Article published online: 2021-05-12

Prevalence of Pregnancy-Induced Hypertension and Its High-Risk Factors among the Antenatal Women

Sony John[1] M. Vanitha[1] Athira Babu[1] Priya Sushma[1] Ashihrii Eloni Regina[1] Reena Wilma Frank[2]

[1]Father Muller College of Nursing, Kankanady, Mangaluru, Karnataka, India
[2]Department of Obstetrics and Gynaecological Nursing, Father Muller College of Nursing, Kankanady, Mangaluru, Karnataka, India

Address for correspondence Reena Wilma Frank, PBBsc, Department of Obstetrics and Gynaecological Nursing, Father Muller College of Nursing, Kankanady, Mangaluru 575002, Karnataka, India (e-mail: rinwil21@yahoo.co.in).

J Health Allied Sci [NU] 2021;11:154–157.

Abstract

Objective A hypertensive disorder during pregnancy seriously endangers the safety of the fetus and women during pregnancy. This study was conducted to estimate the prevalence of pregnancy-induced hypertension (PIH) and its risk factors among antenatal women. The aim of this study was to find the prevalence of PIH and risk factors for PIH among antenatal women in a selected hospital in Mangaluru.

Methods A descriptive study was performed. The study used the total sample size of 400 pregnant women attending the obstetrics and gynecology outpatient department according to the inclusion and exclusion criteria in a tertiary care hospital in Karnataka. The data was collected with a self-reported checklist. Data were entered and analyzed by using SPSS 23.

Results The prevalence of PIH was 10.75% that is 43 antenatal women out of 400. In this study, 34.88% had a family history of PIH, 23% had a previous history of PIH, 16% had a history of gestational diabetes, and 20.93% had a history of thyroid problems. The most important risk factors found for PIH in the present study are the previous history of PIH (adjusted odds ratio [OR] = 1.276, 95% confidence interval [CI: 0.125–11.836), family history of hypertension (adjusted OR=1.930, 95% CI: 1.130–3.296), and thyroid problems (adjusted OR=1.904, CI: 0.786–4.611).

Conclusion PIH is a common medical disorder associated with pregnancy. We noted that PIH is more prevalent in those who had it in their previous pregnancy. PIH is associated with multiple complications in the mother and the baby and particularly preterm delivery. The timely intervention of regular antenatal checkups, nutrition, health education, etc., can reduce the severity of PIH.

Keywords
- prevalence
- risk factors
- pregnancy-induced hypertension
- antenatal

Introduction

Pregnancy is a physiological phenomenon for most women. Sometimes pregnancy won't be normal due to various reasons or risk factors. Mothers need to take care of their health during pregnancy to continue healthy pregnancy. Due to physiological changes, there are many health issues women undergo during pregnancy. Pregnancy-induced hypertension (PIH) is one of the most leading issue and the cause of maternal and fetus mortality.[1] PIH is clinically defined as new onset of hypertension (HTN), that is, systolic blood pressure (BP) ≥140 mm Hg

published online
May 11, 2021

DOI https://doi.org/10.1055/s-0041-1726687
ISSN 2582-4287

Thieme Medical and Scientific Publishers Pvt. Ltd. A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

and/or diastolic BP ≥90 mm Hg or an absolute rise of BP of at least 140/90 mm Hg, if the previous BP is not known or a rise in systolic pressure of at least 30 mm Hg or a rise in diastolic pressure of at least 15 mm Hg over the previously known BP, at ≥20 weeks of gestation in the absence of proteinuria.[2]

The incidence of PIH ranges from 5 to 15% in the different regions of India.[3] Worldwide 10% of all pregnancies are complicated by PIH.[4] In India, according to a 2017 survey, 8 to 10% of pregnancies are complicated with PIH. In Karnataka, 4 to 5/1000 are affected.[5] The main risk factors of PIH are family history, placental abnormalities, obesity (body mass index >30), previous history of HTN, hormonal imbalance, maternal age, primigravida, and preexisting vascular disease.[6]

