

**CENTRAL UNIVERSITY**  
**SCHOOL OF MEDICINE AND HEALTH SCIENCES**  
**DEPARTMENT OF NURSING**

**KNOWLEDGE OF PREGNANT WOMEN ON PREVENTION AND MANAGEMENT**  
**OF PREGNANCY INDUCED IN HYPERTENSION: A STUDY AT THE TEMA**  
**GENERAL HOSPITAL**

**BY**

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## DECLARATION

We Ilona Opoku Anokye and Awuni Adwei Francis do hereby declare that this project work was undertaken by us and supervised by Mr. Gbande Sulleh of central university, nursing department. This programme has not been submitted anywhere in any form for the award of diploma or degree. We duly acknowledge in the text and list of references, authors and publishers whose work we have used in this study

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Mr. Gbande Sulleh

## **DEDICATION**

We dedicate this work to the Almighty God, our creator, strong pillar and source of strength for our successful completion. We also dedicate this work to our loving families for their support throughout this project

## **ACKNOWLEDGEMENT**

We thank the Almighty God for taking us through our final year research study. We thank our parents for supporting us both financially and emotionally. Another big thank you to the staff of Tema general hospital at the obstetrics and gynecology unit and most especially all respondents of this study for their willingness and massive assistance during our data collection. A heartfelt appreciation to our supervisor, Mr. Sulleh Gbande for his guidance and support through the entire period of this study.

God bless you

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## ABSTRACT

Pregnancy-induced hypertension (PIH) is increased blood pressure (more than 140/90mmHg) usually occurring in the second trimester of pregnancy. Although the actual cause is unknown, it can lead to serious complications on both mother and fetus if not properly managed. It has many predisposing factors, which are obesity, lack of exercise, stress etc. of which many people are vulnerable to due to genetic and environment factors.

A quantitative cross sectional data was conducted at the Tema General hospital, using a researcher assisted questionnaire to capture the demographic data as well as ways of preventing and managing pregnancy induced hypertension. To ensure validity and reliability of the questionnaire, the researchers designed the questionnaire to cover all the objectives of the study

This study involved 25 pregnant women with 16% (4) in the first trimester, 60% (15) in the second and 24% (6) in the third trimester. Findings of the study indicated that pregnancy induced hypertension is more prevalent amongst people aged above 29. Majority of respondents stated that regular visit to Ante Natal Clinic (ANC) is a means of preventing PIH, with 14 (100%) respondents also suggesting that healthy diet and effective intake of prescribed medication helps in preventing PIH.

In managing PIH, majority of the respondents 13 (93%) complied with the treatment regimen due to their awareness of the condition. 100% of respondents stated that exercise as well as stress reduction is important managing PIH Thirteen (13) respondents, representing 93% stated they would encourage others with PIH to report to hospital.

Pregnancy induced hypertension is highly prevalent in the sub Saharan region and obesity, lack of exercise, stress and unhealthy diet are the main contributing factors to the condition. Although the actual cause is unknown, modification of these contributing factors can help prevent it.

## **CHAPTER ONE**

### **BACKGROUND AND LITTEATURE REVIEW**

#### **1.0 INTRODUCTION TO THE CHAPTER**

This chapter provides a description of the background, problem statement, purpose of study, objectives of the study, research questions, significance of study and literature review.

#### **1.1 BACKGROUND OF THE STUDY**

Pregnancy-induced hypertension (PIH) is a syndrome of hypertension with or without proteinuria and edema, with the clinical manifestation usually occurring late in pregnancy and resolving after delivery of the baby(Zhang, 1997).It is a major pregnancy complication, causing premature delivery, fetal growth retardation, abruption placentae, and fetal death, as well as maternal morbidity and mortality(Chesley, 1978). Pregnancy induced hypertension has been recognized for centuries; however, the etiology of this syndrome remains uncertain, limiting effective intervention (Chesley, 1978). Pregnancy-induced hypertension is a leading cause of maternal and perinatal mortality and can also lead to long-term health problems like chronic hypertension, kidney failure, or nervous system disorders (Singh et al, 2015).

Pregnancy induced hypertension is estimated to affect 7% to 10% of all pregnancies in the United States. (Granger et al, 2001). Studies during the past decade, however, have provided a better understanding of the potential mechanisms responsible for the pathogenesis of Pregnancy induced hypertension (Granger et al, 2001).

One target of the millennium developmental goal five (5) is to reduce the maternal mortality ratio by 75%. Hundreds of thousands of women die due to complications of pregnancy and childbirth

each year. According to the most recent statistics that was carried out in Ghana, expectant women aged 35-49 registered the highest maternal mortality in Ghana as a result of miscarriages.

According to recent global estimates, about 585, 000 women die annually from pregnancy-related complications. Most of these deaths occur in the developing world. (Senah, 2003) It is established that obesity increase the risk of pregnancy induced hypertension. Family history of pregnancy induced hypertension and placental hormonal imbalance are also associated with pregnancy induced hypertension (Owiredu et al, 2010). Pregnancy induced hypertension is estimated to affect 7% to 10% of all pregnancies in the United States. (Granger et al, 2001). In India, pregnancy induced hypertension has an incident rate of 5-15% and complicating 10-15% of all pregnancies in the country. These complications are responsible for significant maternal and perinatal morbidity and are the third relating cause of pregnancy related death (Singh et al, 2015). A record reviewed for pregnancy outcomes in Zimbabwe revealed pregnancy induced hypertension prevalence is 19.4% (Muti et al, 2015).

