Effect of Lifestyle Modification Guidelines on Mild Preeclampsia

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Abstract

Background: Preeclampsia has an adverse effect on both mother and fetus, and may be life-threating condition. Lifestyle modification can improve the clinical presentation of preeclampsia. **Methods:** Aim of the current study was to examine the effect of lifestyle modification guidelines on improving mild preeclampsia. A Quasi-experimental design was adopted on a purposive sample of 80 pregnant women with mild preeclampsia at the antenatal outpatient unit in Port Said Maternity Hospital, they were assigned into two groups; the study group received lifestyle modification guidelines alongside the routine care and pharmacological management, while the control group received the routine care and pharmacological management. Two tools were used for data collection, Interviewing Questionnaire Sheet and Follow Up Assessment Sheet. **Results:** The findings showed that lifestyle modifications guidelines lowering the mean of systolic and diastolic blood pressure, gestational weight gain, and proteinuria. Also, reducing risk of delivery before 34 weeks of gestation by 10.0%, delivery from 34 to 36 weeks of gestation by 30.0%, altered liver function by 22.5%, altered kidney function by 15.0%, and cardiac symptoms by 17.5%. **Conclusion:** Lifestyle modification guidelines alongside with routine care and pharmacological treatment are effective method in modifying mild preeclampsia and its complications.

Key Words: *Lifestyle Modification, Lifestyle Guidelines, Maternal Outcome, Mild Preeclampsia, Severe Preeclampsia.*

Introduction

Preeclampsia (PE) is an induced pregnancy hypertensin disorder, which may be resolves within six weeks postpartum. In addition, PE are considered a multi system, progressive disorder, which characterized by elevated blood pressure (BP) (systolic blood pressure (SBP) is equal or more than 140 mmHg, and/or diastolic blood pressure (DBP) is equal or more than 90 mmHg), in previously normotensive women, in the absence of proteinuria or proteinuria +1 with dipstick reading, and edema at 20-24 weeks of gestation [(1,2)].

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Preeclampsia is accompanied with various of complications for mother[3,4]. Lifestyle can be described as the way that individuals, families, and communities can live, in terms of personal behaviors including nutrition, physical activity, and stress management. A healthy lifestyle can improve health and happiness[5], and reduce the rate of morbidity and mortality[6]. During pregnancy, lifestyle modification may be an appropriate strategy for controlling PE in combination with pharmacological therapies[7].

Preeclampsia is one of the most common life-threatening complications during pregnancy [8]. Nursing guidelines and counseling sessions for women with high BP during pregnancy have an important role in early control of its subsequent problems. Lifestyle modification could control hypertension (HTN) and reduce complications related to HTN to mother. Hence, the present study through the light on the effect of lifestyle modification guidelines on modifying mild PE.

Material and Method

Aim of the study:

Aim of the current study was to examine the effect of lifestyle modification guidelines on modifying preeclampsia.

Research hypothesis:

Pregnant women with mild preeclampsia who will follow lifestyle modification guidelines will show a low risk for developing maternal complications related to preeclampsia than those who don't.

Research Design:

A quasi-experimental (control and study groups) design was adopted in the current study.

Study Setting:

This study was conducted at the antenatal outpatient unit affiliated with Port Said Maternity Hospital, Egypt.

Study Population and Sample:

The study sample included a purposive sample of 80 pregnant women at 20 – 24 weeks of gestation with mild PE assigned equally into two groups.

Tools of Data Collection:

Tool (1): Structured Interviewing Sheet.

It contains personal data, which include age, occupation, educational level, and marital status, obstetrical history, which contain gravidity, parity, history of abortion and preterm deliveries, and inter-pregnancy intervals.

Tool (2): Maternal Follow Up Assessment Sheet.

It deals with the follow-up data during the pregnancy period, such as BP, weight, proteinuria, severe PE, and maternal complications related to PE.

Pilot Study:

A pilot study was conducted on eight pregnant women with mild PE (10.0% of the total sample) to test the feasibility and applicability of the tool, and examine the clarity of the questions. The women who recruited in the pilot study were excluded from the study sample.

Validity and Reliability of Tool:

The tool was reviewed by jury composed of five experts in the field of Maternity & Newborn Nursing and Community Nursing to test the clarity and applicability of the tools. Reliability was tested by Cronbach's Alpha test to test the reliability of tools through their internal consistency, by Cronbach's Alpha test was equal (0.0843).

