

Psychosocial and Perceived Stress Associated with Pre-eclampsia in a Periurban Hospital

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Abstract:

Pre-eclampsia complicates about 2% of pregnancy Exact aetiology of Pre-eclampsia is not known, however a number of psychosocial factors are often found to be associated with it.

The purpose of the study was to ascertain the prevalence of psychosocial factors and perceived stress among patients with Pre-eclampsia.

This was a cross sectional study done at institute of child and mother health during July to September, 2015. Total 71 women admitted for delivery with diagnosis of Preeclampsia were interviewed in the postnatal ward within three days of delivery using a structured questionnaire. Informed consent was taken. Data analyzed using SPSS version 22.

Mean age was 23.9± 4.3 years with a range of 18-36 years, about a quarter were illiterate. Majority of them stay within extended family and mean household family member was 6.25± 1.93 about 77.5% of husbands were smokers, history of abortion was present in 21.1%. More than half of them have history of hypertension or diabetes in the family. Mean Systolic BP was 122.6±21.3 and mean diastolic BP was 83.5±14.6. About 42.2% reported that their family members were not aware of need of proper nutrition during pregnancy rather were indifferent. Ability to spend money by her was limited, sometimes by 33.8%, 28.2% if they ask for and 36.6% never have the opportunity. On recall of last one month period a significant proportion of women stated that they felt to be stressed sometimes during pregnancy.

Risk factors for Preeclampsia like family history of Hypertension and Diabetes, passive smoking, low education level was found quite prevalent among women with pre-eclampsia. Majority of women reported to experience moderate stress and prevalence of stress was more among 19-24 years age group.

Key words: Psychosocial factors, Preeclampsia, Perceived stress,

Introduction:

Pre-eclampsia is a multisystem complication characterized by Hypertension >140/90 mm Hg measured normally 4-6 hours apart with proteinuria of at least 2+ with dipstick measurement or evidence of end organ damage that occurs after 20 weeks of pregnancy^{1,2}. Pre-eclampsia occurs in 4 to 7 per cent of pregnant women worldwide³. Pre-eclampsia with co-existing intrauterine growth restriction and placental abruption can cause considerable maternal and fetal morbidity and mortality and adverse perinatal

outcome⁴. Women with non proteinuric, preexisting or gestational hypertension can evolve into Pre-eclampsia and have worse outcomes⁵.

The origin of Preeclampsia is thought to be associated with abnormal placentation early in pregnancy, which may be caused by immunological, genetic or environmental factors². Risk factors for Pre-eclampsia include nulliparity, a family or own history of PE, pre-existing diabetes or increased body mass index, multiple pregnancy, maternal age, renal disease,

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hypertension or raised blood pressure at booking and chronic autoimmune disease. Study has shown that low maternal socioeconomic status is a strong factor for Pre-eclampsia. In women with low education level chance of developing Pre-eclampsia was 4.9 time higher⁶. The expected rate of pre-eclampsia when any one of these risk factors is present ranges from 3% to more than 30%, and many women have several risk factors⁶.

Previous studies have shown that using factors in the maternal history as a predictor has a detection rate of about 45%. However, more than half the women who develop pre-eclampsia have no risk factors in their history, and many women with such risk factors do not develop the disease⁴. Evidence shows among women considered as high-risk, approximately 25% will develop Pre-eclampsia compared with 5% in the general population.

Psychosocial factors may exert different role in different settings on occurrence of Preeclampsia. In a study from USA the relationship among psychosocial factors (optimism, uncertainty, social support, coping, psychological distress) and biomarkers (cortisol, cytokines) with Pre-eclampsia and preterm birth was explored. It revealed that women reporting higher levels of social support had lower level of cytokines and women with Pre-eclampsia reported more optimism and less avoidance and lower levels of cortisol and IFN-gamma⁷.

Women with preeclampsia have higher levels of psychological stress compared with low-risk pregnant women⁸. Studies reported a positive relationship between the mental aspects of pregnant women and preeclampsia and women with Preeclampsia experience a higher level of stress than those without preeclampsia^{9, 10}. Perceived psychological stress, even at less than 20 weeks, seemed to influence the possibility of pregnancy complications very early¹¹.