Pregnancy induced hypertension disorders complicating pregnancy are common and constitute a leading cause of maternal, fetal and neonatal morbidity and mortality. Prevention of PIH may be primary, secondary or tertiary (Crowther et al 1992). Primary prevention is only possible by avoiding pregnancy. Secondary prevention requires identification of patients at risk. Prevention of pregnancy induced hypertension reveals that only dietary calcium supplementation and prophylactic low-dose aspirin have shown promise of efficacy in small controlled clinical trials, but the results of large, multicenter trials are disappointing. (Crowther et al 1992) Prophylactic low-dose aspirin is recommended in women at high risk because it is associated with a moderate reduction in risk may reduce the severity of PIH it develops and appears to be safe for mother and

infant. The present data do not support any prophylactic intervention in pregnant women at low or medium risk. (Crowther et al 1992)

## **1.2 PROBLEM STATEMENT**

Globally, about 350.000 women die every year from pregnancy related causes and more than half of these deaths occur in sub-Saharan Africa (SSA). Approximately 12% of the maternal deaths are associated with hypertensive disorders in pregnancy such as pregnancy induced hypertension (PIH). (Middendorp et al, 2013). Studies have been conducted on the prevalence and causes of PIH for instance, in the USA, pregnancy induced hypertension is estimated to affect 7% to 10% of all pregnancies in the United States. (Granger et al, 2001). In Nigeria PIH contributed 6.3% of all cases of hypertensive disorders in pregnancy (Ebeigbe, 2010). Pregnancy induced hypertension has an incident rate of 5-15% in all pregnancies recorded in India, complicating 10-15% of all pregnancies in the country. (Sajith et al, 2014). And in Ghana Pregnancy induced hypertension is the commonest pregnancy complication encountered in Ghanaian hospitals to date and it is the second highest cause of maternal mortality in Ghana (Owiredu et al, 2012)

It is against these statistics that the researchers want to investigate the prevention and management of pregnancy induced hypertension in the Tema General Hospital of Ghana.

## **1.3 PURPOSE OF THE STUDY**

The purpose of study is to investigate the various ways to prevent and manage pregnancy induced hypertension among women at the Tema General Hospital.

## **1.4 RESEARCH OBJECTIVES**

The objective of the study research is to:

- Determine the measures to prevent pregnancy induced hypertension
- Assess the various ways of managing pregnancy induced hypertension

## **1.5 RESEARCH QUESTIONS**

In the course of research the following questions will be asked:

- How can pregnant women contribute to the prevention of pregnancy induced hypertension?
- What measures can be taken to manage pregnancy induced hypertension?

## **1.6 SIGNIFICANCE OF THE STUDY**

The outcome of this research will:

- Help reform nursing practices on the prevention and management of pregnancy induced hypertension.
- Contribute to literature currently available about the condition in the country to serve as a tool for future reference.
- Help in policy formulation by the ministry of health on prevention and management of pregnancy induced hypertension.

## **1.7 OPERATIONAL DEFINITION OF TERMS**

- Prevention: stopping something from occurring
- Management: a way of dealing with an already existing problem with available resources
- Pregnancy induced hypertension: increased blood pressure (more than 140/90) maintained over a long period of time during pregnancy
- Maternal: matters related to pregnant women and a mother shortly after birth
- Pregnancy: conception of a baby

## **1.8 LITERATURE REVIEW**

### **1.81 Introduction**

This section seeks to review literature and information relevant to the topic understanding. This section deals with theoretical frame works and review of topics and empirical facts related to topic understandings.

The literature will be reviewed under the following headings:

- Prevention of pregnancy induced hypertension.
- Management of pregnancy induced hypertension.

### **1.82 Prevention of pregnancy induced hypertension**

Senah (2003) reported in his review that sub-Saharan African women had a lifetime risk of 1 in 21 of dying due to childbirth which is 400 times higher compared to that of their counterparts in Western Europe or North America. He also noted that maternal death is still a challenge in developing countries and this could be due to the medical bias used in addressing the problem. Senah (2003) noted that the cause of the problem was not only medical but could be lifestyle and economical and any interventions designed against it must consider these dynamics. To buttress this point, Senah (2003) referred to Dubos (1965) who propounded that the virulence of specific causative organisms is not responsible for the occurrence and prognosis of diseases but rather the lifestyle of people.

Senah (2003) in his review noted that about half a million women worldwide loose their lives from pregnancy-related complications and majority of them are in the third world. He also reported that in Ghana there is a high loss of maternal lives due to adverse pregnancy outcomes. He tried to give a reason for this high rate to be the result of the complex biological and cultural indices that determine maternal mortality. (Senah 2003)



NM Saleh et al., in 2013 conducted a research on the impact of socio-economic, lifestyle habits, and obesity in developing of pregnancy-induced hypertension in fast-growing country.

