Effect of Group Centering Pregnancy on Empowering Women with Gestational Hypertension

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Abstract

The aim of the study is to examine the effect of group centering pregnancy on empowering women with gestational hypertension. Design: randomized controlled trial. Sample: random sample of two hundred primigravida who were between 24-26 weeks gestation, singleton, age ranged between 35- 45 years old, diagnosed with gestational hypertension and on treatment. Tool: Data collection tools included the following; 1) an interview & a follow up assessment questionnaire, 2) pregnancy-related empowerment scale (PRES), and 3) medical records. Procedure: In the group centering pregnancy, there were 10 women in each group formed around their estimated due dates, and the same women met together for each session till delivery. The antenatal schedule visits were 6 sessions, one every two weeks. Results: women in the group centering pregnancy were strongly empowered than women who received the standard follow up antenatal care. There was statistical significant difference between both groups related to the total mean score of PRES of the empowerment categories ($t=17.61$, $p\leq0.0001$). Conclusion: Group centering pregnancy may hold promise for empowering pregnant women with gestational hypertension.

Key Words: Centering Pregnancy- Empowerment- Gestational Hypertension-RCT

1.Introduction

Gestational hypertensive disorder (GHD) remains one of the most significant unsolved problems in obstetrics (Magee, etal. 2014). Gestational hypertension is developing of hypertension after twenty weeks' gestation without protein in urine or other signs of pregnancy toxemia (Lo Mission & Caughey, 2013). It is estimated that 5-10% of pregnant women are complicated by this disease, and it is one of the major causes of maternal and fetal morbidity and mortality (Gudnadóttir, etal. 2016; Van Baaren, etal. 2017). In Egypt, maternal mortality ratio is reported to be 45 per 100000 live births (WHO, 2013). The trend nowadays is directed to raise women awareness related to the importance of follow-ups and regular observation of clinical data for the prevention of hypertensive disorders' morbidity. Group antenatal care (GAC) permits women to come back along as a support system, receiving antenatal care and taking part in education. There are recently several models of GAC, including centering pregnancy. Centering pregnancy‘s model is comprised of 3 major components; health assessment, education, and support. Groups are consisting of 8–12 women. Sessions typically last 90–120 minutes and therefore the women meet in conjunction with their health provider and group supporter about ten times throughout their pregnancy (Byerley and Haas, 2017).

Nurse is the first skilled provider who has contact with pregnant women and plays a crucial role throughout the prenatal period. She can empower the pregnant woman by providing appropriate information and increasing her abilities for proper decision making, stress on her rights for health, encouraging chances for social support and relationships with health care providers and raising health care quality. Despite proved advantages of group centering care, there is still a lot of to be learned related to group centering pregnancy in high risk populations. The present study is looking at conducting group centering pregnancy for women with gestational hypertension in order to identify its effect on their empowerment.

2. Aim

To examine the effect of group centering pregnancy on empowering women with gestational hypertension

3. Hypothesis

Women with gestational hypertension in group centering pregnancy will be strongly empowered than women who are in standard antenatal care.

4. Materials and Methods

4.1. Design

Randomized controlled trial

4.2. Setting

The present study was conducted at El Kasr Aini, Cairo University Maternity hospitals, at the outpatient prenatal clinic.

4.3. Sample

Random sample of two hundred primigravida who were between 24-26 weeks gestation, singleton, age ranged between 35- 45 years old, diagnosed with gestational hypertension, their body mass index (BMI) were between 18.5 – 24.9 on the beginning of pregnancy, read and write, had mobile phone and had intension to attend the antenatal group sessions. Women who had fetus with congenital malformations, with any other secondary diseases, who had hypertension secondary to other disorders such as renal disease, hypo or hyperthyroidism, had primary infertility and cannot attend the appointments and sessions at the clinic, that refused informed consent were excluded. Sample size calculated with sample equation based estimate effect of intervention (10 %) with a risk of type I error of 5%, with power of 0.80 and confidence interval of 95%.