Pre-eclampsia is quite common in Bangladesh and conventionally the emphasis is more on curative approach. Now the attention is focused to prevention and to screen for Pre-eclampsia before the symptoms appear. The biomedical markers suggested for prediction of Pre-eclampsia are expensive and most of them are not yet available in our country. There is limited evidence regarding the association of social and psychological factors like family support, perception of stress and life style issues on course of

pregnancy in preeclampsia. This study has been conducted to ascertain the prevalence of psychosocial risk factors and perceived stress among postpartum women diagnosed as preeclampsia during pregnancy.

Method:

This was a cross sectional study conducted at postnatal ward of Institute of Child and Mother Health during 15th July to 15th September, 2015. Data was collected from woman who had given birth during the preceding three days and who, in the antenatal period was diagnosed by an obstetrician as being preeclampsia using a structured questionnaire. Cases with chronic hypertension, twin pregnancy, renal disease and known fetal malformation were excluded. The study was approved by ethical review board of the Institute of Child and Mother Health (ICMH) and informed consent was obtained from all participants.

Potential risk factors were selected on the basis of literature review and biological plausibility for an association with Pre-eclampsia. Blood pressure was measured using aneroid sphygmomanometer on both hands. Perceived Stress Scale (PSS) used was a 14-item measure of stressful situations during the past month based on Cohen perceived stress scale¹². PSS questionnaire scale focused on symptoms of anxiety, depression, irritability, cognitive difficulty, financial worries, family & marital problem, satisfaction with family support, health behavior during pregnancy¹². Items are scored on a 5 point scale from 0 to 4; seven of the items are scored in a reverse fashion. Total scores range from 0 to 40; higher scores indicate greater perceived stress. The total score provides a global measurement of the extent to which an individual feels overwhelmed. Data analysis was done using SPSS version 21. Demographic data was expressed in frequency and proportion, chi square test was done to compare association.

Results:

Mean age was 23.9± 4.3 years with a range of 18-36 years. About a quarter (23.9%) is illiterate and 56.3% lives in a rented house (Table 1). Majority of them stay within extended family and mean household family member was 6.25± 1.93 (Table 2). About 77.5% of husbands were smokers, history of abortion was present in 21.1% and more than half of them have history of hypertension or Diabetes in the family (Table 3). About 76.1% were term pregnancy (Table 4). Only 33.8% had regular ANC (Table 5). Majority was found

normotensive, mean Systolic BP was 122.6 ± 21.3 and mean diastolic BP was 83.5 ± 14.6 (Table 6). About 42.2% reported that their family members were not aware of need of proper nutrition during pregnancy and 39.4% were rather indifferent (Table 7). Ability to spend money by her was sometimes by 33.8%, 28.2% if they ask for and 36.6% never have the

opportunity (Table 8). Table 9 shows response stress scale indicating various level of stress within study population. On recall of last one month period 76.1% women expressed moderate stress, 9.9% severe stress during pregnancy (Table 10). Prevalence of stress was more among age group 19-24 years (Table 11)

Table-I
Sociodemographic characteristics of the respondents

Age distribution	Frequency	Percent
<=18 years	4	5.6
19-24 years	37	52.1
>25 years	30	42.2
Parity		
Primi	28	39.4
Multi	43	60.6
Educational status		
Can read and write (no schooling)	20	28.2
Education in school	34	47.9
Illiterate	17	23.9
Residence		
Own house	31	43.7
Rented house	40	56.3

Table-II
Distribution according to number of family members in the household

Family members	Frequency	Percent
2-3	5	7.0
4-6	32	45.1
7-10	34	47.9

Table-III
Distribution according to Obstetric history and medical disease in the family

Characteristics	Frequency	Percent
Husband smoker	55	77.5
History of Abortion	15	56
History of pre-eclampsia (self)	1	1.4
History of pre-eclampsia in sister	2	2.8
Family history of hypertension	38	53.5
Family history of diabetes	39	54.9

