ORIGINAL ARTICLE

Socio-economic Status Associated with Normotensive and Pre-eclamptic Women in Selected Hospitals of Dhaka City

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Abstract:

Pre-eclampsia is a disorder of 2nd half of pregnancy, which is characterized by a combination of hypertension, proteinuria and edema; secondary to decreased placental perfusion. It is commonly associated with reduced weight, diameter and volume of placenta, along with other microscopic changes. This was a comparative study, of 220 pregnant women, selected with inclusion and exclusion criteria from 3 different medical colleges – Dhaka Medical College and Hospital, Sir Salimullah Medical College and Mitford Hospital and Holy Family Red Crescent Medical College and Hospital. The objective of this study is to see the association of socio economic status of selected normotensive and pre-eclamptic women in Bangladesh. Those 220 cases were then divided into 2 groups – a study group, consisting of 110 pre-eclamptic women and a control group consisting of 110 normotensive pregnant women. The sample size was determined using the standard formula. The study was then explained to each individual subject and informed consent was taken. Standard pretested questionnaire was used to collect necessary information regarding their age, residential status, educational background, occupation, age of marriage, monthly income, dietary information and nutritional status. All interviews were conducted in the hospital. Dietary information was collected by 7 days food frequency questionnaire and food score was determined. Anthropometric and biochemical tests were carried out. Urinary protein was evaluated by the Heat Coagulation test. It was found that majority of the pre-eclamptic women were in the age group of 18-24 (56.36%) years, semi-urban (70.90%), housewives (56.36%), and 45.45% of the women could write. Almost half of the pre- eclamptic group (49.09%) had a monthly income of 25,000 to 29,999 taka.

Keywords: Pre-eclampsia, socio-econonic status

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Introduction:

Pre-eclampsia is a multi system disorder of unknown etiology characterized by development of hypertension to the extent of 140/90 mmHg or more with proteinuria after 20th week of gestation in a previously normotensive and non protein uric pregnant woman. Pre-eclampsia has been associated with intrauterine growth retardation, preterm birth, maternal and perinatal death[1]. The incidence of pre-eclampsia is 2- 10%, depending on the population studied and definition of pre-eclampsia[2]. It occurs in 4-7% of pregnant women worldwide[3].

The etiology of pre-eclampsia is still unknown, although a number of hypothesis have been accepted as: i) the placental ischemia hypothesis ii) genetic hypothesis iii) the immune maladaptation iv) hypothesis of the imbalance between free oxygen radicals and scavengers in favor of oxidants. Pre-eclampsia is a disorder of the second half of pregnancy. It is a two stage disease. Stage 1 is decreased placental perfusion. Stage 2 is the maternal syndrome of pre-eclampsia comprising of hypertension, proteinuria and edema. One theory suggests that the linkage between the 2 stages is the generation of mediators of oxidative stress in the intervillous space[4]. Dysfunction of vascular endothelium and inadequate trophoblastic invasion, leads to high resistance and low utero-placental circulation that causes placental ischemia and hypoxia. Hypoxia causes production of reactive oxygen species or free radicals like superoxide, which are capable of damaging proteins, DNA and inducing lipid peroxidation, ultimately resulting in widespread endothelial damage[4]. Pre-eclampsia is a leading cause of infant and maternal mortality, with an estimated 50,000 maternal deaths per year in developing countries like Bangladesh[4]. Therefore, in this study, we tried to evaluate the role of socio economic status, in the development of pre-eclampsia.

Materials and method:

A cross sectional descriptive study was done for three years from June 2015 to May 2018. Study groups were selected from three major tertiary hospitals located in Dhaka City: Dhaka Medical College and Hospital, Sir Salimullah Medical College and Mitford Hospital and Holy Family Red Crescent Medical College and Hospital. To calculate the prevalence and proportion of pre-eclampsia, we followed the standard procedure. A total number of 10,800 pregnant patients, admitted in the Department of Gynaecology and Obstetrics of aforesaid hospitals during the study period were selected. Amongst them, a total of 1800 were complicated with pre-eclampsia. Sample size was calculated, n=217.

Selection of cases was based on strict inclusion criteria: pre-eclamptic women age groups of 18 to 40 years, third trimester of pregnancy, diastolic blood pressure above 90 mm of Hg, clinically oedema of legs present, proteinuria confirmed by biochemical tests. Exclusion criteria: age less than 18 years or greater than 40 years, no oedema, no proteinuria, normal blood pressure (diastolic < 90 mm of Hg). A questionnaire was developed to obtain relevant information regarding socio economic status, age, obstetric history, monthly income, living area, family size, education, type of jobs and usual habit of food before admission to hospital. Ethical permission has been obtained from Ethical review committee of Bangladesh Medical and Research Council (BMRC). Written consent was taken from all the respondents. Haematological and biochemical estimation was done for CBC, Hb%, ESR and fasting blood sugar, urine for albumin assessed by heat coagulation test. Nutritional status was measured by mid upper arm circumference (MUAC), dietary information was measured by 7-days food frequency questionnaire. Body weight was measured by bathroom scale, a wooden height scale was used to record height with bared heels, standing in upright position, height was measured to nearest 0.1 cm.

Birth weights of new born babies were recorded to the nearest 20 grams after delivery without clothes on a beam balance (Dedecto medic, Delecto scale inc., U.S.A.)