Recruitment of participants and randomization

The recruitment of participants took place in the outpatient clinic. After complete assessment and matching the diagnosis, all women had the criteria for participation was invited to be involved in the trial. Randomization using randomly permuted blocks of size four was done. The ratio for group centering pregnancy versus standard care was one to one. Allocation of women to the study and control groups by an individual not concerned within the study was done. Two hundred consecutive numbered sealed opaque envelopes were utilized for participants' assignment (Figure, 1).

4.4. Tools and measurements

Data collection tools included the following; 1) an interviewing & follow up assessment questionnaire, 2) pregnancy-related empowerment scale (PRES), and 3) medical records.

4.4.1. An interview & a follow up assessment questionnaire

This sheet was designed in order to gather the data as follows; 1) socio-demographic data 2) initial and baseline assessment data and obstetric history in terms of woman's parity, gestational age, signs and abdominal examination, ect., and 3) follow up data related to weight, blood pressure, urine analysis and any developed warning/or danger signs.

4.4.2. Pregnancy-Related Empowerment Scale (PRES)

The pregnancy-related empowerment scale (PRES) is sixteen-items of likert-type scale accustomed to assess woman’s sense of control over her pregnancy-related health care. It represents four domains of empowering pregnancy; 1) provider connectedness of 6 items, 2) skillful decision-making of three items, 3) peer connectedness of two items and 4) gaining voice of five items. Answers for each item graded from one (strongly disagree) to four (strongly agree). The total scale scores are sixty four; a score of 16 indicates no empowerment, scores of 17-32 indicate poor empowerment, scores of 33-48 indicate empowerment, and scores of 49-64 indicate strongly empowerment. Cronbach’s alpha for reliability estimates indicated high internal consistency for $\alpha = 0.91$ (Klima etal. 2015).

4.4.3. Medical records

Women's medical records include all data about their medical assessment and management, lab's investigations, and delivery outcome.

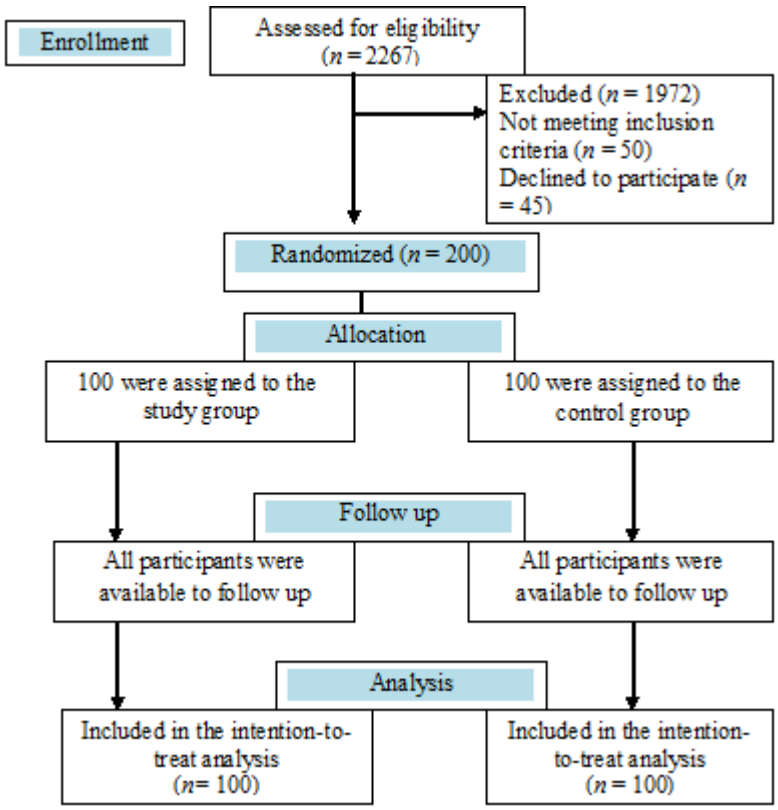

Figure 1: CONSORT 2010 flow diagram (Moher, etal. 2010)

