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Original Research Article

Socio-demographic determinants of pregnancy induced hypertension

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ABSTRACT

Background: Pregnancy induced hypertension is a major health problem affecting the maternal and neonatal health, this serious obstetric problem occurs in women with pre-existing primary or secondary hypertension or women who are not having hypertension before pregnancy.
Methods: A cross-sectional study was carried out among the women suffering from pregnancy induced hypertension, admitted in the gynaecology wards of Lal-Ded hospital, Srinagar from May 2021 to July 2021. A total of 100 sample patients were taken and data was collected using structured questionnaire. Data was analyzed by using SPSS 16.0.
Results: Women suffering from PIH were having the mean age of 28 years with the mean gestation period being 36 weeks+6 days. Their mean systolic blood pressure was 150 mmHg and mean diastolic blood pressure was 98 mmHg. Out of 100 women, 75% were multigravida and 25% were primigravida and 40% were having a history of hypertension before pregnancy. Only 48% had a history of PIH in previous pregnancies while 52% had no such history. In 14% of PIH patients, there was an associated systemic disease. Out of 100, 48% belonged to rural areas, 15% were living in urban areas while 37% resided in semi-urban district. 46% of the patients were illiterate while 54% were educated, be it primary, secondary or higher level. Only 8% were employed while the rest were house wives. 11% had not been to a gynaecologist during their pregnancy while 13% had one visit done, 30% two and 46% had three or more antenatal visits. 67% had a history of hypertension among blood relatives.
Conclusions: Pregnancy induced hypertension and socio-demographic determinants like the age of mother, blood pressure, history of hypertensive disorders in blood relatives,do show correlation Among these, history of PIH and chronic hypertensive disorders in blood relatives and high BP seemed to be the strongest risk factors among these 100 women.

Keywords: PIH, Pregnancy, Socio-demography, Rural, Urban

INTRODUCTION

Pregnancy induced hypertension is a hypertensive disorder of pregnancy which occurs after 20 weeks of gestation. In some cases, high blood pressure may be associated with proteinuria and such cases are termed as pre-eclampsia. Severe pre-eclampsia may further progress to eclampsia, a condition in which, in addition to preeclamptic features, patient develops convulsions severe edema, particularly of the hands, face, and feet, abnormal clotting, and endothelial abnormalities, as well as liver and renal dysfunction.[1]

Established risk factors include nulliparity, family history of pre-eclampsia-eclampsia, pre-eclampsia in a previous pregnancy, obesity, increased insulin resistance, hyperlipidemia, increased trophoblastic mass (i.e.; multiple gestation, molar pregnancy), and change of sexual partner between pregnancies.[2] Maternal age is an important determinant of pre-eclampsia and eclampsia.[3]

Comparison of the risk factors for pre-eclampsia and gestational hypertension may provide insight into the etiologic mechanisms related to these conditions.[4]

Maternal and perinatal outcomes in pre-eclampsia depend on one or more of the following: gestational age at time of disease onset, severity of disease, quality of management, and presence or absence of pre-existing medical disorders.[5] In general, maternal and perinatal outcomes are usually favourable in women with mild pre-eclampsia developing beyond 36 weeks gestation. Maternal and perinatal mortalities are increased in women who develop the disorder before 33 weeks' gestation.[6]

Many biochemical markers have been proposed to predict the women who are likely to develop pre-eclampsia. However, data for the reliability of these markers in indicating pre-eclampsia has been inconsistent, and many markers are not specific or predictive enough for routine use in clinical practice.[7] Stressful work environment and stressful home environment are also associated with preeclampsia.[8] Depression and anxiety in early pregnancy are associated with risk for pre-eclampsia.[9] Family history of chronic hypertension is a proxy measure for hereditary factors as well as common environmental or behavioral exposures that may underlie pre-eclampsia risk.[10] Gestational diabetes is independently and significantly associated with an increased risk of pre-eclampsia and an even minor degree of glucose intolerance is associated with pre-eclampsia.[11,12]

Increases in the incidence of pre-eclampsia and eclampsia represent important changes in the burden of maternal morbidity, raising both clinical and public health concerns. There is a need for large randomised trials to test the new interventions that are designed to prevent cases of pre-eclampsia and eclampsia associated with the adverse and fatal maternal and perinatal outcome.[13]

Aims and objectives

The aim and objective of the study was to determine the socio-demographic determinants of pregnancy induced hypertension (PIH) by carrying out a cross sectional study.