Results:

Each of the study groups consisted of 63% respondents from DMCH, 27% from SSMCH and 9% from HFRCMCH. Almost 62% pre-eclamptic women were from Dhaka district and 5% were from Barisal district. Most of the 56%) pre-eclamptic women were in the age group of 18-24 years and majority of the respondents were living in semi-urban area (Table-I, II).

Table-I : Distribution of Respondents according to their ages

Age Group	Pre – eclamptic Women (Study Group A)		Normal Pregnancy (Control Group – B)	
18 – 24 Years	62	56.36%	38	34.54%
25 – 30 Years	42	38.18%	62	56.36%
31 and above	06	5.45%	10	9.10%
Total	110	100%	110	100%

Table-II: Distribution of Respondents according to Residential Status

Residential Status	Pre – eclamptic Women (Study Group A)		Normal Pregnancy (Control Group – B)	
Urban	12	10.91%	20	18.18%
Semi– Urban	78	70.91%	80	72.73%
Rural	02	1.82%	06	5.45%
Slum	18	16.36%	04	3.64%
Total	110	100%	110	100%

Almost 45.45% pre-eclamptic women were illiterate, whereas only 25.45% of normal pregnancy, where illiterateand 36% preeclamptic women had monthly income were less than 25000 Tk, compared to normal pregnancy, where it was only 10%. Among them 16% pre-eclamptic women were day labours, where only 3% women were day labours as shown in Table-III, IV and V.

Table-III: Distribution of Respondents according to Educational Qualification

Education Level	Pre – eclamptic Wome (Study Group A)		Normal Pregnancy (Control Group – B)	
Illiterate (Sign Only)	50	45.45%	28	25.45%
Less than SSC	26	23.64%	30	27.27%
SSC to HSC	22	20%	32	29.10%
Higher than HSC	12	10.91%	20	18.18%
Total	110	100%	110	100%

Table-IV: Distribution of Respondents according to Monthly Income

Monthly Income (Tk.)	Pre – eclamptic Women (Study Group A)		Normal Pregnancy (Control Group – B)	
9000 – 24999 Tk.	40	36.36%	12	10.91%
25000 – 29999 Tk.	54	49.09%	30	27.27%
30000 – 34999 Tk.	12	10.91%	48	43.64%
35000 and above T	4	3.64%	20	18.18%
Total	110	100%	110	100%

Table-V: Distribution of the Respondents according to occupation

Occupation	Pre – eclampticWomen (Study Group A)		Normal Pregnancy (Control Group – B)	
Day Labour	18	16.36%	04	3.63%
Skill Labour	22	20%	42	38.18%
Agriculture Labour	04	3.63%	02	1.81%
House Wife	62	56.36%	54	49.09%
Others	04	3.63%	08	7.27%
	110	100%	110	100%

The result of nutritional measurement showed 29% of Preeclamptic women were malnourished compare to normal pregnancy ,where only 16% were malnourished and 11% of preeclamptic women were in Poor Food consumption Group compared to 3% Normal pregnancy where it was only 3% (Table-VI and VII).

Table-VI : Distribution of Nutritional Status (MUAC) of the Respondents

	Pre – Eclamptic Women (Group - A) n= 110	Normal Pregnant Women (Control - B) n = 110
Normal MUAC>23.9	78 (70.91%)	92 (83.62%)
Malnourished MUAC<23.9	32 (29.09%)	18 (16.36%)
Total	110	110

Table-VII: Distribution of the respondents by Food Consumption score

Food Consumption Score	Pre – eclamptic Women (Study Group A) n=110		Normal Pregnancy (Control Group – B) n=110	
Poor Food Consumption	13	11.82%	4	3.64%
Borderline Food Consumption	26	23.64%	38	34.54%
Low Acceptable Food Consumption	53	48.18%	42	38.18%
Highly Acceptable Food Consumption	18	16.36%	26	23.64%
Total	110	100%	110	100%

Poor food consumption: 0 to 28, Borderline food consumption: 28 to 42 , Acceptable food consumption: > 42.

Lower acceptable food consumption: 42-51 , High acceptable food consumption: >52

Discussion:

The present study was conducted amongst 220 pregnant women to see the relationship between pre-eclampsia and various socio-economic factors, environmental factors, and nutritional status in selected population of Bangladesh. during pregnancy can be responsible for pre-eclampsia. Several others observed that risk factors associated with pre-eclampsia are poor housing, low income, poor nutrition and cultural deprivation.

Low Socio economic factors act as multiple risk factors for pre eclampsia. Low socio economic factors are associated with nutritional issues, reduced ante-natal care and unsanitary hygienic conditions. In Mexico low socio-economic status of women doubled the risk of pre-eclampsia and eclampsia[5]. A study in Australia found working women compared to non working ones had a higher risk of developing pre-eclampsia and eclampsia[6]. A study in a tertiary hospital in Bangladesh (ChattagramMaa-O-Shishu Hospital Medical College) which revealed significant predictors of risk for development of PE were primigravida, low socioeconomic condition,family history of PE & hypertension, past history of PE and hypertention[7].

There is association between level of education, home sanitation, family possessions, and economic status as indicators for socioeconomic status and severity of preeclampsia[8]. This study therefore indicates that socio economic status is a risk factor for pre eclampsia.

Conclusion:

This study reveals that low socio economic conditions , which can cause nutritional issues, reduced ante-natal care and unsanitary hygienic conditions, is associated with pre eclampsia. To prevent this, pre eclamptic patients should be under regular ante natal checkups. They should have a balanced diet, rich in antioxidants like citrous foods, containing vit-C and vit-E. More studies should be conducted, with a larger sample size, for further evaluation.

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