

# Incidence of Pregnancy Induced Hypertension among Women Attending Ante Natal Clinic, In Zone a General Hospitals of Yobe State

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**Abstract:** - Pregnancy induced hypertension is one of the most common cause of both maternal and neonatal morbidity and mortality affecting a sizable number of pregnant women. Hence this study was carried out to investigate incidence of pregnancy induced hypertension among women attending ante natal clinic in general hospital of zone A Yobe state. A survey descriptive study was carried out among pregnant women attending ante natal clinic within the general hospital of Zone A Yobe state. Using simple random sampling techniques, 343 structured questionnaires were administered, of which 300 were retrieved and used in this study and the data obtained were analysed using statistical package for social sciences (SPSS) version 21.0. The response rate was 87%. Four research questions were answered, and four hypotheses tested. The research question 1, 2 and 4 were tested using percentages and frequencies; while research question 3 and the hypotheses were tested using Pearson's Product Moment Correlation. The hypotheses were tested at 95% confidence level. Most of the pregnant women attending ante natal clinic within the General hospital of zone A Yobe state are of the age range 25- 34yrs and 15- 24yrs (37.7% and 28.0%, respectively), most are islam, 266(88.7%); majority possess secondary and tertiary education, 89(29.7%) and 88(29.3), respectively.; no formal education, 63(21.0%); and primary, 60 (20.0%). The incidence of pregnancy induced hypertension (PIH) among pregnant woman is very low (20.7%). Most of them, 226(75.3%) have heard of PIH; only 75(25.0%) have knowledge of the predisposing factors of PIH. There was a negative but no significant relationship between diet and PIH ( $r = -0.06, P < 0.05$ ). The identified complications of PIH are: preterm delivery (22%); death (21.3%); eclampsia (18%); and abortion (15%). The possible complications of PIH to fetus are: death (13.3%); preterm birth (10.7%); asphyxia (8.3%). There was no significant relationship between age and PIH ( $P > 0.05$ ); level of education and PIH ( $P > 0.05$ ); risk factors and PIH ( $P > 0.05$ ) and between diet and PIH ( $P > 0.05$ ). Hypotheses one to four were accepted/ not rejected ( $P > 0.05$ ). More efforts should be put in by health workers and the government to keep it low or even lower by educating the pregnant women in the study area about the risk factors and complications of PIH; those who have been diagnosed to have the disorder should be taught how to effectively manage it.

**Key words:** pregnancy, ante natal, hypertension, induced, eclampsia

## I. BACKGROUND OF THE STUDY

Hypertension is the most common medical problem encountered in pregnancy and remains an important

cause of maternal, and fetal, morbidity and mortality, and it complicates up to 15% of pregnancies and accounts for approximately a quarter of all antenatal admissions (Jamea & Nelson-Piercy, 2004).

Hypertension is word that is used to describe high blood pressure or hyperglycaemia. Hypertension in pregnancy is a major cause of maternal morbidity and mortality in the United States, and there is approximately one maternal death due to pre-eclampsia-eclampsia per 100,000 live births, with a case-fatality rate of 6.4 deaths per 10,000 cases. Hypertension in pregnancy (HIP) is defined as a systolic blood pressure  $\geq 140$  or diastolic blood pressure  $\geq 90$  mmHg or both. It could be described as chronic, gestational, preeclampsia or eclampsia depending on the gestational period, tendency for postpartum resolution, presence of proteinuria or convulsion.

The exact number of pregnant women who develop preeclampsia is not known, but it is believed that about 10% of pregnancies globally were complicated by hypertension, with pre-eclampsia and eclampsia being the major cause maternal and prenatal morbidity and mortality and about 5-8% of all pregnancies are affected by pregnancy induced hypertension.

