

Pregnancy induced hypertension and associated factors among pregnant women in Madda Walabu University Goba referral hospital, Southeast Ethiopia

Tilahun Ermeko Wanamo^{1†}, Abate Lette Wodera², Diriba Debaba³

ABSTRACT

Background: A Hypertensive disorder during pregnancy poses a huge challenge worldwide. More specifically, developing countries like Ethiopia had double burden of pregnancy induced hypertension. The aim of the study was assessed of prevalence pregnancy induced hypertension and associated factors among pregnant mothers in Madda Walabu University Goba Referral Hospital, Southeast Ethiopia, 2019.

Methods: A hospital based descriptive of document review study was conducted on pregnant mothers with the diagnosis of pregnancy induced hypertension in MWU GRH from March 26 to April 15, 2019. Data was collected from client' document record by using a prepared checklist. The data was entered in to Epi-data version 3.1 and analyzed using SPSS version 24. In addition to, descriptive statistics was applied for describing data and multivariate logistic regression was used to identify associated factors. It was entered in to Epi-data and analyzed using SPSS. In addition, of descriptive statistics for describing data and multivariate logistic regression analyses was used to identify associated factors.

Results: One hundred fifty-three documents of pregnant mothers were included for this study. The odds of pregnancy induced hypertension increases by 3 folds as age increases (AOR=3.56, 95% CI: 1.4, 8.8). Likewise, the type of pregnancy increases the odds of hypertension (AOR=3.8, 95% CI: 1.6, 8.9). Past medical history of pregnancy induced hypertension is more likely than those who do not have medical history (AOR=3.4, 95% CI: 6.5-9.6).

Conclusions: Among mothers visited to GRH majority of them were diagnosed to severe type of preeclampsia. Furthermore, this study reveals that age, past medical history and types of hypertensions were the predictors of hypertension. Therefore, health facilities should early identify, diagnose, and treat the burden of pregnancy induced hypertension based on national guidelines.

Keywords: Pregnant women; Pregnancy induced hypertension, Factors, Goba referral hospital

Introduction

■ Background

Pregnancy Induced Hypertension (PIH) which is developed after 20 weeks of gestation age. It is hypertension without proteinuria or edema at two repeated readings of diastolic blood pressure 90 mmHg-110 mmHg for 4 hours-6 hours apart [1]. One of the leading causes of maternal morbidity and mortality are a group of diseases referred to as Hypertensive Disorders of Pregnancy (HDP). These hypertensive disorders include a wide spectrum of diseases including;

pregnancy induced hypertension, preeclampsia, eclampsia and preeclampsia superimposed on hypertension. Reduction of maternal morbidity and mortality is a high priority for the international community. HDP can affect normotensive as well as hypertensive mothers. They are diseases that usually occur in the second half of pregnancy (gestational age of greater than 20 weeks) [2].

Hypertension in pregnancy is defined as a systolic BP of 140 mmHg and higher, and a diastolic BP of 90 mmHg and higher. HDP increases the risk

¹College of Medicine and Health Science, Department of Public Health, Goba Referral Hospital, Madda Walabu University, Bale Goba, Ethiopia

²Department of Public Health, Goba Referral Hospital, Madawalabu University, Bale Goba, Ethiopia

³Department of Public Health, Goba Referral Hospital, Madawalabu University, Bale Goba, Ethiopia

[†]Author for correspondence: Tilahun Ermeko Wanamo, College of Medicine and Health Science, Department of Public Health, Goba Referral Hospital, Madda Walabu University, Bale Goba, Ethiopia, E-mail: tilahunjimma2008@gmail.com, Telephone: +251909648032

of heart attacks, cardiac failure, cerebrovascular accidents and renal failure in the mothers. The fetuses of hypertensive mothers are also at increased risks, such as: inappropriate placental oxygen transfer, IUGR, premature delivery, placental abruption, stillbirth, and neonatal death [3].