METHODS

Study design

The study design was observational cross sectional study.

Study area

Patients attending obstetrics and gynaecology OPD and Ward at Lal-Ded Hospital, GMC, Srinagar Kashmir.

Study population

Patients suffering from pregnancy induced hypertension attending obstetrics and gynaecology OPD and admitted to obstetric ward at Lal-Ded Hospital GMC, Srinagar, Kashmir from 03 May 2021 to 14 July 2021.

Sample technique

Non-random sample technique was carried out.

Sample size

The sample size was 100.

Data collection tools

Questionnaire and blood pressure measuring apparatus.

Inclusion criteria

Patients attending OPD and admitted in gynaecology wards having blood pressure of >140/90 mmHg after 20th week of gestation.

Exclusion criteria

Uncooperative and comatose patients were excluded.

Data collection procedure

A structured questionnaire was developed including several dependent and independent variables of interest. The questionnaire was pre-tested twice before adapting a final version. The questionnaires were filled from the patients who met the inclusion criteria. Informed consent was taken from all the subjects under study.

Statistical analysis

The completed questionnaires were entered into the computer using SPSS version 16.0. Data was described in terms of frequencies and percentages for categorical variables. Continuous variables were describes in terms of mean±SD.

RESULTS

In our study, it has been shown that the mean age of our study population is 28.54±6.810, with the mean period of gestation 34.6600±2.86469 and their mean BP (systolic) on admission was 150.8000±17.05191 and their BP (diastolic) on admission was 98.35±12.574.

The population size of our study was 100 as shown in above the Table 1.

In Table 2, study showed that out of 100 patients, 25 patients (25%) were primigravida and 75 patients (75%) were multigravida. In Table 3 in our study shows that out of 100 patients studied, 40 patients (40%) were having history of hypertension before pregnancy and 60 patients (60%) were not having any history of hypertension before

pregnancy. In Table 4 of our study shows that 48 patients (48%) were living in the rural area, 15 patients (15%) were from urban area and 37 patients (37%) were from semi urban areas. Table 5 shows that out 100 patients 70 (70%) belonged to lower economic class, 29 (29%) belonged to middle economic class and 1 (1%) belonged to higher economic class.

In Figure 1, the bar chart shows that out of 100 patients, 92 (92%) are housewives, 4 (4%) are private employee, 2 (2%) are self-employee, 2 (2%) are government employee.

In Figure 2, bar chart shows that out of 100 patients, 46 (46%) had three or more antenatal visits, 30 (30%) had two visits, 13 (13%) had one visit, 11 (11%) did not go for any visit.

In Figure 3, the bar chart shows that out of 100 patients, 52 (52%) had history of PIH in blood relatives, while the rest 48 (48%) had no such history

Table 6 shows that out of 100 patients, 65 (65%) were having stage 1 hypertension (systolic) and among these 28 (28%) were living in rural areas, 9 (9%) were living in urban areas and 28 (28%) in semi urban areas. Remaining 35 (35%) out of total 100 were having stage 2 hypertension (systolic) and among these, 20 (20%) were the residents of rural areas, 6 (6%) urban and 9 (9%) of semi-urban. Among all the patients with hypertension (stage 1+stage 2), 48 (48%) were living in rural areas, 15 (15%) were living in urban areas. Remaining 37 (37%) were living in semi-urban areas. Table 7 shows that out of 100 patients, 65 (65%) were having stage 1 hypertension (systolic) among which 28 (28%) were illiterate, 12 (12%) had primary, 12 (12%) had middle, 8 (8%) had secondary, 4 (4%) had higher secondary level of education and only 1 (1%) were graduated.

Remaining 35 (35%) out of total 100 patients recorded had stage 2 hypertension (systolic) among which 18 (18%) were illiterate, 5 (5%) had primary level education, other 5 (5%) had middle level, 11 (11%) had secondary level, 4 (4%) had higher secondary level of education while there were no graduates.

So, among all the 100 patients with (systolic) hypertension (stage1+stage2), 46 (46%) were illiterate, 17 (17%) had acquired primary level of education, other 17 (17%) had middle level, 11 (11%) had secondary level, 8 (8%) had acquired higher secondary level of education and only 1 (1%) were graduated.

