

**ORIGINAL ARTICLE****Factors influencing pregnancy induced hypertension among women treated in Khulna Medical College Hospital**N Nazneen¹, MS Laskar², PP Barua³, SD Haque⁴**Abstract**

Pregnancy induced hypertension (PIH) complicates approximately 6% of pregnancies globally and it is the most important cause of maternal and neonatal morbidity and mortality. The purpose of the cross sectional descriptive type of study was to assess the socio-demographic/economic characteristics of women with PIH in a selected tertiary care hospital. Respondents were selected by purposive sampling technique and data were collected by face to face interview using a semi-structured type of questionnaire. In this study, the number purposively selected respondents was 113 who came for treatment in gynecology and obstetrics related inpatient and outpatient departments of the hospital. It was found that the age of mothers was directly and significantly ($p < 0.01$) associated with PIH. The development of PIH was higher in the educated mothers than illiterate or less educated mothers. The relationship between PIH and educational status was significant ($p < 0.01$). The association between the proportion of mothers with PIH and family history of hypertension was also statistically significant ($p < 0.01$). Awareness regarding the associated risk factors for PIH shall be helpful in reducing the PIH related morbidity and mortality.

Key words: Hypertension, pregnancy induced, factors.

Introduction

Worldwide about 50000 mothers die per year due to pregnancy induced hypertension (PIH). Hypertension in pregnancy complicates around 5-10% of all pregnancies.¹ PIH includes a group of hypertension disorders developed due to the gravid state after 20 weeks of pregnancy. It includes gestational hypertension with blood pressure $>140/90$ mmHg without proteinuria, pre-eclampsia which is gestational hypertension with proteinuria and eclampsia defined as pre-eclampsia with convulsions.² The incidence of pre-eclampsia in nulliparous population ranges from 3 to 10% worldwide.³ Incidence of eclampsia in the developed countries is

about 1 in 2000 deliveries as compared to developing countries where it varies from 1 in 100 to 1 in 1700.^{4,5-7} The national incidence of PIH is 15% in Bangladesh, while it is four times higher in primipara women than in multipara.⁸

Thirteen percent of the maternal deaths are in the women with PIH and eclampsia, the most terrible form that accounts for major cause of death among pregnant women.⁹ The high incidence observed has pointed towards poverty, lack of education and unawareness regarding health care in this part of the world. PIH is more common in primiparous, women of younger age, high

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maternal age, multiple pregnancies, obese women and hydatidiform mole; previous history of PIH is also an important risk factor for the development of PIH. In addition, the genetic factor is also involved. Patients who have a family history of PIH, especially in mother or sister are at higher risk.¹⁰ The age of mother is also important; with increasing age, the risk of PIH increases.¹¹

The aim of the present cross sectional descriptive type of study was to determine the association of the socio-demographic/economic profile of women with PIH in a selected tertiary care hospital

Materials and Method

It was a cross-sectional type of descriptive study. The study was carried out at gynae and obstetric related inpatient and outpatient departments of a tertiary hospital namely Khulna Medical College Hospital. All the pregnant mothers who developed hypertension in pregnancy attended in Khulna Medical College Hospital was the study population. All the subjects were informed in details about the nature and purpose of the study and included in the study only when they had given their written consent. Purposive type of sampling technique was followed. Data were collected four to five days in a week by face-to-face interview. The research instrument was pretested questionnaire containing structured and nonstructural questions. After collection the data were edited, verified for its consistency. Then data analysis were done using SPSS version 19 for windows. Statistical signifi-

cance was measured according to the objectives of the study. Statistical analysis was done using appropriate tests of significance e.g. for comparison of continuous data using Student's *t*-test, for the categorical variables Chi-square test and for the difference in proportion of variables *z*- test. Statistical significance was considered significant when $p < 0.05$.

Results

Table 1 shows different characteristics of the hypertensive pregnant mother. The mean (SD) age of the mothers was 24.5 (4.8) years when the mean (SD) age of mothers at marriage was 16.7 (2.2) years. The literacy rate was as high as 82.4%. Most of the women were from lower middle class socio-economic status. The percentage of service holder women, multipara, with family history of hypertension, previous history of pre-eclampsia, previous history of abortion and previous history of hypertension was 37.2, 77.0, 55.7, 31.9, 24.8 and 48.7%, respectively.

Table 2 shows the cross tabulation on PIH and some socio-demographic/economic characteristics of the pregnant mothers. It was found that age of the mothers was and significantly ($p < 0.01$) associated with PIH. The development of PIH was higher in the educated mothers than illiterate or less educated mothers. The relationship between PIH and educational status was significant ($p < 0.01$). The association between the proportion of mothers with PIH and family history of hypertension was also statistically significant ($p < 0.01$).