The aim of the study was to determine the prevalence and associated risk factors of pregnancy-induced hypertension (PIH) in the third trimester of Arab women and their neonatal outcome

The study was based on pregnant women in third trimester from the first week of January 2010 to April 2011. A total of 2,056 pregnant women, who had any kind of maternal complications, were 1,608 women (78.2%) expressed their consent to participate in the study (NM Saleh, 2013)

Pregnant women with Qatari nationality were 30% more likely to have PIH. Those living in villas were 50% more likely than those living in apartments and 40% more likely than those living in traditional houses to have PIH. The odds of PIH linearly increase with each decrease of 5,000 QAR in monthly income from > 20,000 to 10-15,000 and then it starts decreasing from 10,000 to < 5,000 monthly income.

Qatar has a high prevalence of PIH compared to both regional and global rates. Maternal age > 30 increased BMI, previous abortion, lack of antenatal care, and physical activity were found to be significantly associated with increased risk of PIH in Arab women and could be potentially modifiable risk factors. (NM Saleh, 2013).

Although PIH has been known for ages its etiology is still not very clear, thus making its diagnosis and treatment a big challenge for clinicians. Zhang et al. (1997) noted that based on empirical observations, pregnancy-induced hypertension can be subdivided based on the prognosis of levels of blood pressure and urine protein, whether there are seizures and also when the symptoms were first observed that is before, during or after delivery. It is still not clear whether the subdivisions of this condition have unique pathophysiology or are as a result of the disease prognosis.

In a later work by Zhang et al. (2001) they also confirmed that first time pregnancy-induced hypertensive women have higher risk of recurrence of PIH and this is dependent on how early it is experienced. They reported that primigravid women have a lesser risk for increased BP without proteinuria than for increased BP with proteinuria and multi organ dysfunction and the risk increased in those who had pre-gestational chronic hypertension who developed proteinuria and multi organ dysfunction. (Zhang et al. 1997)

Hypertension may develop during pregnancy or with the use of oral contraceptive pills (OC pills). Although the precise manner by which this rise in blood pressure occurs is unknown, appropriate management of the problem can protect against the consequences. The use of hormonal replacement therapy after menopause is not associated with a rise in blood pressure, and appears to provide significant protection against coronary heart disease. . (Kaplan NM., 1988)

Research has shown that some pregnancy induced hypertension (PIH) cases had prior undetected hypertension. For example, a kidney biopsy 6 months postpartum (when all PIH induced morphologic changes have normally subsided in idiopathic PIH cases) revealed that 65.5% of PIH patients actually had renal disease. A 1978-1980 study showed risk factors to include nulliparity, increasing age, black race, multiple gestations, concomitant heart or renal disease, and chronic hypertension. Even though physicians have depended on screening for elevated blood pressures in the 2nd trimester to hedge eclampsia, a study demonstrated that only 8.7% of nulliparas with diastolic blood pressure 80 mmHg and none 90 mmHg developed eclampsia. Pathogenesis of PIH appears to be reduced uteroplacental perfusion. .( Kaplan NM.,1988).This reduction may be caused by disturbed prostaglandin relationships, increased placental production of progesterone, increased amounts of atrial natriuretic peptide, or increased amounts of a digoxin like immunoreactive

substance that inhibits the sodium-potassium ATPase pump. Traditional treatment for PIH consists of bed rest, nutritious diet, and hypertensive drugs. A controlled study revealed, however, that drug therapy of maternal blood pressure did not change perinatal outcome and increased foetal growth retardation. Oral contraceptives (OCs) may induce high blood pressure in women 35 years old, smokers, and obese women. This can be managed by using the following guidelines: using the lowest effective OC dose of oestrogen and progestin, providing a 6 month supply, monitoring blood pressure frequently, and discontinuing OC use if blood pressure rise 10/5 mmHg. Postmenopausal hormonal replacement therapy decreases the risk of vascular diseases and does not affect blood pressure. (Kaplan NM, 1988)

Pregnancy-induced hypertension has an immunological basis, since it occurs mainly in nulliparous women and rarely affects parous women unless there is partner change (Robillard et al., 1993). In their report, Robillard et al. (1994) stated that there is a strong converse relationship between the frequency of coitus by couples and the probability of the woman presenting with PIH. This means that the higher the frequency of unprotected sexual intercourse the less likelihood that the woman may suffer PIH due to contact of spermatozoa with the female genital tract.

In 2002, Dekker noted that there were two schools of thoughts regarding the etiology of PIH and these were the vascularists who propounded that pregnancy induced hypertension is a condition that results from the mother seeing its fetus as foreign. It occurs mainly in nulliparous women and this could be due to the maternal immune system reacting to a genetically foreign fetus (Dekker, 2002). The assumption is that in primigravid women, they are not familiar with the fetus and may see it as “non-self” but in future pregnancies it adapts better to the fetus (Do et al., 2002).

A cross-sectional study was conducted by Adu Bonsaffoh et al. between January 1 and February 28, 2013 on maternal outcomes of hypertensive disorders in pregnancy at Korle bu teaching hospital, Ghana.