The exact cause of HDP is unknown. However, various risk factors have been attributed to the development of these disorders. These risk factors include extreme of age, gravidity, preexisting hypertension, diabetes, multiple pregnancy, obesity, race, socioeconomic level and diet [4]. According to literatures, women who are affected with PIH before their 37th week of gestation have poorer perinatal results as compared to women who are affected at term. Moreover, IUGR and placental abruption are more common in preterm deliveries. Mothers who have had a history of preeclampsia (17.9%) are at a greater risk than nulliparous women [5].

Hypertensive mothers usually give birth to preterm babies, who in turn will most likely need Neonatal Intensive Care Unit (NICU) care as a result of their IUGR and Low Birth Weight (LBW) [5]. The hazards of these outcomes depend on its severity, Gestational Age (GA) at the onset of HTN, and GA at the time of delivery [6].

PIH is more commonly seen in nulliparous women, and older women (owing to the risk of chronic HTN) are at greater risk of preeclampsia being superimposed. Evidence shows that discrete pathophysiological changes begin from the moment fertilization takes place. And if delivery does not take place these changes lead to the involvement of multiple organs and present with dangerous clinical signs in both the mother and fetus (Central Statistical Agency (CSA) of Ethiopia 2011).

A research done in Jimma University specialized hospital showed that majority (52.5%) of the mothers were developed the case in the age group of 25-34 years. The overall prevalence of hypertensive disorders of pregnancy was 8.5%. Severe preeclampsia accounted for 51.9% of the cases followed by eclampsia (23.4%). Residence of the women has statistically significance with severity disorder of pregnancy induced. Most (66.5% and 74.7%) of the mothers were nulliparous and had antenatal care follow-up during the index pregnancy, respectively. The case fatality rate of hypertensive disorders of pregnancy was 1.3% with perinatal mortality of

317.1/1000 six births [7]. Despite such a great impact of pregnancy related disorders, previous studies in the study area as well as other countries did not give due emphasis for the burden consequences with this issue. The magnitude as well as prevalence was not investigated in the community and country wide [8].

Therefore, the aim of the study was assessed of prevalence pregnancy induced hypertension and associated factors among pregnant mothers in Madda Walabu University Goba Referral Hospital, Southeast, Ethiopia, 2019.

Methods

■ Study settings

A hospital-based document review was applied to assess prevalence of pregnancy induced hypertension and associated factors among pregnant mothers in Madda Walabu University Goba Referral Hospital, 2019 [9]. This study site is 12 kilometers from the capital city of Bale Zone Robe. It is also 365 kilometers from capital city of Addis Ababa [10].

■ Study design

A hospital based documentary review study was employed in Madda Walabu University Goba Referral Hospital, 2019, from March 26 to April 30, 2019 [11].

■ Data collection

Data was collected using the structured checklist for record review developed for this study. The checklist was prepared by English language then translated to local language Afaan Oromo. Medical registration number of mothers diagnosed with PIH during the study period will be recorded from labor ward, maternity ward and gynecology-emergency OPD registration book [12]. Then chart of the mothers diagnosed with PIH will be picked out from archive and record room. Chart will be reviewed and important information was gathered with prepared check lists by tally method. After information gathered, specific code will be given to each card to prevent repetition [13].

■ Data Quality Control

The pre data collection study was conducted in the neighboring Doddola primary hospital in 5% of 8 samples to check consistency of the study [14]. Nine diploma nurses and two Health Officers were assigned for data collection and supervision. Training was given for one

day on basic concepts of the study process and data collection [15]. The collected check list was checked for consistency daily by the data collectors. Every day at the end of data collection, meetings were held between supervisors and the data collectors to discuss practical problems and issues of major concern to learn for next days. Data were coded, cleaned and checked for consistency daily by data collectors as well as supervisors [16].

Data analysis

After the data have been collected, data was first checked for completeness, errors and coding was done daily. The extracted data was cleaned and checked for accuracy, consistency, and entered using Epi-data version 3.1 and exported to SPSS version 24 for further analysis. Descriptive analysis like frequency and mean was used to describe variables. Bivariate logistic regression analysis was tested to identify variables candidate for multivariate logistic regression. p value of <0.25 was used as cut off for inclusion

of variable into the logistic regression model (Figures 1 and 2).

