Research Article

Effectiveness of vascular symptom management package on vascular symptoms, quality of life, and perinatal outcome among pregnant women with pregnancy-induced hypertension – A pilot investigation

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ABSTRACT

Background: Pregnancy-Induced Hypertension (PIH) is a high-risk condition which implies a threat to pregnancy, either by means of the mother's health or the health of the fetus. In PIH, the underlying basic pathology is endothelial dysfunction and intense vasospasm affecting almost all the vessels, particularly those of uterus, kidney, placental bed, and brain result the symptoms called vascular symptoms. Thus, PIH affects QOL of pregnant women and perinatal outcome. **Objectives:** The aim of this study was to assess the effect of Vascular Symptom Management Package (VSMP) on vascular symptoms, QOL of pregnant women with PIH & perinatal outcome. **Materials and Methods:** Quantitative approach with true experimental design was adopted. Ten pregnant women with PIH were selected for the study using purposive sampling technique. Subjects were randomly assigned to the experimental and control group using Sequentially Numbered, Opaque Sealed Envelopes (SNOSE) (5 in the experimental group and 5 in the control group). VSMP includes two sessions: 1-Instructions on strategies to manage each vascular symptoms, fetal well-being assessment, sleep health behavior education, warning signs of complications, and importance of compliance to interventions. 2- Demonstration on Systematic muscle relaxation techniques, Diaphramatic breathing and muscle stretching exercises. The tools used to collect the data were as follows: (1) Demographic questionnaire, (2) vascular symptom assessment scale, (3) Women's Health Initiative Insomnia Rating Scale (WHIIRS), (4) Edinburg Postnatal Depression Scale (EPDS), (5) WHOQOL–BREF, and (6) perinatal outcome questionnaire. Informed written consent was taken from each participant. Baseline assessment was done on the 1st day and the first session of intervention was implemented on the same day. The second session of intervention was implemented after 1 week. Post-assessment was done after 4 weeks. Mothers were followed till immediate puerperium and perinatal outcome was assessed. Phone calls & weekly meeting were done to make the mother to adhere in practice. The data analyzed using descriptive and inferential statistics. **Results:** The post-test mean rank of vascular symptoms of the experimental group was lower ($P \leq 0.05$) than that of the control group. The mean post-QOL score of the experimental groups was higher ($P \leq 0.05$) than that of mean post-QOL score of the control group. The mean rank of all parameters of perinatal outcome in the experimental group was lower ($P \leq 0.05$) than that of the control group. Hence, it can be interpreted that VSMP is effective to improve the reduce the vascular symptoms, improve the QOL & perinatal outcome. **Conclusion:** PIH is a life-threatening condition. The findings of this study show that the effectiveness of VSMP improves the QOL. Hence, VSMP is a

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nurse-led intervention which can be implemented to effectively reduce the vascular symptoms and improve the QOL of pregnant women with PIH.

KEY WORDS: Pregnancy Induced Hypertension; Quality of Life; Vascular Symptom Management Package

INTRODUCTION

Every woman wants to have the best possible pregnancy in terms of experience as well as outcome. Some of the medical and obstetrical complications during pregnancy may affect the joy of motherhood, imposing threat on physical and psychological well-being.[1]

It is estimated that approximately one of every four pregnant women will experience complications which lead to maternal mortality and morbidity. One among them is Pregnancy Induced Hypertension (PIH).[2,3]

PIH, a life-threatening complication of pregnancy is a condition that typically starts after the 20th week of pregnancy and is related to increased blood pressure (BP) (BP ≥140/90 mmHg) and protein in mother's urine (urinary albumin protein ≥300 mg/24 h).[2,3]

Antenatal care has been identified as the single intervention which could influence the maternal mortality of our country. Many women still seem to be unreached with this basic pregnancy evaluation. Most of the patients reported by the registry were registered for antenatal care either in the second (40.98%) or the third trimester (46.28%). Very few (12.54%) booked in the first trimester.[4]

Today, nurses and midwives have an important role in health-care promotion and prevention. Providing information to the pregnant women about symptom management of PIH helps to prevent the development of complications associated with PIH, improves their quality of life (QOL), and enhances the safe delivery. Furthermore, pregnant women are able to recognize the signs of complications and seek early medical help.

