Original Article
DOI: https://doi.org/10.70749/ijbr.v3i2.699

INDUS JOURNAL OF BIOSCIENCE RESEARCH
https://induspublishers.com/IJBR
ISSN: 2960-2793/ 2960-2807

Frequency of Pregnancy Induced Hypertension in Patients Admitted in Maternity Ward of Ayub Medical Teaching Hospital Abbottabad

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ARTICLE INFO

Keywords

Hypertension, Pre-eclampsia, Perinatal Mortality, Pregnancy Induced Hypertension, Systolic Blood Pressure.

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Declaration

Authors' Contribution: All authors equally contributed to the study and approved the final manuscript.

Conflict of Interest: No conflict of interest.

Funding: No funding received by the authors.

Article History

Received: 03-01-2025
Revised: 13-02-2025
Accepted: 22-02-2025

ABSTRACT

Background: Hypertension is one of the most common medical disorders associated with pregnancy. It is the second leading cause of maternal mortality during pregnancy and affects one pregnancy in every ten cases. Maternal and fetal complications associated with hypertension can be highly destructive and can lead for example stroke, seizures, placental abruption, fetal death, and maternal death etc. In the current study, we tend to provide a comprehensive but short review of literature relevant to pregnancy induced hypertension. Importantly, its prevalence and distribution in Pakistan in general and in Abbottabad, Khyber Pakhtunkhwa, Pakistan in particular is discussed. In first section, however, a brief introduction and classification of pregnancy induced hypertension is addressed**. Results:** Total number of individuals are 125. Of these minimum ages of patients was 18 years and maximum were 45. Frequency of Pregnancy induced hypertension individuals were 57(45.60%) out of 125 patients and 68(54.40%) patients were without Pregnancy induced hypertension. 35(28%) patients were with history of pregnancy induced hypertension in previous pregnancy while 90(72%) did not have any history of PIH in previous pregnancy.33 (26.40%) of were doing regular exercise while 92(73.60%) had a sedentary lifestyle. 25(20%) had history of chronic hypertension while 100(80%) did not have any history of chronic hypertension**. Conclusion:** Effective operation of channel like improvement in general health of reproductive age females, health awareness of public, necessary antenatal care, prenatal diagnosis, optimal peripartum care, essential new born care program implementation and improving contraceptive prevalence are needed to lower perinatal mortality. This can be achieved through improving literacy rate, socioeconomic status and provision of free health facilities. Hypertensive disorders of pregnancy are an important cause of maternal and perinatal mortality and morbidity. Concrete steps should be taken so as to diagnose and manage hypertensive disorders during pregnancy to avoid the lethal morbidities.

INTRODUCTION

Gestational hypertension or pregnancy-induced hypertension (PIH) is the development of new hypertension in a pregnant woman after 20 weeks gestation with sustained blood pressure equal to or higher than 140 mm Hg systolic blood pressure (SBP) or 90 mm Hg diastolic blood pressure (DBP). It is classified ad mild (SBP 140-149 and DBP 90-99 mm Hg), moderate (SBP 150-159 and DBP 100-109 mm Hg) and severe (SBP ≥ 160 and DBP ≥ 110 mm Hg). Several features can associate with PIH and based on that it can be classified into various types including: gestational hypertension, preeclampsia and eclampsia. In later two cases in addition to high blood pressure, individuals also show symptoms of proteinuria (>300mg of protein in a 24-hour urine sample). All these forms of PIH significantly contribute to the maternal, fetal and neonatal morbidities.[1,2] Blood pressure of women falls during the first week of pregnancy due to blood vessels muscles relaxation, however, in the middle of pregnancy blood pressure arises again. The factors which can alter the blood pressure in pregnancy are physical activity, different position, time of the day, anxiety, diet, sleeping habits etc. Moreover, rise in blood pressure during pregnancy