4.5. Procedure

The present study is grounded by the locus of control theory of Rotter (1966) and self-care deficit theory of Orem (1991). Rotter theorized that persons with an internal locus of control are tend to be responsible for their actions, are not simply affected by others' opinions, and have a tendency to do their maximum effort at tasks. Also Orem proposed that the individual should be self-reliant and responsible for his/her own care, practice and initiate activities are needed to maintain life, health, and well-being. In the group centering pregnancy, there were 10 women in each group formed according their estimated due dates, and the same women met together for each session till delivery. The antenatal schedule visits were 6 sessions, one every two weeks. Each session consumed 90 minutes. At the first visit after randomization, each group in the groups of centering pregnancy received a schedule of all visits' times and created support network with other group's members on their mobiles (i.e. Whats'app group) for confirmations and notifications. In each prenatal visit, physical examination by obstetrician was done. The prenatal session included check on vital signs, weight, protein in urine and discussions of topics of importance to the group. Women learned self monitoring skills (i.e. blood pressure, weight and fetal movement count), discussed the important issues related to their gestations, lifestyle (i.e. balanced diet and daily activities), identified the warning symptoms of their blood pressure, danger signs of pregnancy and when to ask for doctor's advice. Pregnant women participated in the pregnancy centering care were asked to check the following at home; their blood pressure once daily, fetal count daily, weight once weekly and record the findings in their diary. Each woman in the group should be present at least three sessions. Less than three session attendance considered dropout. Measurement of pregnancy-related empowerment was

done at the end of the third session of the antenatal schedule visits. Women in the control group received the standard antenatal follow up care (i.e. vital signs, weighing, physical examination, and lab's investigations) each antenatal visit. Woman with uncontrolled hypertension or developed alarm events was communicated directly to the researcher and then to the obstetrician to take the appropriate management in both the study and the control groups.

4.6. Primary Outcome

Degree of women's empowerment, prenatal admission, prenatal admission until delivery and developing of pre-eclampsia

4.7. Secondary Outcome

Maternal & neonatal outcome

5. Statistical analysis

Statistical package of social science (SPSS) for data analysis, version 22 was utilized. An intention-to-treat on analysis of primary and secondary outcome was considered. The effects of the intervention were estimated by relative risk.

Characteristics of Women among the Study and the Control Groups

Regarding sample characteristics, data denoted that there were no statistical significant differences between both groups related age, gestational age, body mass index (BMI) on randomization, educational level and the occupational status (table, 1).

Table 1.Characteristics of Mothers among the Study and the Control Groups.

Items	Study group (n=100)		Control group (n=100)		t	P
	Mean	**SD**	**Mean**	**SD**		
Age	36.86	1.34	36.90	1.32	-0.21	0.83
Gestational Age (weeks)	25.18	0.86	25.10	0.88	0.64	0.51
BMI on Randomization	26.53	0.50	26.48	0.50	0.70	0.48
	No.	**%**	**No.**	**%**	χ^2	**P**
Education level						
Primary School	10	10.00	8	8.00	0.24	0.62
Preparatory School	2	2.00	0	0.00	2.02	0.15
Secondary School	54	54.0	44	44.0	2.00	0.15
University	34	34.0	48	48.0	1.19	0.27
Occupation						
Housewife	22	22.0	16	16.00	1.17	0.27
Employee	78	78.00	84	84.00	1.17	0.27

Level of significance at $p \leq 0.05$

Pregnancy-Related Empowerment Scale (PRES)

There were statistical significant differences between both groups related to the total mean score of PRES of the empowerment's categories ($t=17.61$, $p \leq 0.0001$). Women in group centering pregnancy had 2.90% times the risk to be strongly empowered compared to women who had the standard prenatal care (table, 2).