In Nigeria, the last two decades has seen a rise in the number of incidence studies concerning hypertension and other non-communicable diseases. Similarly, a number of systematic reviews of the various incidence studies on hypertension have been done, the most recent being the study by Adeloye *et al.* (2019). In Nigeria, the incidence of the hypertensive disorders in pregnancy was (17%) found in the study done at Sokoto, which was similar to 21.6% & 17.2% that have been reported from south-eastern Nigeria and Finland, respectively.

According to Osungbade & Olusimbo (2011) hypertension in pregnancy affects about 5-22% of pregnancies especially in developing countries. It is the most common medical problem of unknown aetiology during pregnancy and associated with adverse risk across the globe especially in developing countries. Though preeclampsia and eclampsia seems to create more concern than others, evidence abound that any form of hypertension in pregnancy places women at increased risk of adverse outcomes (Roberts *et al.*, 2005).

Hypertension can prevent the placenta from getting enough blood. If the placenta doesn't get enough blood, the fetus gets less oxygen and food. This can result in low birth weight. According to Akejuet *et al.*, (2016), few studies have examined incidence of hypertension in pregnancy in Nigeria. Most of these studies to the best of our search were in southern Nigeria. However, studies have shown that northern Nigeria has the worst statistics of maternal death in Nigeria and probably in the world (Yusuf, 2016). Hypertension related disorder was reported as a leading cause of this mortality in northern Nigeria. It is therefore necessary to uncover factors associated with the condition in the region in order to design appropriate intervention. Pregnancy induced hypertension (PIH) is one of the most common causes of both maternal and neonatal morbidity, affecting about 5 - 8 % of pregnant women. It is associated with adverse pregnancy outcomes as well as maternal morbidity and mortality (Tebeu *et al.*, 2011).

It is against this backdrop that this study was undertaken to determine the incidence of Hypertension in pregnancy and its associated factors among pregnant women, with the aim of providing preliminary information for intervention as well as for a more detailed future investigation.

*Research Questions*

1. What is the incidence of pregnancy induced hypertension among pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state?
2. What is the level of knowledge of a pregnant woman in respect to pregnancy induced hypertension?
3. Does women's diet prone her to pregnancy induced hypertension?
4. What are the complication that may occur due to PIH to the mother & the baby?

*Null hypotheses*

- i. There will be no significant relationship between the age of a woman and pregnancy induced hypertension
- ii. There will be no significant relationship between the level of education and pregnancy induced hypertension.
- iii. There will be no significant relationship between risks factors of hypertension and pregnancy induced hypertension
- iv. There will be no significant relationship between diet and pregnancy induced hypertension.

II. METHODOLOGY

*Study Design*

A descriptive cross sectional analytical and experimental survey was employed to investigate the incidence of pregnancy induced hypertension among women attending general hospital of Zone A senatorial district of Yobe State.

*Study Area*

Yobe is a state located in Northeast Nigeria, A mainly agricultural state. It was created on August 27 1991. It covers a land mass area of 17,568 sq mi, total population of 2,757,000 as of 2011 census. Zone A senatorial district (Yobe East) of Yobe state comprises of 6 local government areas namely Bursari, Geidam, Gujba, Gulani, Tarmuwa & Yunusari in which there are general hospital in each LGA. The dominant tribe of the Yobe east were Kanuri/Manga, Fulani, Babur & Hausa and other several ethnic groups from other part of the country. Yobe east share international boundary with Niger Republic to the north Bauchi State to the west, Borno state to the east and Gombe state to the South.

*Study Population*

The study was carry out among pregnant women attending antenatal clinic in general hospital of all 6 L.G.A. within Zone A senatorial district of Yobe state.

*Inclusive Criteria*

All pregnant women in Yobe State that are attending ante natal care services in Yobe East General Hospitals.

*Exclusive Criteria*

All pregnant women in Yobe State that are not attending ante natal services in Yobe East general hospitals.