A total of 368 women were analyzed. Of 10 maternal deaths, 3 (30.0%) were due to hypertensive disorders in pregnancy, and specifically pre-eclampsia. Overall, 168 (45.7%) women with hypertensive disorders in pregnancy delivered by cesarean, 16 (4.3%) had placental abruption, 11 (3.0%) had pulmonary edema, 3 (0.8%) had HELLP syndrome, 2 (0.5%) had acute renal failure, 3 (0.8%) had an intracerebral hemorrhage or cerebrovascular accident, 21 (5.7%) were admitted to the intensive care unit, 7 (1.9%) had disseminated intravascular coagulation, and 58 (15.8%) had eclampsia. Cesarean delivery, admission to intensive care unit, and eclampsia were significantly more common in women with pre-eclampsia than in those with other hypertensive disorders.

This study showed that Hypertensive disorders in pregnancy are associated with high incidences of adverse maternal outcomes in Ghana, with significantly increased frequencies in women with pre-eclampsia (Adu-Bonsaffoh et al 2013)

A study of all cases of early onset pregnancy induced hypertension/eclampsia seen at the University of Benin Teaching Hospital, Benin City over a five-year period (March 1st 2000 to February 28th 2005). Only cases where the gestational age of the woman was certain, based on a record of the last normal menstrual period or an ultrasound scan before 20 weeks of gestation, were included in this study. Information bordering on socio demographic variables, clinical presentation, management and maternal fetal outcome were extracted from the departmental obstetric data sheets and patients' case notes. A systematic random sample of 200 out of a total of 437 women with a definitive diagnosis of late onset pregnancy induced hypertension/eclampsia

seen over the same period was done using a list of all cases of pregnancy induced hypertension/eclampsia made from the obstetric data sheets of all deliveries during the study period. Severity at presentation, selected measures of fetal outcome (severe birth asphyxia, abruption placenta, still births and early neonatal deaths) as well as obstetric interventions (induction of labor and caesarean section rate) and maternal mortality were compared between early onset and late onset cases of pregnancy induced hypertension/eclampsia. (Davey et al., 1988) Caesarean section was the mode of delivery in 58.7% of the study population, with 47.8% having a caesarean section without prior induction of labor. Twenty four (52.2%) had induction of labor with Misoprostol or Oxytocin, out of which 5 (20.8%) had failed induction necessitating a caesarean section. Measures of perinatal outcome showed that 31.9% of the babies had severe birth asphyxia; the still birth rate was 27.7% and early neonatal death rate, 38.3%. The perinatal survival rate was 34.0%.

An assessment of the effect of birth weight on perinatal survival showed that among the 16 surviving fetuses 8(50%) had birth weight of 1.5 kg and above and 15(93.8%) had birth weight of 1kg or above. In contrast among the 19 fetuses that presented alive but had fresh still births or early neonatal deaths, only 1(5.3%) weighed 1.5 kg or above while 11(53.9%) weighed 1 kg and above. These differences were statistically significant. Hence babies were more likely to survive the higher their birth weight with the chances significant higher when they weighed 1.0kg and above 1.5 kg. (Davey et al, 1988)

Pregnancy-induced hypertension (PIH) complicates 6–10% of pregnancies. It is defined as systolic blood pressure (SBP) >140 mmHg and diastolic blood pressure (DBP) >90 mmHg. It is classified as mild (SBP 140–149 and DBP 90–99 mmHg), moderate (SBP 150–159 and DBP 100–109 mmHg) and severe (SBP  $\geq$ 160 and DBP  $\geq$ 110 mmHg), (Papakatsika et al., 2015).

Gestational hypertension and preeclampsia (PE), pre-existing hypertension plus superimposed gestational hypertension with proteinuria and unclassifiable hypertension. PIH is a major cause of maternal, foetal and new born morbidity and mortality. Women with PIH are at a greater risk of abruption placentae, cerebrovascular events, organ failure and disseminated intravascular coagulation (Papakatsika et al 2015)

A prospective study conducted between January, 1985 and September, 1987 involved 60 pregnant women who had previously suffered from hypertension in pregnancy with or without foetal and maternal complications by Hachicha J, et al. in 1989.

Thirty women received aspirin 250 mg every other day and dipyridamole 300 mg per day, starting from the 3rd month of pregnancy (group I); 30 women were examined regularly from the onset of pregnancy and received the conventional symptomatic treatment of complications that occurred (group II). Women in these two groups were similar in age, parity and previous obstetrical complications. Twenty-five women of group I had a perfectly normal pregnancy, as against 5 women of group II. Hypertension and/or proteinuria were observed in 5 women of group I and 15 of group II. The 13 severe complications recorded (foetal death, eclampsia, retro placental haematoma) occurred exclusively in women of group II. The duration of pregnancy and weight of the new born were significantly greater in group I than in group II. Thus, antiplatelet appear to have an uncertain preventive effect on hypertension of pregnancy and a much more obvious prophylactic effect on major foetal and maternal complications. (Hachicha J, et al 1989)