Table 8 shows the association between hypertension and socioeconomic status of the patients, according to which out of total 100 patients recorded, 65 (65%) had stage 1 hypertension (systolic) among which 42 (42%) had low socio-economic status with an income of <25000/month, 22 (22%) had middle socioeconomic status with an income of 25-50000/month, and only 1 (1%) had a higher socioeconomic status with an income amount of >50000/month. The remaining 35 (35%) out of 100 had stage 2 hypertension (systolic) and among these, 28 (28%) had lower socio-economic status, 7 (7%) had middle socioeconomic status, while 1 (1%) had a higher socioeconomic status. So, among all the 100 patients with hypertension (systolic) (stage 1+stage 2), about 70 (70%) were from a lower socioeconomic background, 29 (29%) had middle seriocomic status, and only 1 (1%) had a higher socio-economic status based on the amount of income per month for each category.

Table: 1 Numerical statistics.

Valid	N	Minimum	Maximum	Mean	SD
Age (year)	100	19	46	28.54	6.810
Period of gestation (in weeks)	100	26.00	41.00	34.6600	2.86469
B.P on admission (in mmHg): systolic	100	110.00	220.00	150.8000	17.05191
B.P on admission (in mmHg): diastolic	100	70	140	98.35	12.574
Sample size		100			

Table 2: Gravidity.

Gravidity	Frequency	Percentage (%)
Primigravida	25	25.0
Multigravida	75	75.0
Total	100	100

Table 3: History of hypertension before pregnancy.

History of hypertension before pregnancy	Frequency	Percentage (%)
Yes	40	40.0
No	60	60.0
Total	100	100.0

Table 4: Area of residence.

Area of residence	Frequency	Percentage (%)
Rural	48	48.0
Urban	15	15.0
Semi urban	37	37.0
Total	100	100.0

Table 5: Socio-economic status.

Socio-economic status	Frequency	Percentage (%)
Lower (<Rs.25,000/m)	70	70.0
Middle (Rs.25,000-50,000/m)	29	29.0
Higher (>Rs.50,000/m)	1	1.0
Total	100	100.0

Table 6: Comparison of blood pressure (systolic) with the area of residence.

Blood pressure (systolic) group	Area of residence N (%)			Total
	Rural	Urban	Semi-urban	
Stage 1 hypertension	28 (28.0)	9 (9.0)	28 (28.0)	65 (65.0)
Stage 2 hypertension	20 (20.0)	6 (6.0)	9 (9.0)	35 (35.0)
Total	48 (48.0)	15 (15.0)	37 (37.0)	100 (100.0)

Table 7: Comparison of blood pressure (systolic) with the level of education.

Blood pressure (systolic) group	Level of education N (%)						Total N (%)
	Illiterate	Primary	Middle	Secondary	Higher secondary	Graduate	
Stage 1 hypertension	28 (28.0)	12 (12.0)	12 (12.0)	8 (8.0)	4 (4.0)	1 (1.0)	65 (65.0)
Stage 2 hypertension	18 (18.0)	5 (5.0)	5 (5.0)	3 (3.0)	4 (4.0)	0 (0)	35 (35.0)
Total	46 (46.0)	17 (17.0)	17 (17.0)	11 (11.0)	8 (8.0)	1 (1.0)	100 (100.0)

Table 8: Comparison of blood pressure (systolic) with socio-economic status.

Blood pressure (systolic) group	Socio-economic status N (%)			Total
	Lower (<Rs. 25,000/m)	Middle (Rs. 25,000-50,000/m)	Higher (>Rs. 50,000/m)	
Stage 1 hypertension	42 (42.0)	22 (22.0)	1 (1.0)	65 (65.0)
Stage 2 hypertension	28 (28.0)	7 (7.0)	0 (0)	35 (35.0)
Total	70 (70.0)	29 (29.0)	1 (1.0)	100 (100.0)