*Sample Size Determination*

The sample size= 
$$n = \frac{Z^2[P(1-P)]}{D^2}$$

Where

Z= Confidence level of 95% that is 1.96

P= the proportion of this population at risk

D=margin of sampling error tolerate

Z=1.96

P= 50%

D= 5%

$$n = \frac{1.96^2 [50](100-50)}{5^2}$$

**n= 3080**

Adjusting rate

$$n = \frac{n}{1+(n-1)}$$

$$= \frac{384}{1+(384-1)}$$

$$= \frac{384}{1+(383)}$$

$$= \frac{384}{3080} = 0.124$$

$$\frac{384}{1 + 0.124}$$

$$\frac{384}{1.124} = 343$$

**Sample size for the study will be 343**

*Sampling Procedure*

Purposive sampling technique was used to collect the data in all the 6 local government area of Yobe east. Thereafter the pregnant women attending antenatal services in all the general hospitals that are available and ready to consent at the time of data collection will be selected till the sample size for this study is met.

*Instrument for Data Collection*

Through interactive session where the researcher administered a questionnaire to each study subject. Therefore some simple clinical & laboratory procedure is employed to screen those with any of the component of pregnancy induced hypertension including review of previous records of women attending ANC services within the health facilities.

*Method of Data Analysis*

Data generated from the questionnaire were analyzed using SPSS version 21.0. The research question 1, 2 and 4 were tested using percentages and frequencies; while research question 3 and the hypotheses were tested using Pearson’s Product Moment Correlation. The hypotheses were tested at 95% confidence level.

*Scope and Limitation of the Study*

The study was limited to pregnant women attending ante natal services at 6 Local Government of Yobe State East Zone.

*Ethical Issues*

Consent is collected from the department of public and community health Novena University and Yobe state ministry of health to carry out the research and also all respondents must sign consent before filling the questionnaire.

**III. RESULTS**

*Response Rate*

Three hundred and forty three (343) questionnaires were administered, while 300 were retrieved. Hence, the response rate is  $300 / 343 = 0.87 \times 100 = 87\%$ . Hence, the response rate 87%.

*Demographic Characteristics*

Table 1: Demographic Characteristics of pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state

Variable		N	%
Age	15- 24yrs	84	28.0

	25-34 yrs	113	37.7
	35- 44 yrs	72	24.0
	45 yrs and above	31	10.3
<b>Tribe</b>	kanuri	71	23.7
	bura	46	15.3
	Hausa	55	18.3
	Fulani	71	23.7
	Others	57	19.0
<b>Religion</b>	Christianity	33	11.0
	Islam	266	88.7
	others	1	0.3
<b>Educational status</b>	primary	60	20.0
	secondary	89	29.7
	tertiary	88	29.3
	No formal	63	21.0
<b>Occupation</b>	civil servant	96	32.0
	farmer	30	10.0
	business	44	14.7
	house wife	92	30.7
	others	38	12.7

The results presented in Table 1 shows that most of the pregnant women attending ante natal clinic within the General hospital of zone A Yobe state are of the age range 25- 34yrs and 15- 24yrs (37.7% and 28.0%, respectively), others are 35- 44yrs, 72(24%); and 45yrs and above, 31(10.3%). The result of their tribes shows that, majority are either Kanuri or Fulani (23.7%, each); followed by other tribes, 57(19.0%); hausa, 55(18.3%); and Bura, 46(15.3%). The result on religion shows that, most are islam, 266(88.7%); followed by Christians, 33(11.0%), and others, 1(0.3%). With respect to education, Table 4.1 shows that, majority possess secondary education, 89(29.7%); followed by tertiary, 88(29.3); no formal education, 63(21.0%); and primary, 60(20.0%). Finally on demography, Table 4.1 shows that with respect to occupation, most of the pregnant women are civil servants, 96(32.0%); followed by house wives, 92(30.7%); other occupations, 38(12.7%); business women, 44(14.7%) and farmers, 30(10.0%).

*Research Questions 1*

What is the incidence of pregnancy induced hypertension among pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state?