Table-IV
Distribution according to Gestational age at delivery

	Frequency	Percent
Preterm (36-37 wks)	17	23.9
Term (38-41wks)	54	76.1

Table-V
Distribution according to availing ANC in current pregnancy

	Frequency	Percent
Regular ANC	24	33.8
Irregular ANC	31	43.7
No ANC	16	22.5

Table-VI
Distribution according to Blood pressure

BP	Frequency	Percent
Systolic		
<=140 mm of Hg	62	87.3
141-160 mm of Hg	7	9.9
> 160 mm of Hg	2	2.8
Diastolic		
<=90 mm of Hg	57	80.3
91-110 mm of Hg	11	15.5
> 110 mm of Hg	3	4.2

Table-VII

Distribution according to Extra care about food

	<i>Frequency</i>	<i>Percent</i>
Always take care	16	22.5
Sometimes	25	35.2
No attention	2	2.8
Reluctant	28	39.4

Table-VIII

Distribution according to ability to spend money by self

	<i>Frequency</i>	<i>Percent</i>
Always take care	1	1.4
Sometimes	24	33.8
Can get if ask	20	28.2
Never	26	36.6

Table-IX

Percent distribution on Perceived Stress Scale

Question	0	1 almost	2	3 fairly	4 very
	Never %	never %	Sometimes %	often %	often %
1. In the last month, how often have you been upset because of something that happened unexpectedly?	21.1	45.1'	29.6	2.8	1.4
2. In the last month, how often have you felt that you were unable to control the important thing in your life?	4.2	26.8	35.2	29.6	4.2
3. In the last month, how often have you felt nervous and "stress"?	1.4	28.2	56.3	14.1	0
4. In the last month, how often have you dealt successfully with irritating life hassles?	1.4	49.3	38.0	9.9	1.4
5. In the last month, how often have you felt hat you were effectively coping with important changes that were occurring in your life?	0	11.3	63.4	25.4	0
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	2.6	35.2	47.9	14.1	0
7. In the last month, how often have you felt that things were going your way?	19.7	36.6	38.0	4.2	1.4
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	1.4	38.0	36.6	23.9	0
9. In the last month, how often have you been able to control irritations in your life?	5.6	39.4	45.1	9.9	0
10. In the last month, how often have you felt that you were on top of things?	12.7	45.1	38.0	4.2	0
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	15.5	63.4	14.1	7	0
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	1.4	4.2	54.9	36.6	2.8
13. In the last month, how often have you been able to control the way you spend your time?	8.5	28.2	46.6	15,5	1.4
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	5.6	45.1	26.8	19.7	2.8

Table-X
Distribution of women with pre-eclampsia by their perceived stress during pregnancy

	Frequency	Percent
Low stress	10	14.1
Moderate stress	54	76.1
High perceived stress	7	9.9
Total	71	100.0

Table-XI
Distribution of women by perceived stress and age during pre-eclampsia

			Perceived Stress scale			Total
			Low stress	Moderate stress	High perceived stress	
age category	<=18 years	Count	2	2	0	4
		% within Perceived Stress scale	20.0%	3.7%	0.0%	5.6%
	19-24 years	Count	7	26	4	37
		% within Perceived Stress scale	70.0%	48.1%	57.1%	52.1%
	25-30 years	Count	1	22	2	25
		% within Perceived Stress scale	10.0%	40.7%	28.6%	35.2%
	> 30 years	Count	0	4	1	5
		% within Perceived Stress scale	0.0%	7.4%	14.3%	7.0%
Total	Count	110	54	7	71	
	% within Perceived Stress scale	100.0%	100.0%	100.0%	100.0%	

Discussion:

The current study has looked for psychosocial risk factors that might contribute to complications of pregnancy including Pre-eclampsia. The age distribution shows mean age of 23.9 ±4.3 years and 5.6% were <18 years. About 60 percent of them were multipara and 87% belong to 19-34 years that is considered as low risk age group for pregnancy complications. According to Bangladesh Health and demographic survey peak childbearing age is within 20-24 year age group that is consistent with current study¹³. However, some studies have found Pre-eclampsia is more common in women who are young, more obese and more likely to have lower socioeconomic status^{7, 14}.