The magnitude of the association between independent variables and dependent were measured using odds ratios and 95% Confidence Interval (CI) and P values below 0.05 were considered statistically significance. Hosmer-Lemshow goodness-of-fit was applied to find the appropriateness of model [17].

Results

There was a total of 2,684 pregnant mothers were visited Goba Referral Hospital during pregnancy and postnatal visit in the document review period. From these in our study case 153 document review were included. 49 (32%) mothers were in the age group of 19-24 years, while 12 (7.8 %) mothers were in the age group of <19 years. Among the total of 153 mother majority of 113(73.9%) are Oromo (Table 1).

There one hundred fifty-three pregnant women

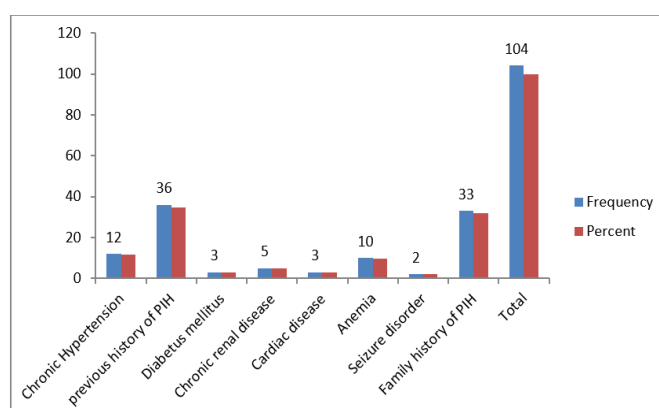


Figure 1: Past medical history of mothers with PIH at Goba Referral Hospital, Bale Zone, Oromia Regional State, Ethiopia, 2019.

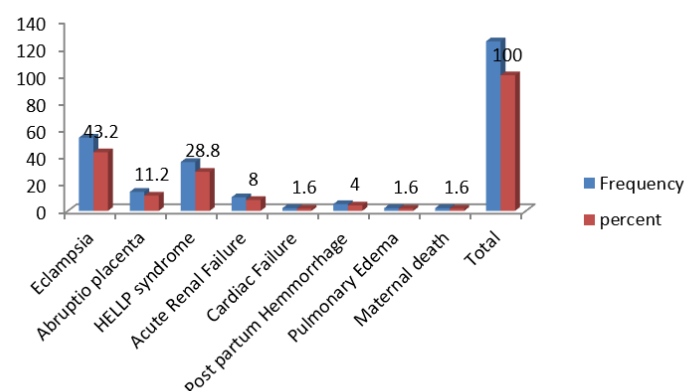


Figure 2: Mode of deliveries by number and percent in mothers with PIH at Goba Referral Hospital, Bale Zone, Oromia Regional State..

Table 1: Socio-demographic characteristics of mothers with PIH at Goba Referral Hospital, Bale Zone, Oromia Regional State, Ethiopia, 2019.

Variables	Category	N (%)
Age	<19	12 (7.8)
	19-24	49 (32.6)
	25-29	46 (30.1)
	30-34	21 (13.7)
	35-39	12 (7.8)
	40-44	8 (5.2)
	45-49	5 (3.3)
Educational level	Illiterate	18 (11.8)
	Elementary	84 (54.9)
	High school	46 (30.1)
	Higher Education	5 (3.3)
Ethnicity	Oromo	113 (73.9)
	Amhara	37 (24.1)
	Tigere	3 (2)
Religion	Muslim	76 (49.7)
	Orthodox	69 (45.1)
	Protestant	8 (5.2)

Table 2: Types of pregnancy induced hypertension among pregnant women at Hospital, Bale Zone, Oromia Regional State, Ethiopia, 2019.

Types of PIH	N (%)
Gestational hypertension	5 (3.3)
Mild preeclampsia	34 (22.2)
Severe preeclampsia	92 (60.1)
Eclampsia	9 (5.9)
Preeclampsia super imposed on chronic HTN	13 (8.5)

were participated in this study. Majority 92 (60.1 %) were with severe preeclampsia, 13(8.5%) were diagnosed to with preeclampsia super imposed on chronic HTN (Table 2).