Table 2. Pregnancy-Related Empowerment Scale (PRES)

Pregnancy-Related Empowerment Scale Items	Study group (n=100)		Control group (n=100)		t	P
	Mean	SD	Mean	SD		
Provider Connectedness						
I can ask my midwife provider about my pregnancy	3.44	0.49	3.29	0.45	2.21	0.02
I have enough time with my midwife to discuss my pregnancy	3.15	0.35	2.44	0.49	11.55	0.0001
My midwife listens to me	3.69	0.46	2.57	0.49	16.44	0.0001
My midwife respects me	3.20	0.40	3.17	0.37	0.54	0.58
I expect my midwife to respect my decisions about my pregnancy	3.08	0.27	3.02	0.14	1.95	0.05
My midwife respects my decision, even if it is different than their recommendation	2.34	0.47	2.19	0.39	2.42	0.01
Skillful Decision-Making						
I take responsibility for the decisions I make about my pregnancy like eating healthy food	3.67	0.47	3.59	0.49	1.17	0.24
I can tell when I have made a good health choice	3.60	0.49	2.76	0.42	12.86	0.0001
Since I began prenatal care, I have been making more decisions about my health	2.38	0.48	2.24	0.42	2.15	0.03
Peer Connectedness						
Women need to share experiences with other women when they are pregnant	3.30	0.46	3.22	0.41	1.28	0.19
I share my feelings and experiences with other women	3.22	0.41	2.55	0.50	10.29	0.0001
Gaining Voice						
I know if I am gaining the right amount of weight during my pregnancy	3.25	0.43	2.33	0.47	14.32	0.0001
I have a right to ask questions when I don't understand something about my pregnancy	3.31	0.46	3.18	0.68	1.56	0.11
I am able to change things in my life that are not healthy for me	2.88	0.32	2.77	0.42	2.05	0.04
I am doing what I can to have a healthy baby	3.56	0.49	3.40	0.49	2.28	0.02
If something is going wrong in my pregnancy, I know who to talk to	3.65	0.47	3.52	0.50	1.87	0.06
Total mean score of scale	49.98	0.98	47.32	1.14	17.61	0.0001
Scale categories	*No*	*%*	*No*	*%*	χ^2	*P*
Empowerment (33-48)	7	7.00	68	68.0	86.1	0.003
Strongly empowerment (49-64)	93	93.0	32	32.0	79.38	0.0001

Level of significance at $p \leq 0.05$

Comparison between Groups Related to Prenatal Follow Up

Regarding prenatal follow up results, women in group centering pregnancy had 66% less risk of prenatal hospital admission with relative risk (RR) of 0.34 and 60% less risk of prenatal hospital admission until delivery with RR of 0.4 compared to women in the standard prenatal care, with risk difference of 19 and 15 respectively. There were no statistical differences between groups related to total numbers of the prenatal visits, numbers of cardiotocograph (CTG's), hospital stay and developed preeclampsia (table, 3).

Table 3. Comparison between Groups Related to Prenatal Follow Up.

Prenatal Follow Up Items	Study group (n=100)		Control group (n=100)		t	P
	Mean	SD	Mean	SD		
Total numbers of the prenatal visits	5.95	0.21	5.91	0.28	1.10	0.27
No of Cardiotocograph (CTG's)	2.28	0.45	2.21	0.40	1.14	0.25
	No	*%*	*No*	*%*	χ^2	*P*
Prenatal admission (%)	10	10.0	29	29.0	11.49	0. 001
No of hospitalized days	4.49 ±0.50 SD		4.52±0.50 SD		t=-0.42	P=0.67
Prenatal admission until delivery (%)	10	10.0	25	25.0	7.79	0.005
Pre-eclampsia	6	6.0	10	10.0	1.08	0.29
HELLP	2	2.00	3	3.00	0.20	0.65

Level of significance at p ≤0.05
HELLP = Hemolysis Elevated Liver enzymes and Low Platelets.

Comparison between Groups Related to Maternal & Neonatal Outcome

Data analysis related to maternal & neonatal outcome revealed that there were no statistical significance differences between groups related to gestation on delivery, mode of delivery, birth weight, and Apgar at 5th minutes (p≥ 0.05), (table 4).

