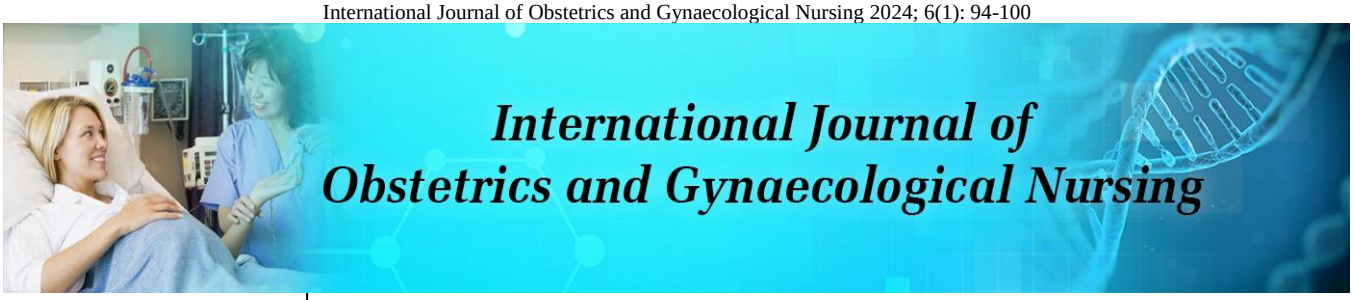

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Effect of relaxation therapy on the level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension

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Abstract
A quasi experimental study was conducted to assess the effect of relaxation therapy on the level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension (PIH). Objectives of the study were to assess the pre and post interventional level of stress and blood pressure among antenatal mothers with PIH, compare the pre and post interventional level of stress and blood pressure among antenatal mothers in experimental and comparison group, compare the post interventional level of stress and blood pressure among mothers with PIH in experimental and comparison group, to find association between pre interventional level of stress and blood pressure among antenatal mothers with PIH with their selected demographic variables and correlate the level of stress and blood pressure among antenatal mothers with PIH. The research design used was quantitative approach with quasi experimental non-equivalent comparison group pretest-posttest design. The population under study was antenatal mothers with PIH admitted in hospital. 40 samples were selected, 20 in experimental group and 20 in comparison group by using purposive sampling technique. Tool includes a structured questionnaire to collect the demographic and clinical data, a modified rating scale to assess stress level and a calibrated sphygmomanometer to measure the blood pressure level. Intervention includes relaxation therapy which consists of walking for 15 minutes, rest in left lateral position for 15 minutes and breathing exercises for 15 minutes. The study findings revealed that post interventional level of stress and blood pressure was significantly lower than the pre interventional level of stress and blood pressure of antenatal mothers in experimental group, post interventional level of stress and blood pressure among antenatal mothers in experimental group was significantly lower than the post interventional level of stress and blood pressure among antenatal mothers in comparison group, there was no significant association of pre interventional level of stress and blood pressure with demographic variables and there is no significant correlation between the level of stress and blood pressure. The study concluded that the intervention, relaxation therapy was effective in reducing the stress and blood pressure among antenatal mothers with pregnancy induced hypertension.

Keywords: Relaxation therapy; stress; blood pressure; pregnancy induced hypertension

Introduction
Pregnancy is a state of wellness, not sickness; women should enjoy it with family members. Pregnancy is very crucial phase in the women's life. Pregnant women are subjected to stress, as pregnancy is a challenging event in their life to prepare themselves for child birth. Level of stress varies with the personality characteristics of an individual. The extreme level of stress may lead to pregnancy complications such as pregnancy induced hypertension (PIH). Pregnancy is normally associated with some degree of stress, related to factors such as anticipation of parenthood, the hormonal changes associated with the implantation of the blastocyst and the embryonic oxygen and nutritional demands on the mother. The emotional instability of an unplanned pregnancy, anxiety, fear or self-doubt affects psychological wellbeing and increases physiological stress, but these reactions are common and desirable as mild stress improves the coping ability of the pregnant woman. However the significant increases in stress levels disrupt daily activities, eventually leading to deterioration in health and well-being. If these psychological factors become more pronounced, the resulting rise in stress hormones further exacerbates the physiological changes, leading to complications such as pre-eclampsia, intra uterine growth retardation, gestational diabetes or preterm labour.

There is strong correlation between levels of stress hormones cortisol of plasma in the mother and in the fetus. Raised cortisol has a direct effect on the development of the fetal brain and affects the child's later response to stress causing personality and attention deficits, temperamental difficulties and depressive illness through changes in neurotransmitter activity. Elevated cortisol of the mother increases the chances of miscarriage, preterm delivery, low birth weight babies and occurrence of pregnancy induced hypertension.