To diagnose PIH, especially when the pregnant woman is seen for the first time after 20 weeks of gestation, or when there is no record of BP measurement before 20 weeks of pregnancy, is not always easy. However, the criteria that facilitate the diagnosis of PIH and its differentiation from other hypertensive disorders of pregnancy include elevated BP, which was previously normal, absence of protein in the urine, and absence of manifestation of preeclampsia–eclampsia. Furthermore, in the differential diagnosis, spot urine polymerase chain reaction; full blood count; urea, creatinine, electrolytes; ultrasound assessment of fetal growth and amniotic fluid volume; and umbilical artery Doppler assessment are generally included in the battery of test that needs to be done.[7] The main complications of PIH are preeclampsia, eclampsia, antepartum hemorrhage, postpartum hemorrhage, and fetal death or maternal death. Hence, the present study was conducted to find out the prevalence of PIH and risk factors among the antenatal woman.

Methods

A descriptive survey approach design was used to assess the prevalence of PIH and its high-risk factors among antenatal women. Mothers attending obstetrics and gynecology outpatient department (OBG OPD) of the selected tertiary hospital at Mangaluru were included as the study population. A total of 400 antenatal mothers were purposively selected as participants for the study. Among them, the diagnosis of PIH was confirmed by reviewing their case records for the diagnosis made by the obstetrician.

Instruments

The tool used in the study had two sections. Section A consisted of sociodemographic proforma and section B included a self-reported checklist on risk factors of PIH consisting of 17 questions. Content validity of the tool was determined by seven experts for their opinion from the OBG specialty. The reliability of the tool was obtained and found to be reliable.

Data Collection Procedure

The investigator obtained permission from the administrative authority to conduct the study. The objectives of the study were explained, and written informed consent was obtained from the study participants. The study participants were diagnosed as having PIH by the obstetrician who was given the tool. The approximate time taken to fill the tool was 15 to 20 minutes. The collected data were tabulated and analyzed using descriptive and inferential statistics.

Results

The analysis and interpretation of the data are organized and presented under the following headings.

►**Table 1** depicts that 196 (49%) antenatal mothers belong to the 20 to 25 age group and only 9 (2.25%) mothers were

Table 1 Distribution of subjects according to demographic characteristics (n = 400)

S. no.	Variable	F	(%)
1	Age in years		
	a) 20–25	196	49
	b) 26–30	175	43.75
	c) 31–35	20	5
	d) 36–40	9	2.25
2	Education		
	a) Primary	170	42.5
	b) High school	105	26.25
	c) PUC	100	25
	d) Degree	25	6.25
3	Occupation		
	a) BSc nurse	10	2.5
	b) Teacher	13	2.25
	c) House maker	377	94.25
4	Gravida		
	a) Primi	135	33.75
	b) Multi	265	66.25
5	Gestational age		
	a) 0–12 wk	100	25
	b) 13–29 wk	186	46.5
	c) 30–40 wk	114	28.5
6	BMI		
	a) <18.5	0	0
	b) 18.5–24.9	100	25
	c) 25–29.9	271	67.75
	d) >30	29	7.25
7	BP		
	a) Normal	357	89.25
	b) Increased BP	43	10.75
8	Diagnosed with PIH	43	10.75

Abbreviations: BMI, body mass index; BP, blood pressure; PIH, pregnancy-induced hypertension; PUC, preuniversity course.

belonging to the 36 to 40 age group. The education status of the mothers shows that 170 (4.5%) were completed only primary education. The majority of the mothers were housewives. A total of 256 mothers were multigravida. The gestational age of the mothers shows 186 were in the 13 to 29 weeks of gestation.

Prevalence of PIH

The prevalence was estimated through a case record review where PIH was diagnosed by an obstetrician by using the BP parameter. Among screened mothers, 357 had normal BP reading and 43 mothers were diagnosed with PIH.