Field of Work:

Guidelines of lifestyle modification for pregnant women with mild PE was prepared to enrich them with knowledge about the appropriate lifestyle for mild PE as regards to nutrition, physical exercise, rest and sleep, stress management, smoking, follow up, measures to relieve signs and symptoms of mild PE, and dangerous signs of PE. Participants were allocated into two groups as the first 40 women were recruited in the control group, while the second 40 women were recruited in the study group. Participants was individually interviewed to collect the personal and clinical data. Then, participants in the control group were following the routine care and pharmacological treatment as the hospital protocol for the management of mild PE. While, the participants in the study group were following the hospital protocol for the management of mild PE beside lifestyle modification guidelines, it was explained using various methods of health teaching; Power Point show and interventional guideline handout. The pregnant women in both groups were assessed every two weeks until 36th weeks of gestation, then weekly until delivery for; BP, weight, proteinuria, and maternal complications related to PE.

Ethical Consideration:

An approval from the Research Ethics Committee, Faculty of Nursing, Port-Said University was obtained. Written approval was obtained from Port Said Maternity Hospital administrators and head of the concerned department. The aim and procedure of the current study was explained to each woman and an oral approval consent was obtained. They were assured about confidentiality and privacy. They have the right to withdraw from the study at any time without any reason.

Result

Table (1): shows the personal data of the studied sample. The mean age of the control and study groups was (28.73±6.56 & 29.85±6.99) respectively. In addition, 60.0% & 75.0%of the control and study groups were housewives respectively. Also, 45.0% & 57.5% of the control and study groups had secondary education respectively. It was estimated that, all of them were married.

Table (2): mentions the obstetrical history among the studied sample. It was observed that, 82.5% & 92.5% of the control and study groups were multigravida respectively, and 72.5% & 57.5% of the control and study groups didn't have history of abortion. Also,the majority of the control and study groups didn't have a history of preterm delivery (97.5% & 87.5%) respectively. In addition, 52.5% &57.5% of the control and study groups had less than 2 years inter-pregnancy intervals respectively.

Table (3): clarifies the maternal outcome among the studied sample. The study group had lower mean of SBP and DBP readings than the control group (145.98±8.32&151.75±6.84) & (89.91±3.98&93.43±3.42) with highly statistically significance (p= 0.001 & 0.000) respectively. Also, the study group had lower mean of GWG than the control group (13.74±4.48&16.10±5.99) with statistically significance (p= 0.049). In addition, the study group had lower mean of proteinuria than the control group (1.67±0.31 & 1.45±0.38) with statistically significance (p= 0.006). As shown in table (3), the study group had lower rate of developing severe PE (62.5%& 92.5%), altered liver function (15.0% & 37.5%), tachycardia and palpitation (7.5% &25.0%) than the control group with statistically significance (p= 0.001, 0.022, &0.034) respectively. Only one case of the control group developed eclampsia, while 30.0% & 15.0% of the control and study groups had altered kidney function without statistically significance (p=0.152&0.108) respectively.

Table (1): personal data among the studied sample (n= 80).

Variables	Control Group (n= 40)		Study Group (n= 40)		Significance
	No	%	No	%	
Age (year)					
20-	15	37.5	14	35.0	
26-	9	22.5	6	15.0	X^2= 1.892
31-	8	20.0	7	17.5	P= 0.60
More than 35	8	20.0	13	32.5	
Mean (SD)	28.73±6.56		29.85±6.99		t= 0.742 P= 0.46
Occupation					
Occupied	16	40.0	10	25.0	X^2= 2.051
Housewife	24	60.0	30	75.0	P= 0.23
Educational Level					
Illiterate	2	5.0	4	10.0	
Primary	3	7.5	6	15.0	X^2= 6.443
Secondary	18	45.0	23	57.5	P= 0.09
University	17	42.5	7	17.5	
Marital Status					
Married	40	100.0	40	100.0	

Table (2): obstetrical history among the studied sample (n= 80).

Variables	Control Group (n= 40)		Study Group (n= 40)		Significance
	No	%	No	%	
Gravidity					
Primigravida	7	17.5	3	7.5	X2= 1.829
Multigravida	33	82.5	37	92.5	P= 0.31
Parity					
Nullipara	7	17.5	3	7.5	X2= 1.835 P= 0.40
Primipara	11	27.5	12	30.0	
Multipara	22	55.0	25	62.5	
History of abortion					
None	29	72.5	23	57.5	X2= 2.121 P= 0.35
Once	5	12.5	9	22.5	
Twice	6	15.0	8	20.0	
History of Preterm Labor					
Yes	1	2.5	5	12.5	X2= 2.883
No	39	97.5	35	87.5	P= 0.20
Pregnancy Interval (year)					
Nulliparous	7	17.5	3	7.5	
Less than 2	21	52.5	23	57.5	X2= 2.691
2 – 5	11	27.5	11	27.5	P= 0.44
More than 5	1	2.5	3	7.5	

Table (3): maternal outcome among the studied sample (n= 80).