■ Factor associated with Pregnancy Induced Hypertension (PIH)

Among the socio-demographic variables age, marital and educational status of the mother, , occupational status of the mother, and residential as well as from the obstetric history variables having past medical history, parity, ANC follow up, gestational age and mode of delivery were evaluated using logistic regression with pregnancy induced hypertension (Table 3).

Binary Logistic regression analysis was used to identify factors associated with Pregnancy induced hypertension. All variables associated with Pregnancy induced hypertension in the Binary logistic regression with a p-value ≤ 0.25 were entered together into a multivariable logistic

regression by using the backward method. The degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval. p-value <0.05 was considered as statistically significant. Multi-collinearity was checked. The Hosmer-Lemeshow goodness-of-fit statistic was used and the model had a p-value > 0.05 which proved the model was good. Accordingly, age, type of pregnancy currently diagnosed, previous history of pregnancy induced hypertension and onset of labor. Age, past medical history of pregnancy induced hypertension, time of diagnosis and type of pregnancy were significantly associated with pregnancy induced hypertension (Table 4).

Table 4: Multivariate logistic regression analysis to show factors associated with Pregnancy induced hypertension among pregnant women in Madda Walabu University Goba referral hospital, Southeast Ethiopia, March 15 to April 15, 2019.

Table 3: Binary logistic regression analysis to show factors associated with Pregnancy induced hypertension among pregnant women in Madda Walabu University Goba referral hospital, Southeast Ethiopia, March 15 to April 15, 2019.

Variable	Category	N (%)	COR 95% CI	p-value
Age	<19	12 (7.8)	3.56 (1.4-8.8)	0.001*
	19-34	49 (32)	1	
	35-49	46 (30.1)	0.4 (1.4-6.7)	<0.001
	50-59	21 (13.7)	0.35 (3.2-7.7)	0.01
	≥60	25 (16.4)	0.35 (0.2-0.7)	0.002
Educational status	Illiterate	18 (11.8)	0.23 (6.1-39)	<0.006
	Elementary	84 (54.9)	0.6 (0.3-1.06)	<0.07
	High school	46 (30.1)	0.4 (0.3-0.78)	<0.08
	Higher Education	5 (3.3)	1	
Ethnicity	Oromo	113 (73.9)	0.67 (3.5-10.5)	<0.001
	Amhara	37 (24.1)	0.3 (3.4-6.7)	<0.097
	Tigre	3 (2)	1	
Types of PIH	Gestational hypertension	5 (3.3)	1	
	Mild preeclampsia	34 (22.2)	0.45(7.7-10.6)	0.003
	Severe preeclampsia	92 (60.1)	3.8 (1.6-8.9)	<0.001*
	Eclampsia	9 (5.9)	0.24(6.0-9.3)	<0.041
	Preeclampsia super imposed on chronic HTN	13 (8.5)	0.18(5.3-8.22)	<0.001
Past medical history	Chronic HTN	12 (7.8)	0.21(7.9-11.2)	<0.067
	Previous history of PIH	36 (24)	3.4 (6.5-9.6)	<0.001*
	Diabetes Melitus	3 (2)	0.14 (7.0-14.3)	<0.087
	Cardiac diseases	5 (3.26)	0.44 (3.2-7.3)	<0.087
	Anemia	10 (7)	1	

NB: 1= Reference Note: Hosmer - Lemeshow Test = 0.514 therefore the model adequately fits the data.