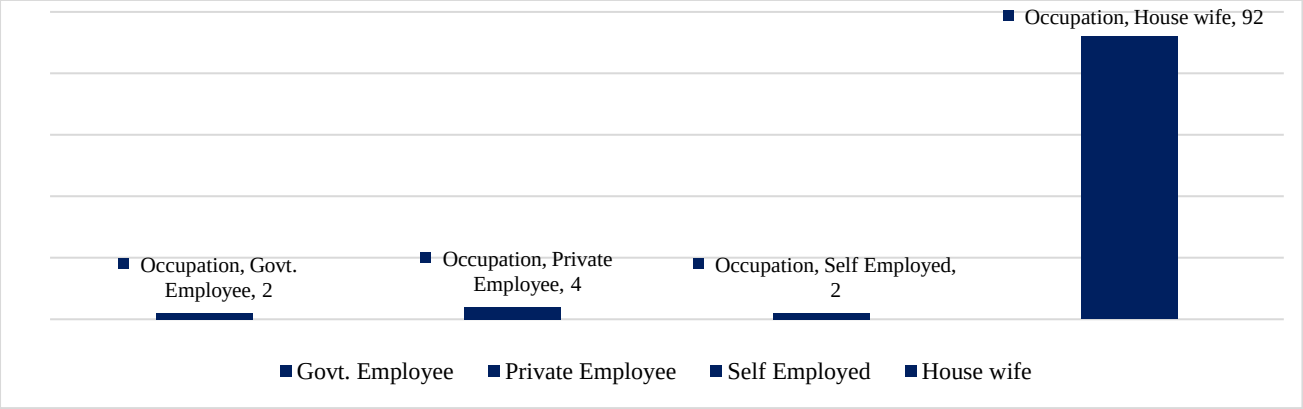

Figure 1: Out of 100 patients, 92 (92%) are housewives, 4 (4%) are private employee, 2 (2%) are self-employee, 2 (2%) are Govt employee.

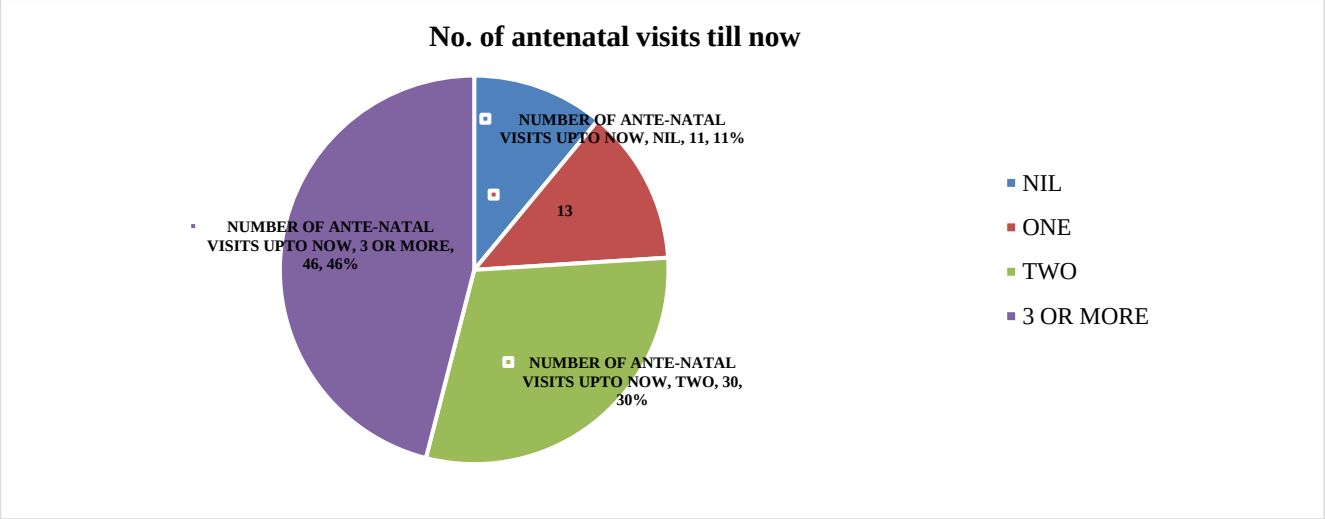

Figure 2: Out of 100 patients, 46 (46%) had three or more antenatal visits , 30 (30%) had two visits, 13 (13%) had one visit ,11 (11%) did not go for any visit.