According to World Health Organization (2019), 35% of maternal deaths are due to hypertensive disorders in pregnancy. Pregnancy induced hypertension occurs in 5-15% of pregnancies and is associated with maternal and neonatal morbidity. The incidence of PIH in primigravidae is 16%, and multigravidae 7%, primary pre-eclampsia occurs in 70% of PIH cases and secondary pre-eclampsia in 30% of all PIH cases. With an estimated 62,000 –77,000 deaths each year, hypertensive disorders of pregnancy account for approximately 18.1% of maternal mortality. In India, the incidence of pregnancy induced hypertension was reported to be 8-10% of the pregnancies. Pregnancy induced hypertension accounts for 21.92% of the deaths in India and 45.5% in Kerala.

Many studies have reported that psychological stress is a risk factor for Pregnancy induced hypertension. Maternity nurse can play a vital role in helping the mother to relive stress and thereby reducing hypertension. Nurses can help their patients to reduce stress levels by bringing some non-pharmacological measures. Reducing stress and blood pressure among mothers through relaxation technique may bring quality pregnancy care and fetal outcome. Nurses can help their patients to reduce stress levels by identifying social supports within the family and in the community, or bringing some non-pharmacological measures. Evidences showed that reducing stress can help to lower high blood pressure. The researcher found that studies to assess the effect of complementary therapies on stress and blood pressure among mothers with pregnancy induced hypertension were found very rare. In order to empower mother's skills with competency, the researcher was interested to assess the effect of relaxation therapy on the reduction of stress and thereby reducing blood pressure among mothers pregnancy induced hypertension.

Statement of problem

A quasi experimental study to assess the effect of relaxation therapy on the level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension in selected hospitals, Thrissur.

Objectives

1. Assess the pre and post interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension in experimental and comparison group.
2. Compare the pre and post interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension in experimental and comparison group.
3. Compare the post interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension in experimental and comparison group.
4. Associate pre interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension with selected demographic variables of experimental and comparison group.
5. Correlate the pre interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension.

Hypotheses

Hypotheses were tested at 0.05 level of significance.

H_1: The level of stress score after relaxation therapy is significantly lower than the level of stress score before relaxation therapy in experimental group

H_2: The level of blood pressure after relaxation therapy is significantly lower than the level of blood pressure before relaxation therapy in experimental group.

H_3: The level of stress after relaxation therapy in experimental group is significantly lower than that of the comparison group.

H_4: The level of blood pressure after relaxation therapy in experimental group is significantly lower than that of the comparison group.

H_5: There is significant association of level of stress before relaxation therapy with selected demographic variables of experimental and comparison group.

H_6: There is significant association of level of blood pressure before relaxation therapy with selected demographic variables of experimental and comparison group.

H_7: There is significant correlation on the level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension before relaxation therapy.

Conceptual framework

Betty Neuman's system model is applied in this study. The model focuses on the client's reaction to stress and the factors of adaptation. Neuman's framework is basically an open systems model with the major components of stressors, reaction to stressors and the person interacting with the environment. This framework enables the nurse to intervene appropriately with health promotion, corrective or rehabilitative nursing actions to maintain or restore equilibrium to the system.

Research approach: Quantitative.

Research Design: Quasi experimental non-equivalent comparison group pre test-post test design.

O_1	X	O_2
O_1		O_2

O_1 - Pre intervention level of stress and blood pressure.
X - Intervention- Relaxation therapy.
O_2 - Posttest level of stress and blood pressure.

Setting of the study: Antenatal wards of two selected hospitals in Thrissur district. Kerala.

Population - Antenatal mothers with pregnancy induced hypertension who satisfied the eligibility criteria.

Sample size - 40 antenatal mothers with pregnancy induced hypertension.
(20 in experimental group and 20 in comparison group)

Sampling technique: Purposive sampling technique

Inclusion criteria
Antenatal mothers with PIH,
- Whose gestational age was 20 to 40 weeks.
- Who got admitted in the hospital for minimum five days.
- Who could read and understand Malayalam.

Exclusion criteria
Antenatal mothers with PIH,
- Who had complications such as eclampsia or heart failure.
- Who were practicing any relaxation techniques such as yoga or meditation.