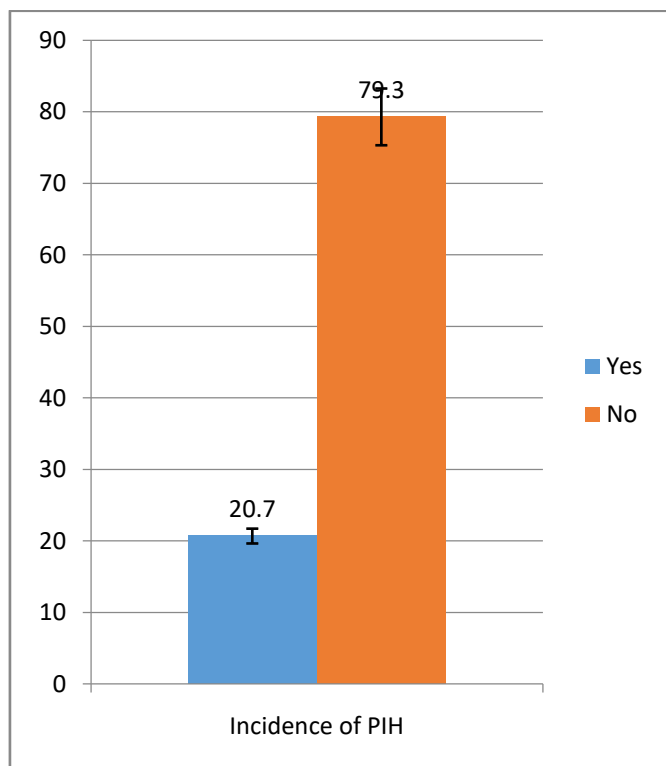


Figure 1: Incidence of PIH

The results presented in Figure 1 shows that, the incidence of pregnancy induced hypertension (PIH) among pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state, is very low (20.7%). Hence PIH is not a common occurrence among the women in the study area.

**Research Question 2**

What is the level of knowledge of a pregnant woman in respect to pregnancy induced hypertension?

Table 2: Knowledge of a pregnant woman in respect to pregnancy induced hypertension

S/N	Items	Yes (%)	No (%)
1.	Ever heard of of PIH	226(75.3)	59(19.7)
2.	Knowledge of the history of PIH in the family	55(18.3)	183 (61.0)
3.	Knowledge of the predisposing factors to PIH	75 (25.0)	206 (68.7)

Table 2 shows the level of knowledge of the pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state. The results shows that most of them, 226(75.3%) have heard of PIH; few however have a knowledge of the history of PIH in their families, 55(18.3%). The table further shows that, only few, 75(25.0%) have knowledge of the predisposing factors of PIH. In summary therefore, the knowledge of the pregnant women about PIH is averagely low.