Table 1. Characteristics of the hypertensive pregnant mothers, n = 113

Characteristics	Number	%
Age, years, mean±SD	24.5± 4.8	
Age at marriage, years, mean±SD	16.7± 2.2	
Literacy	93	82.4
Socio-economic status		
Lower middle class	61	54.0
Service holder	42	37.2
Parity status of mothers (multipara)	87	77.0
Family history of hypertension	63	55.7
History of previous pre-eclampsia	36	31.9
History of previous abortion	28	24.8
History of previous hypertension	55	48.7

Table 2. Cross tabulation on pregnancy induced hypertension and some socio-demographic/ economic characteristics of the pregnant mothers, n = 113

	Pregnancy induced hypertension		Total n (%)	p value
	Gestational hypertension n (%)	Preeclampsia n (%)		
Age				
12 to 24 years	38(33.7)	15(13.2)	53(46.9)	$p < 0.01$
24 years and above	38(33.7)	22(19.4)	60(53.1)	
Total			113(100.0)	
Occupation				
Day laborer	6(5.3)	5(4.4)	11(9.7)	$p > 0.05$
House wife	46(40.7)	14(12.4)	60(53.1)	
Service holder	24(21.3)	18(15.9)	42(37.2)	
Total			113(100.0)	
Educational status				
Illiterate	10(8.8)	10(8.8)	20(17.7)	$p < 0.01$
Primary	39(34.5)	12(10.6)	51(45.1)	
Secondary	19(16.8)	9(8.0)	28(24.8)	
Above	8(7.1)	6(5.3)	14(12.4)	
Total			113(100.0)	
Socio-economic status				
Lower middle class	20(17.7)	13(11.5)	33(29.2)	$p > 0.05$
Upper middle class	42(37.2)	19(16.8)	61(54.0)	
Upper class	14(12.3)	5(4.43)	19(16.8)	
Total			113(100.0)	
Family history of hypertension				
Yes	34(30.0)	29(25.6)	63(55.6)	$p < 0.01$
No	42(37.3)	8(7.1)	50(44.4)	
Total			113(100.0)	

Rounding was done for making the total as 100.

Discussion

A cross sectional descriptive study was designed and conducted with the objective of exploring the socio-demographic/ economic characteristics of women with PIH of the mothers attending gynecology and obstetrics related inpatient and outpatient departments in Khulna Medical College Hospital.

The study showed that most of the respondents, 46.0%, developed moderate hypertension, 30.9% developed severe hypertension and 23.0% mild hypertension. It was found that age of the mothers significantly associated with PIH. Sahu et al reported the maternal age to be significantly higher in cases as compared to controls.¹² Our study showed that elder pregnant women might

have contributed to a greater frequency of PIH. The US nationwide data proposed that the danger of PIH increases by 30% for each additional year of age past 34.¹³ Yadav et al concluded that the threat of PIH was greater when the age of pregnant women was less than 25 years, and this observation was in conformity with ours.¹⁴ Increased age of women was reported to be an important risk factor due to increased villous reaction leading to pre-eclampsia in a woman greater than 30 years and this has been conclusively found in various studies.^{15,16}

The literacy rate among the mothers was 82.3%, higher than that of other parts of the country. The current literacy rate in Bangladesh is about 58.8%.⁸ It may be due to that

the data of the present study were collected from a section of married couples at tertiary level hospital and most of the mothers lived within and around the city. The development of PIH was higher in the educated mothers than illiterate or less educated mothers. The relationship between PIH and educational status was directly significant. Higher incidence of PIH among literate women in our study was in conformity with a report in which similar higher incidence was observed in literate women.^{17,18} A report states that women with college education had 19% greater chances of having PIH which was due to the reason that these women were more aware about their health problems as compared to illiterate women.¹⁸ Women with low income group usually have tendency to ignore ailments/ symptoms associated with pregnancy and cannot afford to utilize the available health care services at nearby clinics/ hospitals. Therefore, their visit to the hospital is not as frequent as those of literate women with higher income group.

The association between the proportion of mothers with PIH and family history of hypertension was also statistically significant. A study has also supported by similar findings that women whose mothers had a history of hypertension, preeclampsia or eclampsia were at increased risk of severe preeclampsia. The risk of preeclampsia was greater when the woman had a sister with a history of hypertension, preeclampsia, or eclampsia.¹⁹ The risk of preeclampsia was also higher for women who had both a mother and sister with a history of hypertension.¹⁹

So, identified the risk factors for developing hypertension and socio-demographic status of the mothers with PIH which have a role in primary prevention of PIH creating awareness about PIH and its complication during antenatal visits and reinforcing the health care providers the importance of screening and early detection of PIH and timely intervention will be helpful in reducing this problem.

Conclusion

This study provided information to explore the socio-demographic/economic characteristics of women with PIH. From this study, it can be concluded that there is a definite relationship between socio-demographic/

economic factors and PIH. Therefore, there is further need to elaborate the study using larger population including more study subjects and socio-demographic parameters to establish better statistical correlation.

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