A multicenter, randomized controlled double-blind trial in 5 maternity hospitals in Australia assessed the effect of a daily supplement of calcium (1.8 g oral calcium) taken daily until delivery, from less than 24 weeks' reduced the risk of preeclampsia and the risk of preterm birth. (Robinson et al 1999)

No significant differences were seen between the 2 groups in the frequency of pregnancy-induced hypertension, although the study only had statistical power to detect large differences in this outcome. An updated systematic review of the 9 randomized trials of calcium supplementation in pregnancy shows a significant reduction in the risk of hypertension and preeclampsia although no effect on preterm birth. (Robinson et al 1999) Calcium supplementation during pregnancy reduced the risk of preeclampsia and preterm birth in this nulliparous population. The available evidence for systematic review of all the randomized trials of calcium supplementation shows benefit in reducing the risk of pregnancy induced hypertension. (Robinson et al 1999)

It is possible to prevent the development of hypertension and to lower blood pressure levels by simply adopting a healthy lifestyle (Greenwood et al, 1996). The frustration of advocating lifestyle changes are obvious to healthcare providers in clinical practice. Community resources are rarely available or convenient, counseling takes considerable time, and many patients do not adhere to treatment. Even with extensive publicity regarding the importance of blood pressure control and the benefits of drug therapy, only 16% of people with hypertension in Canada have the condition under control, Campbell et al (1999). Physicians and other health care professionals could also be strong advocates for the community resources to assist patients with lifestyle change (Lombard 1996)

Lifestyle modification, previously termed non-pharmacologic therapy, plays an important role in hypertensive as well as non-hypertensive individuals, (Greef 2006). In hypertensive individuals, lifestyle modifications can serve as initial treatment before the start of drug therapy and as an adjunct to medication in persons already on drug therapy. (Greef 2006)

### **1.83 Management of pregnancy induced hypertension**

Muti, et al in 2015 conducted an analytic cross sectional study at Harare Central Hospital on the prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. Harare City experienced an increase in referrals due to PIH to central hospitals from 2009 to 2011. (Muti et al 2015).

PIH prevalence was 19.4 %. Women with PIH were three times more likely to deliver a low birth weight baby 4.3 times more likely to have still birth and four times more likely to have a baby with low Apgar score at 5 minutes compared to women without PIH. There was no statistically significant difference in delivery before 37 weeks gestation between women with PIH and those without 12.5 % of the women delivered by caesarean section. Methyldopa was the drug of choice for management of PIH. Less than half of the health workers had sufficient knowledge on definition or management of PIH. Delay in seeking care and shortage of resources were the major reported challenges in the proper management of PIH. (Muti et al 2015). Women with PIH was at higher risk of adverse pregnancy outcomes than those without. Poor knowledge of management of PIH and inadequate resources are a threat to the proper management of PIH. This underscores the need for increased human resources and capacity building as well as resource mobilization for proper management of pregnant women. Urinalysis must be routinely done for all pregnant women regardless of their blood pressure. . (Muti et al 2015).

A prospective study was conducted over a period of one year in inpatients of Gynecology and Obstetrics Department at Bharati Hospital, Pune by Sajith et al (2014). The aim of the study was



to determine the frequency and distribution of different types of hypertensive disorders of pregnancy and to assess the drug utilization pattern of antihypertensive drugs in pregnancy.

Patients diagnosed as hypertensive disorder of pregnancy were taken for primary evaluation. The data regarding demographic details, presenting complaints, gestational age, obstetrics history, diagnosis, blood pressure monitoring, current medications, antihypertensive drugs prescribed were collected and the utilization of antihypertensive drugs in pregnancy was evaluated. (Sajith et al 2014)

A total of 1330 pregnant women visited the OBG department, out of which 104 patients were diagnosed with hypertension. The overall prevalence of hypertensive disorders in pregnancy was 7.8%. The mean maternal age was 23.8 years during the hospital admission. The prevalence of Preeclampsia, gestational hypertension, chronic hypertension, and eclampsia were 5.6 %, 1.5%, 0.15 %, and 0.60 % respectively. Highest incidence of hypertension was occurred in age group of 18-22 years (41.3%) and primigravidae patients (53.8%). A majority of patients 67.3 % were on combination therapy whereas 32.7% were on Monotherapy. (Sajith et al 2014)

Methyldopa was the commonest prescribed antihypertensive as monotherapy (17.3 %) as well as in combination therapy (i.e. 28.8 % with methyldopa and Nifedipine).