Variables	Control Group (n= 40)		Study Group (n= 40)		Significance
	No	%	No	%	
SBP Mean (SD)	151.75±6.84		145.98±8.32		t= 3.388 P= 0.001*
DBP Mean (SD)	93.43±3.42		89.91±3.98		t= 4.251 P= 0.000**
GWG Mean (SD)	16.10±5.99		13.74±4.48		t= 1.998 P= 0.049*
Proteinuria Mean (SD)	1.67±0.31		1.45±0.38		t= 2.813 P= 0.006*
Severe PE					
Yes	37	92.5	25	62.5	X2= 10.323
No	3	7.5	15	37.5	P= 0.001*
Timing of delivery					
Less than 34 weeks	5	12.5	1	2.5	X2= 13.787
34 – 36 weeks	18	45.0	6	15.0	P= 0.001**
37 – more than 37	17	42.5	33	82.5	
Eclampsia					
Yes	1	2.5	0	0.0	X2= 2.051
No	39	95.0	40	100.0	P= 0.152
Altered liver functions					
Yes	15	37.5	6	15.0	X2= 5.230
No	25	62.5	34	85.0	P= 0.022*
Altered kidney function					
Yes	12	30.0	6	15.0	X2= 2.581
No	28	70.0	34	85.0	P= 0.108
Cardiac symptoms					
Yes	10	25.0	3	7.5	X2= 4.501
No	30	75.0	37	92.5	P= 0.034*

Discussion

A healthy lifestyle can control PE in combination with pharmacological therapies[7]. Use of booklets facilitate for the continuation of effective education as the guidelines become easier to be comprehended and adapted from the booklet and used in everyday life [9]. As mentioned by the findings of the present study, lifestyle modification guidelines lower the mean of SBP and DBP, proteinuria, gestational weight gain (GWG), eliminate the risk of developing severe PE, reduce the alteration of liver functions, and cardiac complications with statistically significance. While, it lowers the rate of eclampsia, and altered kidney functions without statistically significance differences.

These findings are emphasized by Alexender et al[10], who stated that lifestyle modification is sufficient for the management of pregnant women with stage one HTN. In addition, Vamvakis et al[11] found that lifestyle modifications lower SBP and DBS. Also, ElSayed and Desoky[12] concluded that the counselling sessions of lifestyle had a positive correlation on the status of pregnant women with mild PE and lower the readings of SBP and DBS with a high statistically significance.

These findings are going in the same line with Ahmed[13], who found that lifestyle counselling lowers the BMI of pregnant women. Also,Horn et al[14] recommended that antenatal diet and physical activities prevent excess GWG and benefit mother and child. Moreover, Ferrara et al[15] found that diet, physical activity, and stress management had reduced weekly rate of GWG. On the other side, Asci and Rathfisch[16] mentioned that lifestyle interventions show no statistically difference in GWG between the intervention group and control group.

These findings are supported by Attini et al[17] suggested that a low protein-restricted, vegan diet, plant-based diet might contribute to controlling proteinuria in pregnant CKD women. On the other hand, a study adopted by Reshma et al[18] mentioned that relaxation therapy included deep breathing, progressive muscle relaxation, and guided imagery shown no significant difference in proteinuria. From the point of view, this conflict may be because the current study, including instructions regarding nutrition and exercise besides stress management.

The findings of the current study emphasized that lifestyle modification guidelines lower the risk of developing severe PE by 30.0%. These findings are supported by Mekie et al[19] who found that nutritional counselling during ANC follow-up lower the risk of facing PE by 48.0%. Furthermore, Davenport et al[20] mentioned that, women who exercise had 30.0% less risk for developing gestational hypertensive disorders. In addition,Lewandowska and Wieckowska[21] concluded that smoking in the first trimester increase the risk of PE.

The current study findings are in disagreement with Fulay et al[22] who concluded that adherence to the DASH diet during early pregnancy does not appear to be protective against hypertensive disorders in pregnancy. Also, Mol et al[23] reported that simple preventive measures, such as low-dose aspirin, calcium, and diet and lifestyle interventions, show small benefit. In addition, Vollebregt et al[24] reported that physical activity in pregnancy does not reduce the incidence of PE or gestational hypertension in nulliparous women. These differences due to different designs and methodologies of research, including the general characteristics of the studied sample, could have influenced the discrepancy.

Conclusion

Lifestyle modification guidelines alongside pharmacological treatment protocol are effective and safe management plan for pregnant women with mild

preeclampsia to improve maternal outcome; it can be used to reduce the adverse effect of preeclampsia on women. Health educational sessions about lifestyle modification should be implemented to pregnant women with mild PE.

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Conflict of Interest: Nil.

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