is often associated with serious complication leading to condition like pre-eclampsia which subsequently leads to kidneys and liver failure, stroke, still-birth, foetal morbidity as well as various abnormalities of clotting system.[2] Furthermore, pregnancy induced hypertension results in maternal morbidity and mortality leading to perinatal mortality due to premature birth and associated complications. It is now well established that the development of significant proteinuria, which is usually connected with PIH, increases the perinatal mortality at least three folds.[3-5] 68% of pregnancies are associated with hypertensive disorder thus majorly contributing to maternal mortality worldwide. In agreement, the situation in Pakistan is not different where hypertensive disorders of pregnancy are ranked as the third most important cause of maternal mortality.[6] More recently, it has been shown that Pakistan like other developing countries has about 75% of the population concentrated in rural areas where there is lack of basic health facilities. This emphasizes the notion that the concept of antenatal monitoring is absent thus contributing to the PIH.[7] Surprisingly, even in the biggest and highly educated cities of Pakistan only 50% of the women have antenatal care and hospital delivery. In a hospital-based study from Karachi, it was found to be the leading cause of stillbirth .[8]In order to minimise the risk of PIH and to get detailed medical and obstetric history, identification of a problem is the most important step. Early and aggressive intervention is an important strategy in the care of high-risk patients to ensure best possible outcome for both mother and baby. Unfortunately, the progression of PIH from mild to life threatening disease cannot be predicted. Currently there are no screening tests for preeclampsia that are reliable, valid and economical. Therefore, careful history is required to identify high risk factors that can have adverse effects on maternal or foetal outcomes. The aim of current study is to draw attention to the life-threatening complication that may occur in cases of PIH viewed in Abbottabad in particular and in other parts of Pakistan in general. In a prospective study conducted at Ayub Teaching Hospital, Abbottabad, between January 2005 and December 2007, a total of 5,412 deliveries were recorded, with 498 perinatal deaths (PNDs), resulting in a perinatal mortality rate of 92/1000 live births. Stillbirths accounted for 74 per 1,000 deliveries, and early neonatal deaths were 17.9/1,000. Hypertensive disorders were identified as the second leading risk factor, contributing to 20.4% of PNDs. A study in 2007 reported a 7.02% incidence of pre-eclampsia, while a more recent study observed complications in 42.06% of patients, with HELLP syndrome and placental abruption being common. Preeclampsia's impact on liver function was evident with elevated serum bilirubin and liver enzyme levels. Additionally, a study investigating placental abruption found a strong association with maternal hypertension, concluding that preeclampsia is a significant maternal
risk factor. Studies across various regions, including Karachi and Rawalpindi, highlight the widespread incidence of Pregnancy Induced Hypertension (PIH), especially among primigravida patients. The objective of the ongoing research is to determine the incidence of PIH and assess contributing risk factors.

MATERIAL AND METHOD

Study design: Our study design was cross sectional study.

Setting: Study was done in maternity ward at Ayub teaching hospital Abbottabad.

Study duration: December 2016 to August 2017**.**

Sample size: Our sample size was 125.

Sampling technique: Our sampling technique was convenient non-probability sampling technique.

Sample selection: Inpatients were taken from maternity ward of Ayub teaching hospital.

Data collection: Close ended questionnaires are implied to collect data. Data is collected from willing patients while those who were not willing were excluded.

Data analysis: We analyzed our data through SPSS-16.0 soft-where.

RESULTS

Table 1

Age and Income

	N	Minimum	Maximum	Mean	Std. Deviation
Age in Years	125	18	45	28.31	5.876
Monthly Family Income (pkr):	125	4000	200000	25720.00	24792.884

Table no 01 shows that total number of individuals are 125 patients. Of these minimum ages of patients was 18 years and maximum were 45 with mean value of 28.31 and standard deviation of standard deviation ±5.87. The monthly family income 4000 was minimum and 200000 was maximum with mean value of 25720 and standard deviation of ±24792.884.

Table 2

Socio-economic Status

	Frequency	Percent
Poor	76	60.8
Middle Class	43	34.4
Upper Class	6	4.8
Total	125	100.0

Table no 02 shows that out 0f 125 individuals 76(60.80%) were poor,43(34.40%) were from middle class and 06 (04.80%) were from upper class.

Table 3
Pregnancy induced hypertension

	Frequency	Percent
Present	57	45.6
Absent	68	54.4
Total	125	100.0

Table no 03 shows that frequency of Pregnancy induced hypertension individuals were 57(45.60%) out of 125 patients and 68(54.40%) patients were without Pregnancy induced hypertension.