The incidence of hypertensive disorders in pregnancy was high. Early diagnosis and treatment through regular antenatal checkup is a key factor to prevent PIH and its complications. The incidence of combination therapy was high. Methyldopa was the commonest prescribed antihypertensive in monotherapy and combination, as it is safest during pregnancy. (Sajith et al 2014)

According to Cífková et al. (2006), non-pharmacological treatment of hypertension must be considered in pregnant women with systolic blood pressure 140-150 mmHg or diastolic blood pressure 90-99 mmHg. Salt restriction is not recommended, as well as weight reduction in obese women. Systolic blood pressure  $\geq$  170 mmHg or diastolic blood pressure  $\geq$  110 mmHg in pregnant women must be considered serious condition necessitating hospitalisation. Pharmacological therapy should include labetalol IV or methyldopa or Nifedipine administered orally. Intravenous administration of dihydralazine is no longer a therapy of choice, for its use is connected with increased occurrence of adverse effects. The threshold values for commencement of anti-hypertension therapy are systolic blood pressure 140 mmHg or diastolic blood pressure 90 mmHg in females with gestational hypertension without proteinuria or with pre-existing hypertension before commencement of 28th week of pregnancy (Cífková . et al 2006). Drug administration to reduce hypertension is instituted after reaching the same threshold values in females with gestational hypertension and proteinuria or after occurrence of the symptoms any time during pregnancy, with the same threshold values of blood pressure in the case of pre-existing hypertension at the presence of accompanying diseases or organ malfunction and further in the case of pre-existing hypertension and gestational hypertension. In other cases drug treatment of hypertension is recommended at systolic blood pressure values of 150 mmHg or diastolic blood pressure values of 95 mmHg. Unless serious hypertension is involved, the drugs of choice include methyldopa, labetalol, calcium channel blockers and beta-blockers. Calcium channel blockers are considered safe, unless administered concurrently with magnesium sulphate (risk of hypotension in the case of potential synergism). ACE inhibitors and angiotensin blockers II (AT1-blockers) are contraindicated in pregnancy. Treatment with diuretics is not substantiated, unless oliguria is

present. IV magnesium sulphate is recommended for prevention of eclampsia and spasm treatment. (Cífková R. et al 2006).

Calcium is a major nutrient implicated in pregnancy-induced hypertension (PIH). Aside dietary sources of calcium and other essential nutrients required to prevent adverse pregnancy outcomes, the practice of geophagia (consumption of soil/clay) has been reported to provide calcium needed to prevent hypertension during pregnancy. . (Sackey D.S., 2017)

These soils are shown to also contain significant amount of lead and other heavy metals which have been associated with hypertension. The aim of the study was to determine the relationship between geophagia and hypertensive disorders of pregnancy, and assess the dietary intakes and health outcomes in participants. The study was a case-control involving 30 women with PIH without proteinuria and 70 normotensive pregnant women. Percentage intakes of macronutrients for normotensives were within the Adequate Macronutrient Distribution Range and PIH group recorded higher intakes of carbohydrate (16.16 %), lower intakes of protein (5.61 %) and fat (11.99%). Sources of protein among PIH were mainly from cereal based products. Dietary calcium intakes in both groups were lower than recommended (<1,000 mg/day). Geophagia and energy drink intake was not significantly associated with PIH. Coffee intake significantly increased the risk of hypertension while food supplementation during pregnancy significantly reduced the risk of PIH Hypertensives recorded impaired fasting blood glucose ( $5.77\pm 1.71$  mmol/L) higher levels of urea ( $3.60\pm 1.29$  mmol/L) and creatinine ( $382.67\pm 11.17$   $\mu$ mol/L). There was no significant difference in serum calcium and ferritin levels in both groups. Women with PIH practicing geophagia recorded significantly low levels of hemoglobin, calcium), and ferritin than those who did not. . (Sackey D.S., 2017)

The population of pregnant women in this study had considerably low intakes of energy and nutrients. Recommendations by the World Health Organization (2011) for the prevention and treatment of hypertension in pregnancy, is to administer 1.5-2.0 g of elemental calcium to pregnant women in areas where dietary intakes of calcium are low. The benefits of supplementation with calcium in PIH is however inconclusive and inconsistent therefore there is the need for measures to ensure adequate maternal nutrition for a positive health and pregnancy outcome. (Sackey D.S., 2017)

The management of pregnancy induced hypertension using antihypertensive drug therapy remains contentious. A number of agents have a favorable benefit risk profile for use in women with pregnancy induced hypertension. These include alpha methyldopa, beta-blockers, hydralazine, pazosin, calcium channel antagonist. (Lowe, 1992)

Calcium channel blocker has the ability to inhibit contractility in smooth muscle cells. They have already establish a role in the treatment of pregnancy induced hypertension. (Papatsonis, 2001)

Nurses can encourage all women planning pregnancy to work towards achieving a healthy body weight and consume a healthy diet to replete with recommended nutrients. Current guidance is to limit foods with added sugars and those that are high in fat and eat a variety of fruits, grains vegetables etc. (Anderson et al, 2017)

According to the clinical practice guideline of the King Edward Memorial hospital 2015, Gestational hypertension is the new onset of hypertension arising after 20 weeks gestation, has no additional maternal or fetal features of preeclampsia and resolves within 3 months postpartum

The earlier the gestation at presentation and the more severe the hypertension, the higher the likelihood of developing preeclampsia or an adverse pregnancy outcome.

Any woman presenting with new hypertension after 20 weeks gestation should be assessed for signs and symptoms of preeclampsia. Initially assessment and management in a day assessment unit may be appropriate. If features of preeclampsia are detected, admission to hospital is indicated. The presence of severe hypertension, headache, epigastric pain, oliguria or nausea and vomiting are ominous signs which should lead to urgent admission and management, as should any concerns about fetal wellbeing. (Clinical practice guideline, King Edward Memorial hospital 2015).