Risk Factors of PIH (►Table 2)

Among the 43 antenatal, 10 (23%) had a previous history of PIH and 7 (16%) of them had gestational diabetes and 1(10.025%) had a previous history of abortion.

►**Fig. 1** depicts that among 43 antenatal women, 34.88% had a family history of HTN, and 21% had a history of thyroid problems (►**Table 3**).

The most important risk factors found for PIH in the present study are the previous history of PIH (adjusted odds ratio [AOR] =1.276, 95% confidence interval [CI]: 0.125–11.836), family history of HTN (AOR=1.930,95% CI: 1.130–3.296), and thyroid problems (AOR=1.904, CI: 0.786–4.611).

Discussion

In this study, the prevalence of PIH among antenatal women was 10.75%. Similar findings are seen in the study conducted in Brazil and South Africa where the prevalence of PIH shows 13.9 and 12%, respectively. The difference may be due to the differences in the study period, sample size, geographical difference of the study areas, and health-seeking behavior of the pregnant women in the area.[8]

Table 2 Frequency and percentage distribution of risk factors related to obstetric conditions among PIH mothers (n = 43)

S. no.	Variables	F	(%)
1	Previous history of gestational hypertension		
	a) Present	10	23
	b) Absent	33	76.74
2	History of GDM		
	a) Present	7	16
	b) Absent	36	83.72
3	History of abortion		
	a) Present	1	2.32
	b) Absent	42	97.67
4	Polycystic ovarian disease	0	0
5	Preterm labor	0	0
6	Multiple pregnancy	0	0

Abbreviations: GDM, gestational diabetes; PIH, pregnancy-induced hypertension.

The most important risk factors found for PIH in the present study are the previous history of PIH, family history, thyroid problems, and abortion. A similar cross-sectional study was conducted on PIH and associated factors among pregnant women in 2015 in Ethiopia. Results showed maternal education (AOR = 2.5, 95% CI% = 1.2–5.3), age (AOR = 2.73, 95% CI = 1.31–5.7), previous history of preeclampsia (AOR = 19.3, 95% CI = 5.2–72.1), and family history of preeclampsia (AOR = 7.2, 95% CI = 2.9–17.8) were identified as predictor factors for the occurrence of PIH.[9] The study conducted by Tehrani et al shows that among 801 women, 534 (66.7%) had a normal delivery and 267 cases had an abnormal delivery outcome that included 60 (7.5%) abortion, 40 (5%) ectopic pregnancy, and 167 (20.8%) preterm labor.[10]

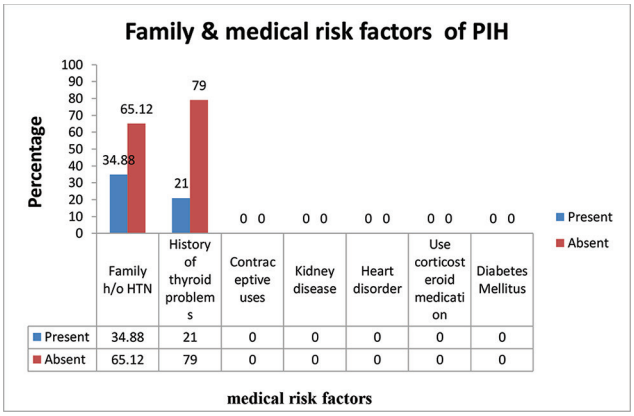

Fig. 1 Distribution of risk factors related to medical and family history among pregnancy-induced hypertension (PIH) mothers. HTN, hypertension.