Table 4. Comparison between Groups Related to Maternal & Neonatal Outcome

Maternal & Neonatal Outcome	Study group (n=100)		Control group (n=100)		t	p
	Mean	SD	Mean	SD		
Gestation on delivery (weeks)	37.99	0.74	37.90	0.77	0.83	0.40
Birth process	*No*	*%*	*No*	*%*	χ^2	*P*
Spontaneous	94	94.0	89	89.0	1.60	0.20
Induction	6	6.0	11	11.0	1.60	0.20
Mode of delivery						
Vaginal	83	82.0	81	80.0	0.13	0.71
Instrumental	2	2.00	1	1.00	0.33	0.65
Primary cesarean section	9	9.00	10	10.0	0.05	0.80
Secondary cesarean section	6	6.00	8	8.00	0.30	0.57
Neonatal outcome						
Birth weight	3.005±0.20 SD		2.96±0.21 SD		t= 1.25	P= 0.21
Apgar at 5th minutes	9.01±0.73 SD		9.03±0.71 SD		t=-0.19	P= 0.84

Level of significance at p ≤0.05

6. Discussion

Methodological considerations

The present study applied the group centering pregnancy in a governmental hospital. Such this free medical services setting put the obstetrician in a superior position for medical decision making. Against this background, applying group centering pregnancy that puts the entire focus on the patient had been to be a challenge. Furthermore, blinding was difficult because of the nature of intervention.

Results discussion

Centering pregnancy-based group is meant to produce continuity of care, build self-care skills, and make sure the forming of connections with providers (Rising & Quimby, 2016). The aim of the present study was examining the effect of group centering pregnancy on empowering women with gestational hypertension.

Women in the present study in the group centering pregnancy were strongly empowered than women in the control group. This result can be referred to the provider's ability to give adequate time for woman each visit, listen, show respect and encourage her to take decision from different health choices, make her engage with other women in the same health condition, and provide complete simple health information.

The present result goes on the same line with the results of Patil, etal. (2017) who reported that centering pregnancy-based group antenatal care is a promising model to increase pregnancy-related empowerment for pregnant women. Women in group sessions had significantly better prenatal knowledge, felt more ready for labor and delivery, and had greater satisfaction with care (Ickovics, etal. 2007). Group prenatal care has a positive effect on weight gain paths in pregnancy and postpartum (Magriples, etal. 2015). Adolescent pregnant women in centering pregnancy group were less likely to suffer from postpartum depression (Trotman, etal. 2015). Heberlein, etal. (2016) also added, the group participants had an eight point three times enhance in prenatal preparation for coping in late pregnancy and a four point nine times decrease in post partum's scores of depressive symptom.

Eluwa, etal. (2018) reported in their trial that group centering pregnancy had positive effect on the rate of usage of antenatal services and facilities by women. Regarding prenatal follow up in the present study, there were positive effect of the group centering pregnancy on numbers of prenatal hospital admission and numbers of admission until delivery. These results may be related to the increased women level of awareness about their health condition, as well as the information they received to monitor their blood pressure and danger symptoms of preeclampsia and also to count their fetal movement. This interpretation is supported by Swendeman etal. (2009) who propose rules for self-management of chronic disease in social, psychological, and physical domains (i.e. understanding illness, health-promoting behaviors, compliance to treatment, self-monitoring, empowerment, cognitive skills of self-management and cooperative relationships with health care professionals).

The present results are agreed with the systematic review results of Tucker, etal. (2017) who concluded that self-monitoring in conjunction with co-interventions (i.e. regular medication titration by doctors, or clients; health education; or lifestyle modification) leads to clinically observable reduction of blood pressure for twelve months. In another systematic review of Mc Bain, Shipley and Newman (2015), self-monitoring can lead to significant reductions in hospitalization and readmission to hospital, specifically in heart diseases. Moreover**,** Perry, etal. (2018) concluded in their study that home monitoring of blood-pressure for pregnant women with hypertension may give a promise to reduce the hospital visits' numbers needed for women.

7. Conclusion

Group centering pregnancy may hold promise for empowering pregnant women with gestational hypertension and decreasing the rate of hospital admissions during pregnancy, with no significant clinical effect on delivery and neonatal outcome.

8. Recommendations

Maternity teams ought to reach clear agreement on how to empower high risk pregnant women in order to make their own serious decisions regarding plan their pregnancy, birth and postpartum.

9. Implication into practice

Respect patients' needs and preferences and supporting their decision by appropriate information are basic elements in improving maternal outcome, and as a result, reducing health care costs and usage of health services, and improving quality of care.

10. Conflict of interest

There is no conflict of interest.

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