Table 4
Pregnancy induced hypertension in previous pregnancy

	Frequency	Percent
Yes	35	28.0
No	90	72.0
Total	125	100.0

Table no 04 shows that out of 125 patients, 35(28%) patients were with history of pregnancy induced hypertension in previous pregnancy while 90(72%) did not have any history of PIH in previous pregnancy.

Table 5
History of still born baby

	Frequency	Percent
Yes	20	16.0
No	105	84.0
Total	125	100.0

Table no 05 shows that Out of 125 patients 20(16%) had history of still born babies while 105(84%) did not have any history of still born babies.

Table 6
History of addiction

	Frequency	Percent
Yes	10	8.0
No	115	92.0
Total	125	100.0

Table no 06 shows that according to the data collected, 10(08%) patients had history of addiction while 115(92%) did not have any history of addiction.

Table 7
History of Regular exercise

	Frequency	Percent
Yes	33	26.4
No	92	73.6
Total	125	100.0

Table no 07 shows that out of 125 individuals 33 (26.40%) of were doing regular exercise while 92(73.60%) had a sedentary lifestyle.

Table 8
Previous history of Chronic Hypertension

	Frequency	Percent
Yes	25	20.0
No	100	80.0
Total	125	100.0

Table no 08 describes that 25(20%) had history of chronic hypertension while 100(80%) did not have any history of chronic hypertension.

Table 9
History of renal disease prior to pregnancy

	Frequency	Percent
Yes	24	19.2
No	101	80.8
Total	125	100.0

Table no 09 shows that 24(19.20%) patients had history of renal disease while 101(80.80%) did not have any history of renal disease.

Table 10
History of per vaginal bleeding

	Frequency	Percent
Yes	53	42.4
No	72	57.6
Total	125	100.0

Table no 10 describes that 53 (42.40%) out of total of 125 patients had history of per vaginal bleeding while 72(57.60%) did not have any history of per vaginal bleeding.

Table 11
Family history of pregnancy induced hypertension

	Frequency	Percent
Yes	34	27.2
No	91	72.8
Total	125	100.0

Table no 11 shows that 34(27.20%) patients had history of PIH in their families while 91(72.80%) did not have any history of PIH in their families.

Table 12
History of regular antenatal check ups

	Frequency	Percent
Yes	93	74.4
No	32	25.6
Total	125	100.0

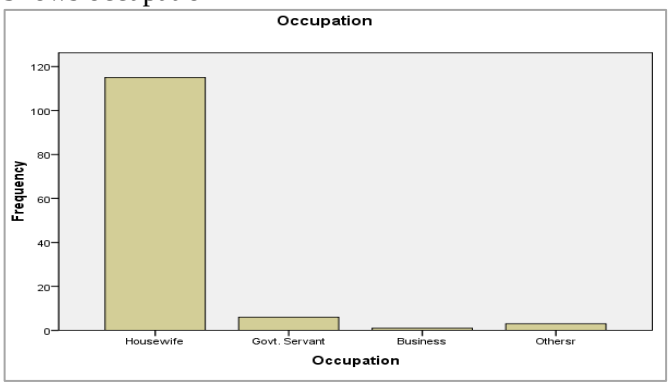
Table no 12 shows that out of 125 individuals 93(74.40%) patients were doing regular antenatal checkups while 32(25.60%) were not doing regular antenatal checkups.

Figure 1
Shows individual belonging from rural and urban areas

Figure no 01 shows that out of 125 individuals 51 were in urban areas and 74 were living in rural areas.

Figure 2

Shows occupation



In figure no.02 it has been shown that out of 125 patients 115 were house wives, 6 of them were government servants Business women were 1 and women doing other type of business were 3.

Figure 3

History of abortion

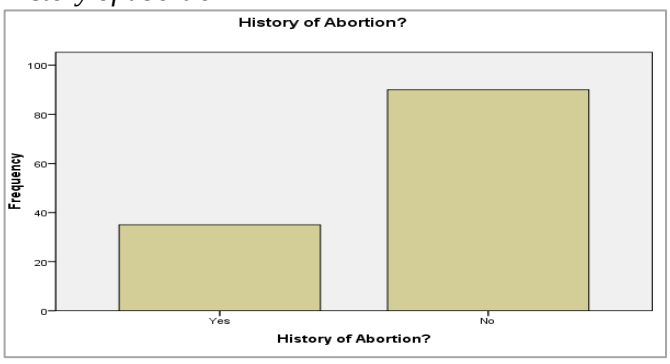


Figure no 03 shows that 35 patients had history of abortion while 90 had not any history of abortion.