DESCRIPTION OF TOOL
Tool 1
Section I
Questionnaire to collect demographic data – it age, religion, education, occupation, monthly income of family, type of family, leisure time activities, place of residence, presence of any stressful events in her life.

Section II
Questionnaire to assess clinical data - consists of gestational age, reason for admission, whether any previous history of hypertension, any family history of hypertension, family history of PIH, any history of PIH in previous pregnancy, body weight, presence of proteinuria, oedema, headache and visual disturbance.

Tool 2: A Rating scale based on Cohen's Perceived Stress scale to assess the stress level among mothers with pregnancy induced hypertension. The modified stress scale consists of questions related to the concern for the baby, concerns for mother and concerns for the family. This section comprised of twenty five items which are relating to their feelings and thoughts during the period of pregnancy. Each parameter have five ratings as 0, 1, 2, 3, 4. Total score is 100. The level of stress is graded as: 0-10 → normal stress, 11-30 → mild stress, 31-60 → moderate stress, 61-100 → severe stress

Tool 3: Assessment of blood pressure by using calibrated sphygmomanometer. By using the systolic and diastolic blood pressure value, the investigator calculated the mean arterial pressure by using the formula:

$$\text{Mean arterial pressure (MAP)} = \frac{\text{Systolic} + (\text{Diastolic } \mathbf{x}\ 2)}{3}$$

The values above 105 (140/90mm Hg) is considered as PIH. The mean arterial pressure is graded into:

Mild → less than 106 Moderate → 106-120 Severe → more than 120

Tool 4: Intervention - Relaxation therapy
The investigator used the relaxation therapy which consists of:
- Walking -Women is advised to walk for 15 minutes with arm stretched freely.
- Rest - Encourage mother to lie down in left lateral position for 15 minutes.
- Breathing exercises for 15 minutes which includes slow breathing exercise, blowing breathing exercise, pattered breathing exercise and cleansing breath exercise.
- Total duration of relaxation therapy was forty five minutes.

Results

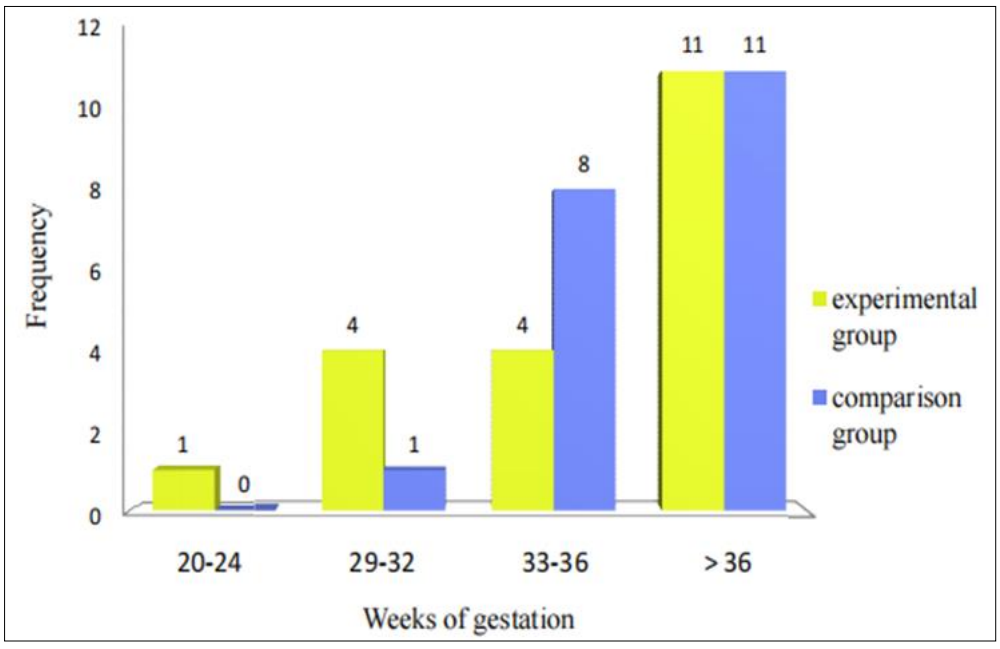

Fig 1: Frequency and percentage distribution of antenatal mothers with PIH based on gestational age

Table 1: Frequency and percentage distribution of antenatal mothers with PIH based on their demographic variables