Table 3 Adjusted risk factors of PIH

S. no.	Exposed factors	OR	95% CI
1.	Do you eat often fatty food such as fried chicken, salty snacks, potato chips regularly?	0.271	0.035–2.105
2.	Family history of hypertension	1.930	1.130–3.296
3.	Previous history of PIH	1.276	0.125–11.836
4.	History of renal disease	0.941	0.474–1.868
5.	History of diabetics mellitus	0.992	0.455–2.161
6.	History of thyroid problems	1.904	0.786–4.611
7.	History of cardiac illness	0783	0.744–0.825
8.	History of migraine	1.467	0.280–7.694
9.	History of abortion	0.605	0.227–1.612
10.	Use of oral contraceptive medication before pregnancy	0.782	0.743–0.824
11.	History of rheumatoid arthritis	0.909	0.100–8.238
12.	Multiple pregnancy	0.782	0.742–0.824

Abbreviations: CI, confidence interval; OR, odds ratio; PIH, pregnancy-induced hypertension.

The most important risk factors found for PIH in the present study are the previous history of PIH (AOR=1.276, 95% CI: 0.125–11.836), family history of HTN (AOR=1.930,95% CI: 1.130–3.296), and thyroid problems (AOR=1.904, CI: 0.786–4.611). A similar case–control study was conducted on risk factors associated with PIH among 216 pregnant women attending antenatal care clinic at the Hohoe Municipal Hospital 2017. They found advanced maternal age of 35 to 39 years, consumption of transfatty food, a family history of HTN, and history of previous preterm delivery to be significantly associated with PIH (AOR = 3.53, p = 0.048), (AOR = 4.43, p < 0.001), (AOR = 3.42, p = 0.012) and (AOR = 5.14, p = 0.017), respectively.[7]

Conclusion

The prevalence of PIH is quite high in the present study. Women with PIH are at higher risk of adverse pregnancy outcomes. The most important risk factors found for PIH in the present study are the previous history of PIH, family history, thyroid problems, and abortion. Poor knowledge of the management of PIH and inadequate resources are a threat to the proper management of PIH.

Limitations

The main limitation of the present study is that it did not assess the risk factors among normal antenatal mothers. In this study, risk factors are assessed only in diagnosed PIH mothers by the obstetrician.

Conflict of Interest
None declared.

References

1 Chen XK, Wen SW, Smith G, Yang Q, Walker M. Pregnancy-induced hypertension and infant mortality: roles of birthweight centiles and gestational age. BJOG 2007;114(1):24-31
2 Dutta DC, Hiralal K. DC Dutta's Textbook of Obstetrics. 7th edition. New Delhi: Jaypee Brothers; 2013:220–229
3 Mehta B, Kumar V, Chawla S, Sachdeva S, Mahopatra D. Hypertension in pregnancy: a community-based study. Indian J Commun Med 2015;40(4):273–278
4 Muti M, Tshimanga M, Notion GT, Bangure D, Chonzi P. Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. BMC Cardiovasc Disord 2015;15:111
5 Maternal mortality ratio (modeled estimate, per 10,000) live birth. Available at: http://data.worldbank.org/indicator/SH.STA.MMRT? locations=IN. Accessed February 23, 2021
6 Parmer MT, Solanki HM, Gosalia VV. Study of risk factors of perinatal death in pregnancy-induced hypertension. Natl J Community Med 2012;3(4)
7 Sing V, Srivastava M. Associated risk factors with pregnancy-induced hypertension: a hospital-based KAP study. Int J Med Public Health 2015;1:59–61
8 Randhawa AK, Singh A, Kaboor S. Pregnancy Induced Hypertension: a retrospective study of 200 cases of pregnant women. J IOSR JDMS 2016;15(6):36–43
9 Mekonen L, Shiferaw Z, Wubshet E, Haile S. Pregnancy Induced Hypertension and Associated Factors among Pregnant Women in Karamara Hospital, Jijiga, Eastern Ethiopia, 2015. J Pregnancy Child Health 2018;5:37910.4172/2376-127X.1000379
10 The relation between time to pregnancy and pregnancy outcome [Internet]. [cited 2020 Aug 28]. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4166062/. Accessed February 23, 2021