Figure 4

History of pre-term delivery

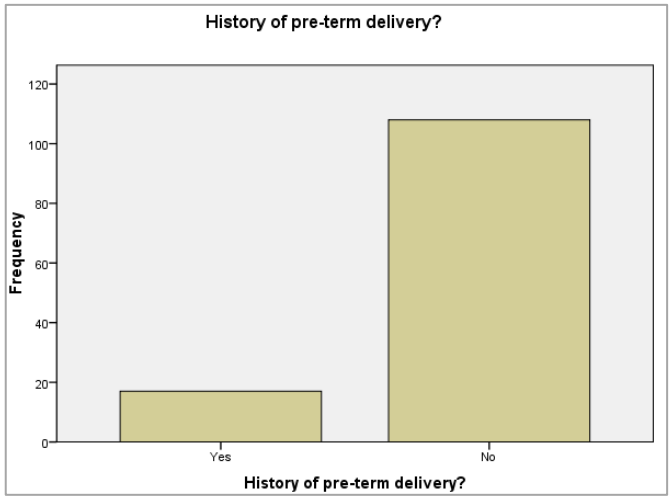


Figure no 04 shows that history of pre-term delivery was present in 17 patients while 108 did not have any history of pre-term delivery.

DISCUSSION

The study of frequency of pregnancy induced hypertension in patients admitted in maternity ward was carried out in Ayub Medical Complex Abbottabad. The patients were selected from maternity ward of Ayub Medical Complex Abbottabad. The individuals were only female patients of different ages. The total individuals selected for study were 125. Then they were categorized on basis of Age and Income, Socio-economic Status, Pregnancy induced hypertension, Pregnancy induced hypertension in previous pregnancy, history of still born baby, history of addiction, history of Regular exercise, Previous history of Chronic Hypertension, history of renal disease prior to pregnancy, history of per vaginal bleeding, family history of pregnancy induced hypertension, history of regular antenatal checkups, history of abortion, history of pre-term delivery, occupation and address. Table no 02 shows that out 0f 125 individuals 76(60.80%) were poor,43(34.40%) were from middle class and 06 (04.80%) were from upper class. Table no 03 shows that frequency of Pregnancy induced hypertension individuals were 57(45.60%) out of 125 patients and 68(54.40%) patients were without Pregnancy induced hypertension. Table no 04 shows that out of 125 patients, 35(28%) patients were with history of pregnancy induced hypertension in previous pregnancy while 90(72%) did not have any history of PIH in previous pregnancy. A study done by Duckett K in 2005 also showed that PIH was more in patients who had PIH in previous pregnancy as compared to those who did not have PIH in previous pregnancy.[16] Thus PIH in previous pregnancy is a risk factor for PIH in current pregnancy. According to Cande et al, the occurrence of PIH in one pregnancy is a strong predictor of recurrence in the next pregnancy and recurrent hypertensive disorders is associated with substantially higher risks of adverse perinatal