Sl. No	Variable	Experimental group (n=20)		Control group (n=20)	
	Age	**Frequency**	**Percentage %**	**Frequency**	**Percentage %**
1	< 19 years	1	5	0	0
	20-24 years	5	25	5	25
	25-29 years	5	25	10	50
	30-34 years	6	30	2	10
	35 years	3	15	3	15
2	**Religion**				
	Christian	2	10	6	30
	Hindu	13	65	9	45
	Muslim	5	25	5	25
3	**Educational status**				
	Primary	1	5	0	0
	High school	5	25	2	10
	Higher secondary	6	30	9	45
	Graduate	7	35	7	35
	Post graduate	1	5	2	10
4	**Occupation**				
	Housewives	10	50	9	45
	Private job	6	30	5	25
	Govt. job	1	5	0	0
	Self employed	3	15	6	30
5	**Family Income (per month)**				
	Less than Rs.3000	1	5	2	10
	Rs. 3001-5000	1	5	0	0
	Rs. 5001-10,000	5	25	8	40
	More than Rs.10,000	13	65	10	50
6	**Leisure time activities**				
	Reading books	5	25	4	20
	Watching TV	6	30	7	35
	Hearing music	3	15	0	0
	Sleeping	1	5	1	5
	Others	5	25	8	40
7	**Family history of hypertension**				
	Yes	9	45	6	30
	No	11	55	14	70

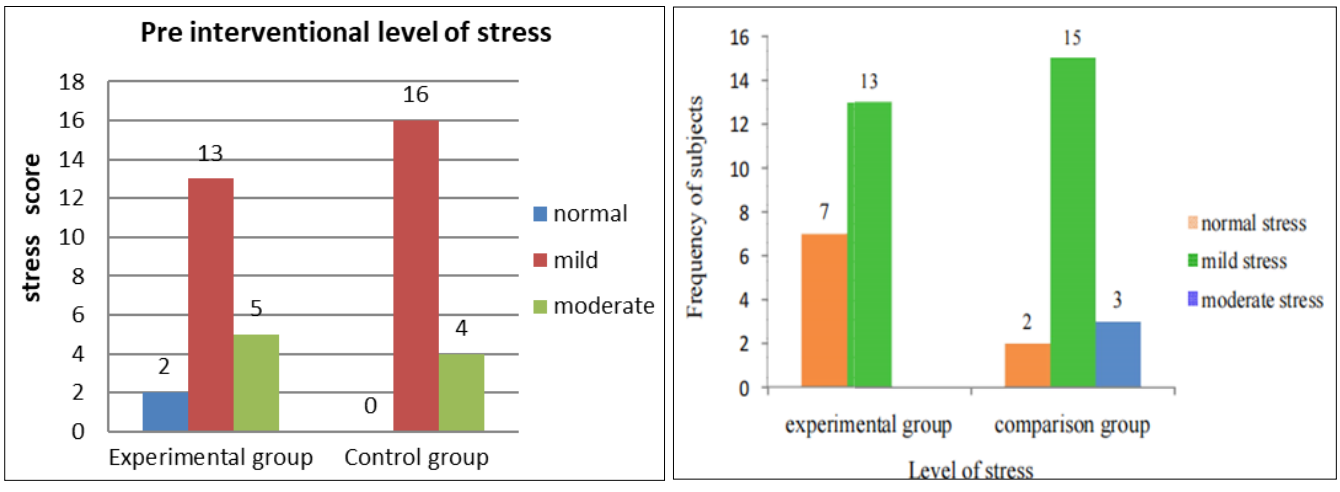

Fig 2: Assess the pre and post interventional level of stress among antenatal mothers with pregnancy induced hypertension in experimental and control group

Figure shows that majority during the pretest, 13[65%] in experimental group and 16[80%] in comparison group of antenatal mothers with PIH had mild stress. During posttest, 13[65%] in experimental group and 15[75%] in comparison group had mild stress.