Very limited nursing studies were conducted on nursing care aspects of PIH. There are no effective nursing interventions for managing the symptoms of PIH. However, PIH is a global health problem with relatively high rates of perinatal mortality and morbidity. Though definite cure of PIH not found, intervention with small or moderate benefit also worthwhile. By considering this, the researcher planned to highlight the need for the present study.

Objectives

The objectives of this study were to evaluate the effect of vascular symptom management package (VSMP) on vascular symptoms, QOL and perinatal outcome of pregnant women with PIH.

MATERIALS AND METHODS

Quantitative approach with true experimental research design was used to test the effect of VSMP on vascular symptoms, QOL, and perinatal outcome among pregnant women with PIH. Pregnant women who diagnosed with PIH and registered in respective study center, belong to hilly area, are primigravida, gestational age between 26 and 30 weeks, are experiencing at least three vascular symptoms, willing to give written consent for the study, and can understand and speak the Hindi language were included in the study. Pregnant women with convulsion and coma, with other chronic medical disorders and admitted in hospital during the time of data collection, were excluded from the study. After taking permission from the ethical committee and administrative, pilot study was conducted. Ten women with PIH were purposively selected from the population and subjects were randomly assigned to the experimental and control group using sequentially numbered, opaque sealed envelopes (5 in the experimental group and 5 in the control group). The tools used to collect the data were as follows: (1) Demographic questionnaire, (2) vascular symptom assessment scale, (3) women's health initiative insomnia rating scale, (4) Edinburg postnatal depression scale, (5) the WHOQOL–BREF, and (6) perinatal outcome questionnaire. Informed written consent was taken from each participant. Baseline assessment was done on the 1st day and the first session of intervention was implemented on the same day. The second session of intervention was implemented after 1 week. Post-assessment was done after 4 weeks. Mothers were followed till immediate puerperium and perinatal outcome was assessed.

RESULTS

Demographic variables of the study participants shows that equal percentage of the women belongs to the age group between 22 and 26 years and 27 and 32 years, majority (60%) of women had secondary education, most (90%) of the women were housewives, highest percentage (40%) of women belongs to the monthly family income of Rs. 5547–9248, most (80%) of the women belong to the joint family and majority (70%) of women belongs to rural area.

Table 1 shows the frequency and percentage wise distribution of magnitude of vascular symptoms among pregnant women with PIH. BP shows that 50% of women had mild

Table 1: Frequency and percentage wise distribution of magnitude of the vascular symptoms among pregnant women with PIH (*n*=10)

Vascular symptoms	Frequency	%
Blood pressure		
<140/90 mmHg (Normal)	0	0
140/90–149/99 mmHg (Mild)	5	50
150/100–159/109 mmHg (Moderate)	4	40
>160/110 mmHg (Severe)	1	10
Proteinuria		
Absent (Normal)	0	0
+1 (Mild)	2	20
+2 (Moderate)	7	70
+3 and above (Severe)	1	10
Edema		
0 (Normal)	0	0
1 (Mild)	1	10
2 (Moderate)	6	60
3 (Severe)	3	30
Weight gain (per week)		
0.5 (250 g)–1 lb (500 g) (Normal)	5	50
1 lb (500 g)–2 lbs (1 kg) (Mild)	5	50
>2 lbs (1 kg) (Severe)	0	0
Headache		
0 (No pain)	1	10
1–3 (Mild pain)	4	40
4–6 (Moderate pain)	4	40
7–10 (Severe pain)	1	10
Epigastric pain		
0 (No pain)	5	50
1–3 (Mild pain)	2	20
4–6 (Moderate pain)	1	10
7–10 (Severe pain)	2	20
IUGR		
No IUGR	3	30
Mild	6	60
Severe	1	10
Insomnia		
Absent	5	50
Present	5	50
Depression		
Absent	5	50
Present	5	50

IUGR: Intrauterine growth restriction, PIH: Pregnancy-induced hypertension

BP, 40% had moderate BP, whereas only 10% had severe BP. Regarding proteinuria, majority (70%) of women had moderate proteinuria, 20% had mild proteinuria and only 10% had severe proteinuria. Edema of pregnant women depicts that majority (60%) of women had moderate edema, 30% had severe edema and only 10% had mild edema.