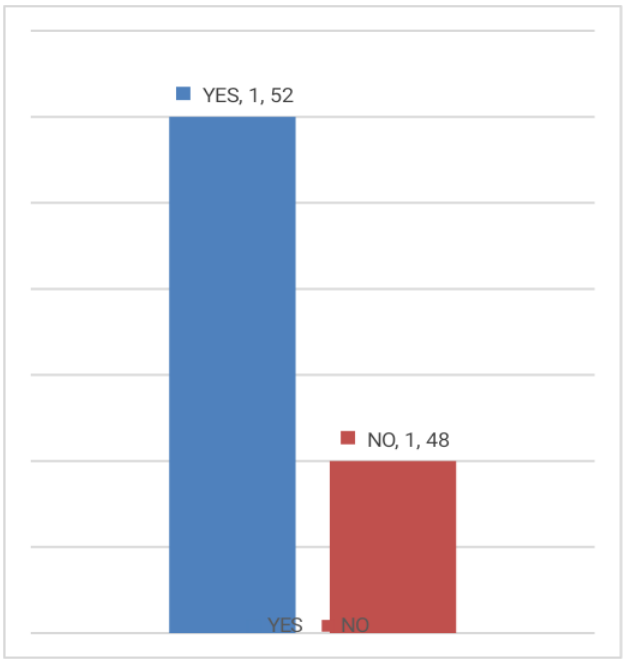

Figure 3: Out of 100 patients, 52 (52%) had history of PIH in blood relatives, while the rest 48 (48%) had no such history.

DISCUSSION

Our reasearch based on the socio-demographic determinants of pregnancy induced hypertension was conducted on about 100 patients in the obstetrics and gynaecology OPD and Ward at Lal-Ded hospital GMC, Srinagar, Kashmir from 03 May 2021 to 14 July 2021. Different socio-demographic factors that determine the prevelance of pregnancy induced hypertension (PIH) are age, education, occupation, socio-economic status status, genetics, physical activity, area of residence, gravidity, etc. Most of the patients in our study sample belonged to middle age group, with the mean age of 28.54 years. PIH tends to be more prevalent in older patients. Hypertension before pregnancy was recorded in about 40% of the patients while other 60% patients had no history of hypertension before pregnancy. Gravidity of the patients plays an important role in the PIH as our study shows about 75% of the patients were multigravida while other 25% were primigravida. Regarding the occupation of the PIH patients, about 92% were housewives and the remaining 8% were private and government employees. This difference may be due to the sedentary lifestyle, lack of exercise and physical activity that result in high blood pressure in housewives, more pronounced during pregnancy. It was seen in our study that economy is the major determinant of PIH. It was seen about 70% of the patients belonged to lower class families (monthly income

in INR<25000) and 29% belonged to the middle class families (monthly income in INR 25-50000). Only 1% belonged to the higher class families (monthly income in INR>50000). It was found in our study that only 15% of the patients developed PIH, living in cities (urban), 37% of patients were from semi-urban areas and 48% of patients were from rural settlements. This shows the more prevalance of PIH in rural areas because of lack of education, health care facilities and proper management of pregnant ladies. Similar research about PIH was conducted in Mexico. According to that study, low socio-economic factors act as risk for PIH, as low socio-economic factors are associated with the nutritional issues, reduced ante-natal care and unhygienic living habits. It was seen that low socioeconomic status of women doubled the risk of pre-eclampsia and eclapmsia. Another study conducted in Australia by Starcevic et al showed that the risk of pre-eclapmsia and eclampsia was higher in working women as compared to non-working ones. This may be due to the stress that women have due to increased workload.[14] Our study further showed that the patients who are well educated, do regular physical exercise, avoid sedentary lifestyle, and have regular ante-natal checkups are comperatively at the low risk of developing PIH.

A similar study was conducted by Bairwa et al to study the socio-demographic factors in cases of pregnancy induced hypertension and its associated risk factors in a tertiary care hospital in the Obstetrics And Gynecology Department of Shrimati Heera Kunwar Baa Memorial Hospital, Jhalawar, Rajasthan from December 2018 to November 2019. It concluded that PIH is a very common complication encountered in pregnancy associated with adverse maternal and fetal outcome. The risk is higher among young primigravidas and in rural population. Better health care facilities and awareness among the pregnant women will help in reducing the incidence of PIH and its associated complications.[15]

Limitations

This study included a smaller number of patients and had a shorter follow-up period. For proper validation of these conclusions, a long-term prospective clinical study with large sample size and longer follow-up is required.

CONCLUSION

Based on our research, we concluded a statistically significant association between pregnancies induced hypertension and history of PIH in blood relatives. We assessed the socio-demographic factors of PIH, age, other medical illness, BMI, level of literacy, level of ante natal care provider, history of other systemic disease, age of mother and gravidity.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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