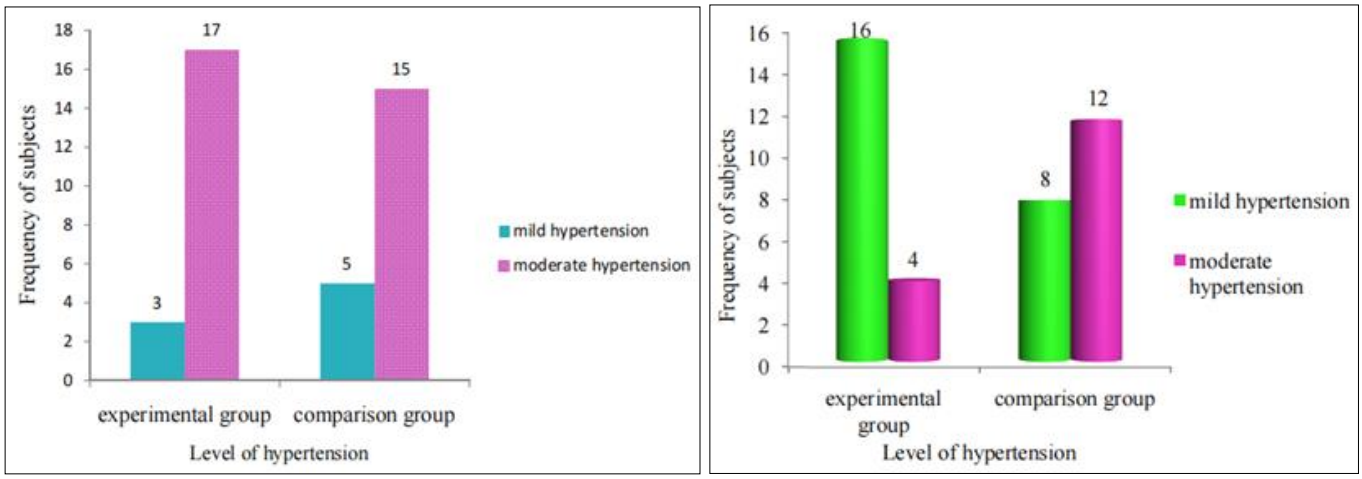

Fig 3: Assess the pre and post interventional level of blood pressure among antenatal mothers with pregnancy induced hypertension in experimental and comparison group

Figure shows that during prettest, 17[85%] in experimental group and 15(75%) in comparison group had moderate hypertension. During posttest, 16[80%] in experimental group and 12[60%] in comparison group had moderate hypertension.

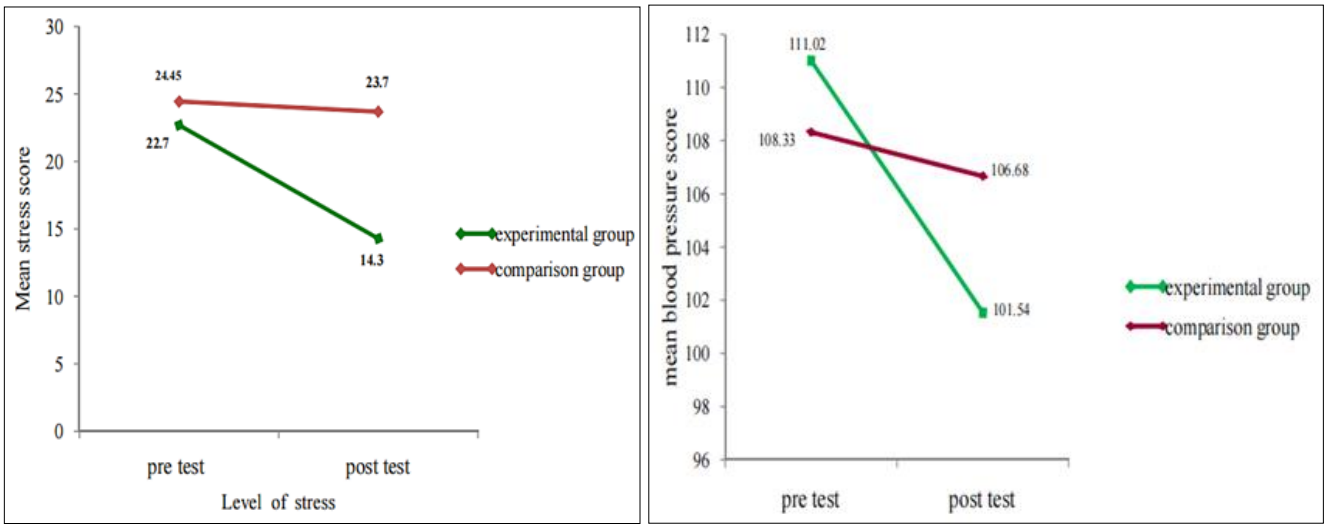

Fig 4: Comparison of pre and post interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension in experimental group and comparison group

The figure reveals that the mean score of post interventional level of stress among antenatal mothers with PIH in experimental group after relaxation therapy was significantly lower than that of antenatal mothers with PIH in the comparison group. The second figure depicts that the mean score of post interventional level of blood pressure among antenatal mothers with PIH in experimental group after relaxation therapy was lower than that of among antenatal mothers with PIH in comparison group.