Table 2: Comparison of pre- and post-test magnitude of vascular symptoms between the experimental and control group (*n*=10)

Variable	Group	Test	Mean rank	U value	*P* value
BP	Pre-test	Experiment	5	10	0.317
		Control	6		
	Post-test	Experiment	3	0	0.005
		Control	8		
Proteinuria	Pre-test	Experiment	4.20	6	0.093
		Control	6.80		
	Post-test	Experiment	3	0	0.004
		Control	8		
Edema	Pre-test	Experiment	4.70	8.5	0.339
		Control	6.30		
	Post-test	Experiment	3	0	0.005
		Control	8		
Weight gain	Pre-test	Experiment	6	10	0.549
		Control	5		
	Post-test	Experiment	3.80	4	0.054
		Control	7.20		
Headache	Pre-test	Experiment	5.90	10.5	0.656
		Control	5.10		
	Post-test	Experiment	3	0	0.005
		Control	8		
Epigastric pain	Pre-test	Experiment	4.30	6.5	0.178
		Control	6.70		
	Post-test	Experiment	3.10	0.5	0.009
		Control	7.90		
IUGR	Pre-test	Experiment	4.70	8.5	0.339
		Control	6.30		
	Post-test	Experiment	3	0	0.005
		Control	8		

Mann–Whitney *U*-test. BP: Blood pressure

Weight gain of pregnant women shows that equal proportion (50%) of women had normal and mild weight gain. Headache depicts that more or less equal and highest percentage (40%) of women shows the mild and moderate ache and equal 10% of women shows the severe and no pain. Epigastric pain shows that highest percentage (50%) of women had no pain, equal 20% of women had mild and severe pain, whereas only 10% had moderate pain. Intra Uterine Growth Retardation (IUGR), majority (60%) of women had mild IUGR, 30% had no IUGR and 10% had severe IUGR. Half (50%) of the subjects experienced insomnia and depression.

Table 2 shows the comparison of pre- and post-test difference in magnitude of vascular symptoms between the experimental and control group. Revealed that more or less similar pre test mean rank of vascular symptoms seen in both experimental and control group. However, the post-test mean rank of

Table 3: Comparison of insomnia, depression and QOL score between the experimental and control group (n=10)

Variable	Group	Mean±SD		MD	*t*-value	*P* value
		Experimental group	Control group			
Insomnia	Pre-test	11.40±3.209	9.80±6.907	1.6	0.470	0.651
	Post-test	8.0±2.345	17.20±3.834	9.2	4.577	0.002
Depression	Pre-test	9.40±3.286	7.20±6.419	2.2	0.682	0.514
	Post-test	6.60±2.191	18.40±4.930	11.8	4.891	0.001
QOL	Pre-test	67.20±6.340	69.00±10.344	1.8	3.32	0.749
	Post-test	76.60±2.881	54.00±13.60	22.6	3. 635	0.007

Independent sample *t*-test, df=8, $P \leq 0.05$ level. QOL: Quality of life, SD: Standard deviation

vascular symptoms of the experimental group was lower ($P \leq 0.05$) than that of the control group. This shows the significant decrease in the magnitude of vascular symptoms in the experimental group. Hence, it can be interpreted that VSMP is effective to reduce the magnitude of vascular symptoms.

Table 3 depicts the comparison of insomnia, depression, and QOL mean score between experimental and control group which revealed that almost similar mean pre-test insomnia, depression, and QOL in experimental group and in control group is seen. Moreover, the mean post-test insomnia level in the experimental group is 08.0 ± 2.345 less than the post-test insomnia level in the control group 17.20 ± 3.834 with the mean difference of 9.2.