Preeclampsia is a progressive disorder that will inevitably worsen if pregnancy continues. Delivery is the definitive management and is followed by resolution, generally over a few days but sometimes much longer. At mature gestational age, delivery should not be delayed. Even so, it is important to control severe hypertension and other maternal derangements before subjecting the woman to the stresses of delivery.

Prolongation of pregnancy in the presence of preeclampsia carries no benefit for the mother but is desirable at early gestations to improve the fetal prognosis as in general, fetal outcome is proportional to gestational age at delivery. In cases of preterm preeclampsia before 34 weeks, delivery should be delayed for at least 24-48 hours if maternal and fetal status permit, to allow fetal benefit from antenatal corticosteroids administered for lung maturation. Continuation of pregnancy carries fetal risk and some stillbirths will occur despite careful monitoring. (Clinical practice guideline, King Edward Memorial hospital 2015)

The management of women with preeclampsia between gestational ages of 24-32 weeks should be restricted to those centers with appropriate experience and expertise. In many cases, the timing of delivery will be based upon a number of factors, maternal and/or fetal rather than a single absolute indication for delivery.

Evidence suggests that antihypertensive drug therapy confers no clear benefit to women with mild pre eclampsia. Randomized control trials of women with mild pre eclampsia remote from term, which compared antihypertensive drug therapy with no medication or a placebo, have been reported. In some of these trials, the frequency of proteinuria, progression to severe disease, and neonatal respiratory distress syndrome were higher in the women not treated. These observations however have not been confirmed in other trials. (Clinical practice guideline, King Edward Memorial hospital 2015)

## **CHAPTER TWO**

### **RESEARCH DESIGN AND METHOD**

#### **2.0 INTRODUCTION TO CHAPTER**

This chapter describes the methodology employed in the study including the research design, research setting, population, sampling method and sample size, data collection tool, data collection procedure and analysis, pretesting, validity and reliability and ethical consideration and limitation of study.

#### **2.1 RESEARCH DESIGN**

The researchers used the quantitative cross sectional research design. A cross sectional design is fast and inexpensive, it provides a snapshot of the outcome and the characteristics associated with it at a specific point and it is carried out over a short period, data can also be collected on different variables. (Levin, 2006)

#### **2.2 RESEARCH SETTING**

Research setting is the physical, social and cultural site in which the researcher conducts (Bhattacharya, 2008). This research was conducted at the Tema General Hospital.

The Tema General Hospital was built in 1954 to cater for workers who constructed the Tema Harbor. The hospital is located at Tema community 9 in the Tema metropolis. The geographical location of the hospital surround a road network and commercial nature making it one of the busiest hospitals in the country as it serves surrounding towns and villages.

It is also a major referral point for all clinics and hospitals in the metropolis and the first point of most call for most of the numerous road traffic accidents especially those that happen on the Accra Tema motorway.

The hospital has various departments which include internal medicine, general surgery, pediatric, theatre, obstetrics and gynecological care as well as accident and emergency services among others. Its specialized clinics and units are eye, dental, diabetic, sickle cell, and dermatology clinics with others being anesthetic, chest, hypertensive and ENT clinics and Fevers Unit. The Tema General Hospital supporting services are laboratory, blood bank, radiology, ultrasound scan, pharmacy and physiotherapy. With the introduction of the National Health Insurance Scheme (NHIS) some few years back, attendance at the hospital has increased over the years with a record of a total of 207,329 at the Out-Patient Department (OPD) in 2008 compared with 180,914 in 2007.

With a 280-bed capacity in its 10 wards, a total of 19,685 patients were admitted by the hospital in 2008 out of which 13,800 and 5,885 were females and males respectively.

The mission of the hospital is to:

- 1) Provide comprehensive, affordable and quality 24 hour general and specialist healthcare services to our clients.
- 2) Uphold dignity of life.
- 3) Support research and regular education for Staff to update their knowledge attitude and skills.
- 4) Create an enabling workplace environment for Staff.

And the vision is:

To be the leading Health care provider in Tema Metropolis and its environs and to compete favorably with leading healthcare institutes in the country



## 2.3 TARGET POPULATION

A target population for a survey is the entire sets of unit for which the survey data are to be used to make inferences. (Lavraskas P.J., 2008)The population of this study was all pregnant women who were diagnosed of pregnancy induced hypertension attending ante natal clinic at the Tema General Hospital.

### - Inclusion Criteria

1. Pregnant women who are 18 years and above and had pregnancy induced hypertension.
2. Pregnant women who had more than one child

### - Exclusion Criteria

1. Women who had pregnancy induced hypertension but are below 18 years.

## 2.4 SAMPLING METHOD AND SAMPLE SIZE

### Sampling method

The purposive sampling method was used in this research. It is the type of non- probability sampling technique that is most effective when one needs to study a certain cultural domain with knowledgeable experts within. (Snedecor, 1939)

### Sample size

The Cochran's Sample size formula was used to calculate the sample size for the study.