Table 2: Comparison of pre and post interventional level of stress among antenatal mothers with PIH in experimental group and comparison group [n= 20]

Attribute Stress	Mean	Standard deviation	Calculated t' value	Table value	Inference
Experimental group					
Pre test	22.7	10.5	6.71	2.09*	S
Post test	14.3	6.7			
Comparison group					
Pre test	24.4	10.5	1.54	2.09*	NS
Post test	22.9	6.7			

*0.05 level of significance S = Significant NS=Not significant

Table indicates that there was statistically highly significant difference in the level of stress among antenatal mothers with PIH before and after relaxation therapy in experimental group. Also depicts that there was statistically no significant difference in the in pre and post interventional level of stress among antenatal mothers with PIH in comparison group.

Table 3: Comparison of pre and post interventional level of blood pressure among antenatal mothers with PIH in experimental group [n=20]

Attribute Blood pressure	Mean	Standard deviation	Calculated t' value	Table value	Inference
Experimental group					
Pre test	111.0	7.7	6.4	2.09*	S
Post test	101.5	4.7			
Comparison group					
Pre test	108.3	5.3	1.79	2.09*	NS
Post test	106.6	5.2			

*0.05 level of significance S = Significant NS=Not significant

The above table shows that there was statistically significant difference in the level of blood pressure among antenatal mothers with PIH in experimental group before and after relaxation therapy. For comparison group, there was statistically no significant difference in the level of blood pressure of antenatal mothers with PIH before and after relaxation therapy.

Table 4: Comparison of post interventional level of stress and blood pressure among antenatal mothers with PIH in experimental and comparison group.

Attribute	Mean	Standard deviation	Calculated t' value	Table value	Inference
Post interventional level of stress					
Experimental group	14.3	6.7	4.15	2.02*	S
Control group	23.7	7.5			
Post interventional level of blood pressure					
Experimental group	101.5	4.7	3.22	2.02*	S
Control group	106.7	5.2			

*0.05 level of significance S= Significant

The above table shows that on analysis, the results were found statistically significant. It indicates that there was significant difference in the post interventional level of stress and blood pressure among antenatal mothers with PIH in experimental and comparison group. The finding shows that relaxation therapy was effective in reducing both the level of stress and blood pressure.

Association of pre interventional level of stress and blood pressure among antenatal mothers with pregnancy induced hypertension with selected demographic variables

Association of selected demographic variables with pre interventional level of stress and blood pressure among antenatal mothers with PIH was found by using ANOVA and unpaired t test. The result showed there is no significant association between the level of stress and blood pressure with demographic variables such as age, education, religion, occupation, type of family, family income, area of residence and history of any stressful events in their life.

Table 5: Correlation between the pre interventional level of stress and blood pressure among antenatal mothers with PIH (N=40)

Attribute	Pretest mean score	Calculated r value	Table value	Inference
Stress	23.57	-0.07	0.25*	NS
Blood pressure	109.68			

*0.05 level of significance NS= Not significant

Table indicates that there was no significant correlation between the pre interventional level of stress and blood pressure among antenatal mothers with PIH which was calculated by using Pearson product moment coefficient.

Nursing implications

- Nursing education curriculum should provide opportunities to plan and conduct relaxation techniques in variety of settings.
- The clinical nurse has the responsibility of imparting the importance of relaxation therapy and demonstrating the techniques among antenatal mothers to reduce the level of stress and hypertension.
- Nurse administrator could suggest authorities in collaborating with other health care members, to plan and implement various interventions to improve the health status of mothers with pregnancy induced hypertension by conducting various in-service educations and training program to the health personnel. Make policies to incorporate it in comprehensive nursing care of antenatal mothers with pregnancy induced hypertension.
- More researches on the same topic will be very useful to implement an evidence based nursing on training program for the antenatal mothers.

Limitations

1. Relaxation therapy was included for only 5 days due to limited period of hospitalization.
2. The investigator could not control the extraneous variables.

Recommendations

- A comparative study can be done to assess the effect of relaxation therapy and other complementary therapies.
- Similar study can be done to assess effect of relaxation therapies on anxiety level.
- A similar study can be replicated in another setting with larger samples.
- A similar study can be conducted by using relaxation therapies for 2 weeks duration.

Conclusion

The findings of the study revealed that the relaxation therapy has an effect on stress and blood pressure among mothers with pregnancy induced hypertension. So the study suggested that the nurses have to take an important step for the promotion of relaxation therapy in the hospital as well as in community setting.

Conflict of Interest

Not available

Financial Support

Not available

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