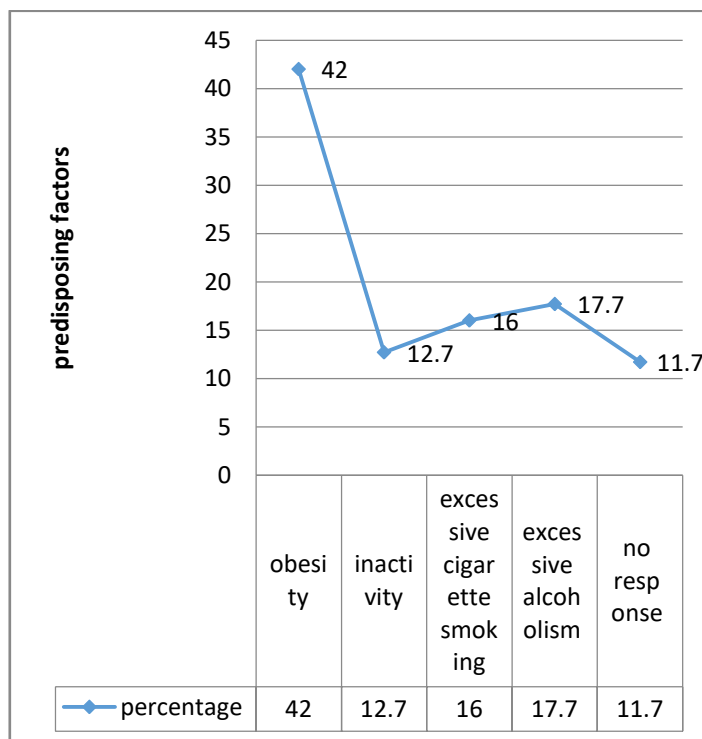


Figure 2: knowledge of predisposing factors of pregnant woman to pregnancy induced hypertension

Figure 2 further shows the major predisposing factors known to the pregnant women attending ante natal clinic within the General hospital of zone A, Yobe state. The results shows that the predisposing factors are: obesity (42%); excessive alcoholism (17.7%); excessive cigarette smoking (16%); inactivity (12.7%). However, 11.7% of the participants claim they have no knowledge of the predisposing factors.

**Research Question 3**

Does women’s diet prone her to pregnancy induced hypertension?

Table 3: Relationship between Diet and PIH in pregnant women

Variables	r	P
Diet * PIH	-0.06	0.29

\*Significance: P< 0.05

The results presented in Table 3 shows that, the women’s diet did not make them prone to pregnancy induced hypertension. There was a negative but no significant relationship between diet and PIH (r = -0.06, P< 0.05).

**Research Question 4**

What are the complication that may occur due to PIH to the mother & the baby?

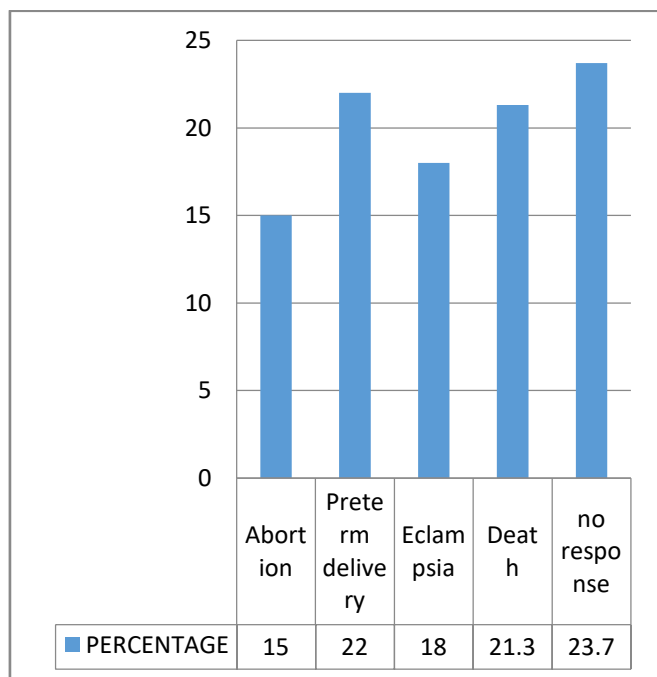


Figure 3: What are the possible complications of PIH to the mother

The results presented in Figure 3 shows the possible complications of PIH to mothers. The identified complications are: preterm delivery (22%); death (21.3%); eclampsia (18%); and abortion (15%). However, a large number of the respondents declined response to the knowledge of the complications.