Mean post-test depression level in the experimental group is 06.60 ± 2.191 significantly ($P \leq 0.05$) less than the post-test depression level in the control group 18.40 ± 4.930 with the mean difference of 11.8.

The mean post-test QOL score in the experimental group is 76.60 ± 2.881 more than the post-test QOL score in the control group 54.00 ± 13.60 with the mean difference of 22.6. The mean post-QOL score of the experimental groups was higher ($P \leq 0.05$) than that of mean post-QOL score of the control group. This shows the significant decrease in insomnia, depression and increase in the QOL score in the experimental group.

Table 4 shows the comparison of perinatal outcome between the experimental and control group. The mean rank of all parameters of perinatal outcome in the experimental group was lower ($P \leq 0.05$) than that of the control group. Hence, it can be interpreted that VSMP was effective to improve the perinatal outcome.

Table 4: Comparison of perinatal outcome between the experimental and control group (n=10)

Variable	Test	Mean rank	U value	*P* value
Hospitalization	Experiment	4.00	5	0.050
	Control	7.00		
Received advanced care	Experiment	4.50	7.5	0.134
	Control	6.50		
Gestational age at onset of labor	Experiment	4.50	7.5	0.221
	Control	6.50		
Mode of delivery	Experiment	4.90	9.5	0.502
	Control	6.10		
Breastfeeding onset	Experiment	3.20	1.0	0.013
	Control	7.80		
Emotional status	Experiment	3.00	0.0	0.008
	Control	8.00		
Advanced care in puerperium	Experiment	5.00	10	0.513
	Control	6.00		
Maternal complications	Experiment	4.50	7.5	0.221
	Control	6.50		
Condition of baby at birth	Experiment	4.50	7.5	0.134
	Control	6.50		
Admission of baby in NICU	Experiment	5	10	0.513
	Control	6		
Newborn resuscitation	Experiment	3.50	2.5	0.014
	Control	7.50		
Feta/neonatal complications	Experiment	3.50	2.5	0.014
	Control	7.50		

Mann–Whitney *U*-test

DISCUSSION

This study result shows that VSMP was effective in reducing the vascular symptoms, improves the QOL and perinatal outcome of pregnant women with PIH and given hope to conduct the main study.

This result was supported by the study conducted by Rakhshani *et al.* shows that guided yogic practices and visualization can improve the intrauterine fetal growth and the utero-fetal-placental circulation in high-risk mothers, especially in hypertensive mothers.[5]

This study result shows that women with PIH have lower QOL. This finding was supported by Mautner *et al.* shows that women with hypertension group had statistically significant lower health-related QOL scores on the physical domain during pregnancy than those without complications.[6]

Jayasutha *et al.* stated that counseling on perinatal outcome revealed that a significant reduction in BP ($P = 0.0001$). And also, the author stated that patient counseling makes the patient to understand better about their disease, diet modification, and pharmacotherapy and thereby enhances compliance and adherence to therapy with an optimal outcome of therapy.[7]

Magee *et al.* also stated that though pre-eclampsia is considered as a contraindication to vigorous exercise by few authorities, mild exercise with stress management by relaxation techniques may be useful to improve BP control.[8]

Subedi stated that early detection and prevention of maternal hypertensive disorder and its complication are important to avoid morbidity and mortality. Education about the warning symptoms is also important because early recognition may help women receive treatment and prevent worsening of the disease.[9]

Strengths

- The first study with VSMP
- True experimental design was used
- Various strategies used to make the women to adhere with the management.

Limitations

- One setting only
- Only non-invasive method of assessment used.

CONCLUSION

PIH continues to be a major problem, particularly in developing countries contributing significantly to high maternal and perinatal morbidity and mortality. Antenatal care has been identified as the single intervention which could influence the maternal mortality of our country. Though definite cure of PIH not found, intervention with small or moderate benefit also worthwhile. Today, nurses and midwives have an important role in health-care promotion and prevention. Providing information to the pregnant women about symptom management of PIH helps to prevent maternal mortality and morbidity.

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