Some studies reported an increase in risk of Pre-eclampsia with positive family history of chronic hypertension and Diabetes¹⁵. Family history of chronic hypertension and Pre-eclampsia is a proxy measure for hereditary factors as well as common environmental or behavioral exposures that may underlie Pre-eclampsia risk¹⁶. Luealon et al found that nulliparity, a family or self-history of Pre-eclampsia, increased body mass index (BMI), multiple pregnancies, increased age, chronic hypertension,

diabetes mellitus, renal and connective tissue diseases, work-related psychosocial strain during pregnancy, poor social status, coagulation abnormalities, and dyslipidemia are at increased risk for Pre-eclampsia¹⁷.

In the current study more than 50% had a history of hypertension or Diabetes in the family. This indicates a rising trend of non communicable disease in the society that is consistent with national BDHS data¹³. This also suggests that a great proportion of pregnant women are exposed to the risk factor during pregnancy.

Although all the patients were diagnosed as Preeclampsia about 87.3% turned normotensive during early puerperium. About 76% were term pregnancy yet 25.4% were low birth weight. The basic pathogenesis of Pre-eclampsia is abnormal placentation leading to placental ischemia and hypoxia, and subsequent fetal growth. Fetal growth restriction and small size for gestational age is reported to be 2 to 5 times more in preeclampsia than in women without Pre-eclampsia¹⁸.

It is often claimed that there is an association between psychosocial stress of the mother and hypertensive

disorders of pregnancy¹⁰. Stress activates the hypothalamus–pituitary–adrenal cortex system (HPA), which in turn increases in levels of corticosteroids and catecholamines. Stresses also involve excessive sympathetic nervous system activation¹⁹. Increased levels of corticotrophin-releasing hormone and increased sympathetic activity have been observed in women with pre-eclampsia and gestational hypertension²⁰.

Exploring family support in terms of extra care about food of the pregnant women reveals approximately 55% of mothers received attention from family members. However, 42.2% are not aware of special need for nutrition during pregnancy rather some were indifferent. This might contribute to mental stress of mother and negative influence on growth of baby. The ability to spend money by herself is very limited and that indicated usual social structure of economic dependence on spouse or family hindering decision making for self care.

Findings to date on psychosocial stress and Pre-eclampsia/eclampsia have been inconsistent. In a study from Netherland found no association of work stress, anxiety, depression or pregnancy-related anxiety early in pregnancy and there was development of gestational hypertension or pre-eclampsia later in pregnancy in nulliparous women²¹. Accumulating evidence indicates that a positive history of maternal mood or anxiety disorder was associated with a 2.12-fold increased risk of Pre-eclampsia²². A study from Ethiopia showed women with preeclampsia perceive more stress and less social support²³. One study indicated that women with depression, anxiety, or both had a 3.1-fold increased risk for Pre-eclampsia, compared to those without them²⁴. Some studies observed an association of Pre-eclampsia/gestational hypertension with job stress in working women²⁵. Evidence shows that high perceived stress and chronic hypertension interact synergistically to increase the risk of Pre-eclampsia up to 40-fold²⁶. It is suggested that a substantial reduction in the incidence of Pre-eclampsia might be gained through effective control of maternal stress and hypertension, both pre-pregnancy and throughout the gestational period²⁶. In the current study about 76.1% expressed moderate stress and more reported among age group 19-24 years. It is often said optimum age for child bearing is 20-24 years because there are less chance of pregnancy complications, however, paying less attention to psychological makeup and stress factors

may result in untoward outcome.

The emotional stress level experienced during the pregnancy by the women with hypertensive disorders of pregnancy could be influenced by the disease and the experienced stress from hospital admissions and treatment. It is recommended that midwives and health care providers should pay attention to psychological health specially stress of pregnant women during prenatal period and provide appropriate support to reduce maternal stress²⁷.

Conclusion:

Pre-eclampsia still remains a serious and poorly understood complication of pregnancy. A significant proportion of pregnant women with Preeclampsia perceive to be stressed sometimes and there are positive family history of metabolic disorders. Identifying epidemiological and clinical risk factors associated with Pre-eclampsia will be helpful to screen Pre-eclampsia as early as in first trimester and a substantial reduction in the incidence of Pre-eclampsia might be gained through effective control of maternal stress throughout the gestational period.

This was a very small scale study limited to a tertiary level hospital and information about duration and period of psychological stress was not obtained in this study which may have different effects on Pre-eclampsia. A more large scale study should be undertaken to identify psychosocial and stress risk factors.

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