated chi-square value shows that there was a statistically significant difference in the post-test level of proteinuria between the groups (as depicted in Table 7 and Figure 7).

Table 7. Effectiveness of Relaxation Therapy on Proteinuria among Antenatal Mothers in the Interventional Group and Comparison of Pretest and Post Test Level of Proteinuria in the Placebo Group

N = 60(30+30)

Test	Proteinuria	Experimental Group		Placebo Group		Chi-Square Test
		F	%	F	%	
Pretest	1+	-	-	-	-	χ^2=0.936 p=0.626 N.S
	2+	17	56.6	20	66.6	
	3+	8	26.7	5	16.7	
	4+	5	16.7	5	16.7	
Post Test	1+	18	60.0	3	10.0	χ^2=**18.529** **p=0.0001** **S*****
	2+	10	33.3	17	56.7	
	3+	2	6.7	6	20.0	
	4+	0	0	4	13.3	

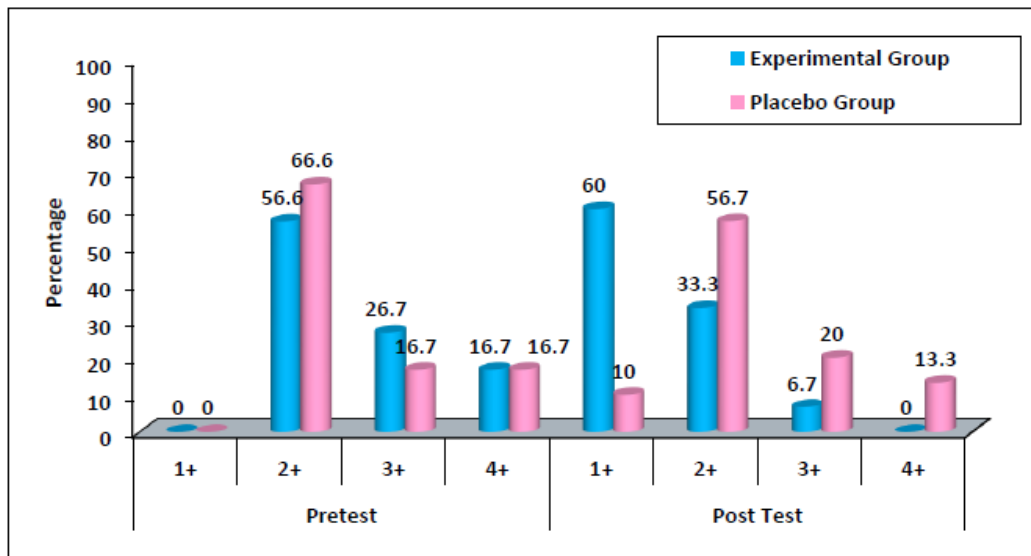***p<0.001, S – Significant

Figure 7. Comparison of Pretest and Post Test Levels of Proteinuria among Antenatal Mothers in the Interventional and Placebo Group

In the present study, it was identified that, after administration of relaxation therapy there was a significant reduction in the level of both BMI and proteinuria among our study participants in the interventional group. However, no studies so far reported a reduction in the level of BMI and proteinuria after the administration of diaphragmatic deep breathing exercises.

Association of Post Test Stress, Physiological and Biochemical Parameters among Antenatal Mothers with Selected Demographic Variables

The demographic variable age **(F=3.609, p = 0.041)** had shown a statistically significant association with the post-test level of stress among antenatal mothers at $p<0.05$ level and the other demographic variables had not shown a statistically significant association with the post-test level of stress among antenatal mothers in the experimental group. The demographic variables did not show a statistically significant association with post-test levels of blood pressure, BMI and proteinuria among antenatal mothers in the experimental group.

Conclusion

Based on the findings of the current study, it was evident that there was a significant effect of diaphragmatic deep breathing exercise on our study participants Therefore diaphragmatic deep breathing maternal exercise can be implemented as an alternative treatment by all the midwife nurses and other health care profession to reduce the blood pressure during the antenatal period as a part of nursing care to minimize complications and promote and neonatal wellbeing. Diaphragmatic deep breathing exercise enhanced, the reduction in the level of blood pressure, stress, BMI and proteinuria among these clients.

Acknowledgement

Conflict of Interest

The authors declare no conflict of interest.

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