outcome.[17]Table no 05 shows that Out of 125 patients 20(16%) had history of still born babies while 105(84%) did not have any history of still born babies. Table no 07 shows that out of 125 individuals 33 (26.40%) of were doing regular exercise while 92(73.60%) had a sedentary lifestyle. A study done by Saftlas AF and others showed that exercise during pregnancy and before pregnancy decreases risk of PIH and preeclempsia.[18] Table no 08 describes that 25(20%) had history of chronic hypertension while 100(80%) did not have any history of chronic hypertension. The study carried out on Epidemiology of Pregnancy-induced Hypertension shows association between PIH and future development of chronic hypertension has been a topic of considerable debate. Most studies in the literature show that women who have had PIH have a higher mean blood pressure and 3-20 times higher risks of developing chronic hypertension in later life, in comparison with women who have been normotensive during pregnancy .[19-22] Table no 10 describes that 53 (42.40%) out of total of 125 patients had history of per vaginal bleeding while 72(57.60%) did not have any history of per vaginal bleeding. Table no 11 shows that 34(27.20%) patients had history of PIH in their families while 91(72.80%) did not have any history of PIH in their families. The study of Epidemiology of Pregnancy-induced Hypertension shows that the incidence of preeclampsia in mothers, daughters, sisters, and granddaughters of provands is 2-5 times higher than in mothers-in-law, daughters-in-law, and other controls.[18] However, neither a specific model of inheritance nor a role of maternal or fetal genotype has been established. Table no 12 shows that out of 125 individuals 93(74.40%) patients were doing regular antenatal checkups while 32(25.60%) were not doing regular antenatal checkups. Figure no 01 shows that out of 125 individuals 51 were in urban areas and 74 were living in rural areas. Figure no.02 it has been shown that out of 125 patients 115 were house wives, 6 of them were government servants Business women were 1 and women doing other type of business were 3. Figure no 03 shows that 35 patients had history of abortion while 90 had not any history of abortion. Figure no 04 shows that history of pre-term delivery was present in 17

patients while 108 did not have any history of pre-term delivery.

CONCLUSION

Effective operation of channel like improvement in general health of reproductive age females, health awareness of public, necessary antenatal care, prenatal diagnosis, optimal peripartum care, essential new born care program implementation and improving contraceptive prevalence are needed to lower perinatal mortality. This can be achieved through improving literacy rate, socioeconomic status and provision of free health facilities. Hypertensive disorders of pregnancy are an important cause of maternal and perinatal mortality and morbidity. Concrete steps should be taken so as to diagnose and manage hypertensive disorders during pregnancy to avoid the lethal morbidities.

Recommendation

According to these study on pregnancy induced hypertension it is recommended for peoples to take consultation from gynecologist before planning of pregnancy. They should have proper checkups on time. Take proper treatment for hypertension. They should have regular exercise. Avoid those measures that can cause pregnancy induced hypertension

REFERENCES

1. Magee, L. A., von Dadelszen, P., Stones, W., & Mathai, M. (2016). *The FIGO textbook of pregnancy hypertension: an evidence-based guide to monitoring, prevention and management*. The Global Library of Women's Medicine. http://www.glowm.com/resource_type/resource/textbook/title/the-figo-textbook-of-pregnancy-hypertension/resource_doc/2768
2. Redman, C., & Roberts, J. (1993). Management of pre-eclampsia. *The Lancet*, *341*(8858), 1451-1454. https://doi.org/10.1016/0140-6736(93)90890-s
3. NATIONALHIGHBLOODPRESSUREEDUCA. (2000). Report of the national high blood pressure education program working group on high blood pressure in Pregnancy*1. *American Journal of Obstetrics and Gynecology*, *183*(1). https://doi.org/10.1016/s0002-9378(00)40820-3
4. Moodley, J. (2008). Maternal deaths due to hypertensive disorders in pregnancy. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *22*(3), 559-567. https://doi.org/10.1016/j.bpobgyn.2007.11.004
5. Rochat, R. W., Koonin, L. M., Atrash, H. K., & Jewett, J. F. (1989). Maternal mortality in the United States. *Obstetric Anesthesia Digest*, *8*(4), 161. https://doi.org/10.1097/00132582-198901000-00004
6. Jaffrey, S. N. (1991). Maternal mortality in Pakistan, an overview in the proceedings of a workshop on maternal and prenatal health at