*Significant p-value

Table 4: Multivariate logistic regression analysis to show factors associated with Pregnancy induced hypertension among pregnant women in Madda Walabu University Goba referral hospital, Southeast Ethiopia, March 15 to April 15, 2019

Variable	Category	N (%)	COR 95% CI	p-value
Age	<19	12 (7.8)	3.56 (1.4-8.8)	0.001*
	19-34	49 (32)	1	
	35-49	46 (30.1)	0.4 (1.4-6.7)	<0.001
	50-59	21 (13.7)	0.35 (3.2-7.7)	0.01
	≥60	25 (16.4)	0.35 (0.2-0.7)	0.002
Educational status	Illiterate	18 (11.8)	0.23 (6.1-39)	<0.006
	Elementary	84 (54.9)	0.6 (0.3-1.06)	<0.07
	High school	46 (30.1)	0.4 (0.3-0.78)	<0.08
	Higher Education	5 (3.3)	1	
Ethnicity	Oromo	113 (73.9)	0.67 (3.5-10.5)	<0.001
	Amhara	37 (24.1)	0.3 (3.4-6.7)	<0.097
	Tigre	3 (2)	1	
Types of PIH	Gestational hypertension	5 (3.3)	1	
	Mild preeclampsia	34 (22.2)	0.45(7.7-10.6)	0.003
	Severe preeclampsia	92 (60.1)	3.8 (1.6-8.9)	<0.001*
	Eclampsia	9 (5.9)	0.24(6.0-9.3)	<0.041
	Preeclampsia super imposed on chronic HTN	13 (8.5)	0.18(5.3-8.22)	<0.001
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	Previous history of PIH	36 (24)	3.4 (6.5-9.6)	<0.001*
	Diabetes Melitus	3 (2)	0.14 (7.0-14.3)	<0.087
	Cardiac diseases	5 (3.26)	0.44 (3.2-7.3)	<0.087
	Anemia	10 (7)	1	

NB: 1= Reference Note: Hosmer - Lemeshow Test = 0.514 therefore the model adequately fits the data.

*Significant p-value

Discussion

In this study the majority severe preeclampsia was the most common contributor to PIH. The result of this study was higher when compared to a study conducted in Tikur Anbessa Hospital. The odds of pregnancy induced hypertension increases by 3 folds as age increases (AOR=3.56, 95% CI: 1.4, 8.8). This finding was in line with the study conducted in Tikur Anbessa Hospital. Likewise, the type of pregnancy increases the odds of hypertension (AOR=3.8, 95% CI: 1.6, 8.9). Convenient finding was found in the study conducted in Zewuditu Memorial Hospital by Selamawit. The current study showed that the type of pregnancy currently diagnosed increases by 3 folds of pregnancy induced hypertension, (AOR=3.8; 95%CI: 1.6, 8.9). This finding is in line with the study conducted in Zimbabwe and Addis Ababa, Ethiopia. The odds of pregnancy induced hypertension was increased with women who have early identified medical history (AOR=0.64; 95% CI: 0.47,0.87). The study conducted in Dilla University Referral Hospital showed similar finding with our current study. This study showed that (13.7%) of pregnant women were delivered by IUFD. This finding was consistent with the study conducted at Dilla University Referral Hospital (9.3%). Previous history of PIH increases 3.4 folds than the counterparts. Similar finding was indicated in study conducted in Dilla University Referral Hospital and Addis Ababa, Ethiopia.

Limitation of the study

The findings of our study must be interpreted in the context of the limitations encountered. The record review study, in which we relied completely on information found from the respondents' document, is prone to information bias. A single institutional survey and the results may not be generalized to the majority of pregnant women. Nevertheless, it provides useful information for planning a multicenter study in the hospital-based studies.

Conclusion

In our conclusion, the findings of this study showed the majority of the mothers developed hypertension during pregnancy, among mothers admitted to Madda Walabu University Gobba Referral hospital. The common induced hypertension was preeclampsia. The predictors of pregnancy induced hypertension were age, types of pregnancy currently diagnosed and past medical history. Concerned bodies should be triggered to reduce maternal deaths by considering these predictors.

Ethics approval and consent to participate

The study was done by interviewing the pregnant women visited GRH after an ethical consent was obtained from Madda Walabu University ethical clearance committee and individual verbal consent was obtained from the study participants. This manuscript has never been submitted and deliberated for publication to any other journals or books.

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Competing interests

Authors have declared that no competing interests exist.

Authors' contributions

TEW, ALW and DD developed the concept and method, collects data and drafts the manuscript, analyzed and interprets the data.

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