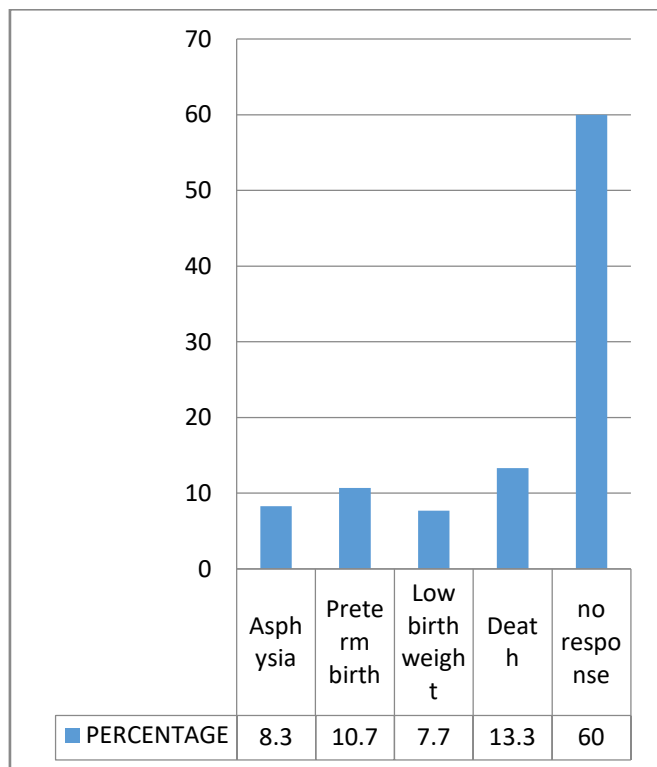


Figure 4: What are the possible complications of PIH to the fetus

The results presented in Figure 4 shows the possible complications of PIH to fetus. The identified complications are: death (13.3%); preterm birth (10.7%); asphyxia (8.3%). However, a large number of the respondents declined response to the knowledge of the complications to fetus.

Testing of Hypothesis

Hypothesis 1

There is no significant relationship between the age of a woman and pregnancy induced hypertension

Hypothesis 2

There is no significant relationship between the level of education and pregnancy induced hypertension.

Hypothesis 3

There is no significant relationship between risks factors of hypertension and pregnancy induced hypertension

Hypothesis 4

There is no significant relationship between diet and pregnancy induced hypertension.

To test hypotheses 1, 2, 3, and 4 where tested using Pearson’s Product Moment Correlation. The results obtained are presented in Table 4.

Table 4: Relationship between age and PIH; level of education and PIH; risk factors and PIH; and diet and PIH

Variables	r	P
Age	0.01	0.80
Level of education	0.01	0.87
Risk factors	-0.06	0.29
Diet	-0.02	0.72

\*Significance: P< 0.05

The results obtained showed that there is no significant relationship between age and PIH (P > 0.05); level of education and PIH (P > 0.05); risk factors and PIH (P > 0.05) and between diet and PIH (P > 0.05). Hence, age, level of education, risk factors, and diet did not have significant relationship with pregnancy induced hypertension. The hypotheses one to four are therefore accepted/ not rejected (P > 0.05).

IV. DISCUSSION

Pregnancy Induced Hypertension is the most common medical problem of unknown aetiology during pregnancy and associated with adverse risk across the globe especially in developing countries (Ford *et al.*, 2011). This present study was aimed at investigating the incidence of pregnancy induced hypertension among pregnant women attending the antenatal clinic in Zone A, Senatorial Hospitals of Yobe State.

The study revealed that the incidence of pregnancy induced hypertension (PIH) among pregnant woman attending ante natal clinic within the General hospital of zone A, Yobe state, is very low (20.7%). Hence PIH is not a common occurrence among the women in the study area. According to Osungbade *et al.*, (2011), hypertension in pregnancy affects about 5-22% of pregnancies especially in developing countries. This agrees with the findings in the present study. Similarly, according to Singh *et al.*, (2014) the incidence of the hypertensive disorders in pregnancy was 17% in a study done in Sokoto, while incidence rate greater than 10% and 11.6% that has been reported from Ibadan & Benin City, respectively.

The study revealed that the knowledge of the pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state showed most of them, 226(75.3%) have heard of PIH; few however have a knowledge of the history of PIH in their families, 55(18.3%). The table further shows that, only few, 75(25.0%) have knowledge of the predisposing factors of PIH. In summary therefore, the knowledge of the pregnant women about PIH is averagely low.