Karachi, Editor S Zaidi. *TWEL Publishers Karachi*, *21*, 15-17.
7. Jehan, A., Musarrat, J., & Nadra, S. (2004). Perinatal outcome in pregnancy induced hypertensive mothers. *Pak Armed Forces Med J.* *54*(1), 76–8. https://pesquisa.bvsalud.org/portal/resource/pt/emr-67991
8. Korejo, R., Bhutta, S., Noorani, K. J., & Bhutta, Z. A. (2007). An audit and trends of perinatal mortality at the Jinnah Postgraduate Medical Centre, Karachi. *JPMA. The Journal of the Pakistan Medical Association*, *57*(4), 168-172. https://europepmc.org/article/med/17489521
9. Shamshad. (2010). PERINATAL MORTALITY: AN OUTCOME OF QUALITY OF PERINATAL CARE. *GOMAL JOURNAL OF MEDICAL SCIENCES*, *8*(2), 166-171.
10. Ayaz, A., Muhammad, T., Hussain, S. A., & Habib, S. (2009). Neonatal outcome in pre-eclamptic patients. *Journal of Ayub Medical College Abbottabad*, *21*(2), 53-55. https://ayubmed.edu.pk/jamc/index.php/jamc/article/view/3355
11. Malik, N., Sarwar, I., & Khan, A. B. (2016). Frequency of Major Maternal Complications In Patients With Severe Preeclampsia. *Journal of Rehman Medical Institute*, *2*(2), 12-16.
12. Munazza, B., Raza, N., Naureen, A., Khan, S. A., Fatima, F., Ayub, M., & Sulaman, M. (2011). Liver function tests in preeclampsia. *J Ayub Med Coll Abbottabad*, *23*(4), 3-5.
13. Khattak, S. N., Deeba, F., Ayaz, A., & Khattak, M. I. (2012). Association of maternal hypertension with placental abruption. *Journal of Ayub Medical College Abbottabad*, *24*(3-4), 103-105.
14. Shamshad. (2010). PERINATAL MORTALITY: AN OUTCOME OF QUALITY OF PERINATAL CARE. *GOMAL JOURNAL OF MEDICAL SCIENCES*, *8*(2), 166-171.
15. Qasim, A., Bashir, A., Sajid, S., Riaz, M. M., & Almas, A. (2016). Women with pregnancy induced hypertension have a higher risk of developing essential hypertension-a case control study from a tertiary care center in Pakistan. *JPMA. The Journal of the Pakistan Medical Association*, *66*(2), 179-183. https://europepmc.org/article/med/26819164
16. Sibai, B. M., El-Nazer, A., & Gonzalez-Ruiz, A. (1986). Severe preeclampsia-eclampsia in young primigravid women: subsequent pregnancy outcome and remote prognosis. *American journal of obstetrics and gynecology*, *155*(5), 1011-1016. https://doi.org/10.1016/0002-9378(86)90336-4
17. Hargood, J. L., & Brown, M. A. (1991). Pregnancy- induced hypertension: recurrence rate in second pregnancies. *Medical journal of Australia*, *154*(6), 376-377. https://doi.org/10.5694/j.1326-5377.1991.tb121125.x
18. Sibai, B. M., Sarinoglu, C., & Mercer, B. M. (1992). Eclampsia: VII. Pregnancy outcome after eclampsia and long-term prognosis. *American journal of obstetrics and gynecology*, *166*(6), 1757-1763. https://doi.org/10.1016/0002-9378(92)91566-S
19. Nisell, H., Lintu, H., Lunell, N. O., Möllerström, G., & Pettersson, E. (1995). Blood pressure and renal function seven years after pregnancy complicated by hypertension. *BJOG: An International Journal of Obstetrics & Gynaecology*, *102*(11), 876-881. https://doi.org/10.1111/j.1471-0528.1995.tb10874.x
20. Ananth, C. V., & Basso, O. (2010). Impact of pregnancy-induced hypertension on stillbirth and neonatal mortality. *Epidemiology*, *21*(1), 118-123. https://doi.org/10.1097/EDE.0b013e3181c297af
21. Zeisler, H., Llurba, E., Chantraine, F., Vatish, M., Staff, A. C., Sennström, M., Olovsson, M., Brennecke, S. P., Stepan, H., Allegranza, D., Dilba, P., Schoedl, M., Hund, M., & Verlohren, S. (2016). Predictive Value of the sFlt-1:PlGF Ratio in Women with Suspected Preeclampsia. *The New England Journal of Medicine*, *374*(1), 13–22. https://doi.org/10.1056/NEJMoa1414838
22. Berry, C., & Atta, M. G. (2016). Hypertensive disorders in pregnancy. *World journal of nephrology*, *5*(5), 418. https://pmc.ncbi.nlm.nih.gov/articles/PMC5011248/