This study revealed that the predisposing factors to PIH are: obesity (42%); excessive alcoholism (17.7%); excessive cigarette smoking (16%); inactivity (12.7%). The women's diet was not a predisposing factor to pregnancy induced hypertension ( $P < 0.05$ ). contrary to this report, Kahsay *et al.* (2018) reported that mothers who consume fewer amounts of fruits in their diet had 5 times higher odds of developing hypertensive disorders than those who consume fruits regularly. Overweight ( $BMI > 25 \text{ Kg/m}^2$ ) mothers were also at risk of developing hypertensive disorders of pregnancy as compared with the normal and underweight mothers. The risk of developing hypertensive disorders of pregnancy was 5.4 times higher among diabetic mothers.

The present study also revealed that the possible complications of PIH to mothers are: preterm delivery (22%); death (21.3%); eclampsia (18%); and abortion (15%). This however contradicts the report of Lindherimer (2009); Mackay *et al.*, (2001); Grujic and Milasinovic, (2006) who reported that the outcomes for pregnancy complicated by hypertension range from uneventful pregnancy in women with chronic, controlled hypertension to death in cases of preeclampsia-eclampsia, temporary blindness, disseminated intravascular coagulation (DIC), pulmonary oedema, arrhythmias, liver lesions, intracranial or hepatic haemorrhage, adult respiratory distress syndrome (ARDS), hypervolemia and risk of recurrent preeclampsia. On the study revealed that the possible complications of PIH to fetus are: death (13.3%); preterm birth (10.7%); as physia (8.3%). Bellamy *et al.*, (2007) and Lampinen *et al.*, (2006) however reported that the effects of PIH on fetus includes induced labor, fetal growth restriction, neonatal respiratory difficulties, and increased frequency admission to neonatal intensive care

unit. The variations observed in the reports on complications of PIH, may be as a result of different locations.

The study revealed that there was no significant relationship between age and PIH ( $P > 0.05$ ); level of education and PIH ( $P > 0.05$ ); risk factors and PIH ( $P > 0.05$ ) and between diet and PIH ( $P > 0.05$ ). Hence, age, level of education, risk factors, and diet did not have significant relationship with pregnancy induced hypertension. Tesfaye and Tilahun (2018) however, reported that positive family history of pregnancy induced hypertension, kidney diseases, having asthma and gestational age were significant predictors of pregnancy induced hypertension. Sorohi *et al.* (2017) also reported that family history of diabetes mellitus had no association with present PIH. Past history of PIH however had strong association with current PIH for women who are multigravida. All this reports disagrees with the findings of this study with respect to association, since they are the risk factors of PIH, which of course in this study, has a no significant association with PIH.

## V. CONCLUSION

In conclusion, the incidence of pregnancy induced hypertension (PIH) among pregnant woman attending ante natal clinic within the General hospital of zone A Yobe state, was low. Hence PIH was not a common occurrence among the pregnant women in the study area. Also, the knowledge of the pregnant women about PIH is averagely low. The better the diet, the lower the incidence of PIH in the study area. PIH has complications which affects both the mother and the fetus. Age, level of education, risk factors, and diet did not have significant relationship with pregnancy induced hypertension, hence there are some other risk factors that have significant relationships with PIH, but they were not captured in the research instrument of this study.

## VI. RECOMMENDATIONS

1. Although, PIH has low incidence rate in General hospital of zone A Yobe state, more efforts should be put in by health workers and the government to keep it low or even lower by educating the pregnant women in the study area about the risk factors and complications of PIH.
2. Also, those who have been diagnosed to have the disorder should be taught how to effectively manage it.
3. Other factors that cause PIH should be noted and studied subsequently with the purpose of creating awareness about the findings.
4. Government and health workers should show more commitment to eradicating maternal and neonatal death by providing free health care for pregnant women in the study area.

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