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where Z is confidence interval of 95% (1.96),

E is margin of error or desired level of precision,

P is the estimated proportion of the population which has the attribute in the question

And q is (1-P)

Using 50% as p

$$no = 1.96^2 \times 0.5 (1-0.5) / (0.05)^2$$

$$no = 3.8416 \times 0.25 / 0.0025$$

$$no = 0.9604 / 0.0025$$

no=384.16 therefore the sample size is 384

Sample size was 348 but due to limited financial and time constraints researchers were able to use 25 respondents for the study.

## **2.5 DATA COLLECTION TOOL**

A well-structured, researcher assisted questionnaire, mainly made up of close ended questions was used to collect data for study. The questionnaire was organized according to the objectives of the study. The questionnaire will consist of three sections. Section A will consist of the demographic data of respondents, Section B will deal with the preventive measures to pregnancy induced hypertension and Section C on the management practices of pregnant women diagnosed with pregnancy induced hypertension.

## **2.6 DATA COLLECTION PROCEDURE**

An introductory letter from the Head of Department, School of Nursing, Central University (Miotso), was given to the Director of Nursing Department of the Tema General Hospital. The Deputy Director of nursing services (DDNS) of the maternity unit was informed about the study for their support and cooperation in the recruitment of respondents for the study. A verbal consent of the selected respondents was sought and their confidentiality was assured. The questionnaires was self-administered and therefore allowed enough time to fill them.

## **2.7 VALIDITY AND RELIABILITY OF STUDY**

Validity in research is the degree to which a test measures what it is supposed to measure. (Mugenda & Mugenda, 2008). Validity was ensured by using simple language and non-technical terms in the construction of the questionnaires. Reliability is the measure of the degree of which a research instrument yields consistent results or data after repeated trials and it is influenced by random errors. (Mugenda & Mugenda, 2008) To ensure reliability of the questionnaire, the researchers designed the questionnaire to cover all the objectives of the study. The questionnaire will also be done in consultation with supervisor for thorough examination and necessary corrections done before it is administered to respondents.

### **- Pretesting**

A pretest of questionnaire was carried out on at least five pregnant women diagnosed with pregnancy induced hypertension at the Prampram Polyclinic. This helped to restructure and clear all forms of ambiguous questions and ensure that all questions set are free from bias.

## **2.8 ETHICAL CONSIDERATIONS**

The respondents were informed about the purpose of study and verbal consent was sought from each of them before questionnaire was administered. Researchers ensured that the findings of the study would not cause harm to respondents. Strict privacy and confidentiality was ensured at all time, and all respondents were given options to withdraw from the study at any given time without any consequences; no names were also included in the data collection procedure.

## **2.9 LIMITATION OF STUDY**

The following limitations were encountered in this research study. The process of selecting respondents randomly from a sample was challenging since respondents were not uniform in their attendance. It was also observed that some selected respondents were very reluctant to respond to the questionnaire. The survey relied upon respondent's self- assessment on PIH information. There were also limited time and resources constraints which could otherwise extended the coverage of the study. Nonetheless, these limitations encountered in the research study did not influence the interpretation of the study.

## **CHAPTER THREE**

### **RESULTS AND DISCUSSIONS**

#### **3.0 INTRODUCTION TO CHAPTER**

This chapter presents the results of the study in the form of frequency distribution tables, bar graphs and pie charts. This chapter also includes the discussions and findings of the results in the literature reviewed in the previous chapter. Recommendations have also been made based on the findings of the study.

#### **3.1 APPROACH TO DATA ANALYSIS**

Data was entered and screened with Microsoft excel and analyzed with Statistic Package for Social Sciences (SPSS version 22) software after coding the individual questions. The results have been presented as mean scores, percentages and frequencies in tables and graphs.

## 3.2 FINDINGS

### Respondents Demographics

The study analysed data on the demographics of the respondents

**Table 3.1: Age of Respondents**

Age Range	Number of Respondents	Percentage of Respondents	Cumulative Percentage
18 – 22 years	0	0	0
23 – 28 years	12	48	48
29 – 34 years	8	32	80
35 – 40 years	4	16	96
40 years plus	1	4	100
<b>Total</b>	25	100	100

**Source: Field data, 2019**

Table 3.1 presents results on respondents' age distribution. The results of the analysis shows that none of the respondents were aged between 18 years and 22 years. 12 of the respondents, representing 48% were aged between 23 and 28 years. Table 3.1 also indicated that 8 of the respondents, representing 32% were aged between 29 years and 34 years. This means that 80% of the respondents were aged between 23 years and 34 years. 4 of the respondents, representing 16% were aged between 35 years and 40 years. This brings to 96% the percentage of respondents aged between 35 years and 40 years. One of the respondents, representing 4% was above 40 years.

The study also analysed the Body Mass Index (BMI) of respondents

**Table 3.2: BMI of Respondents**

<b>BMI</b>	<b>Number of Responses</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
26 – 29	9	36	36
30 – 39	12	48	84
Above 40	4	16	100
<b>Total</b>	25	100	100

**Source: Field data, 2019**

Table 3.2 presents the BMI of the respondents. The results suggests that 9 of the respondents, representing 36% have BMI between 26 and 29 whilst 12 of the respondents, representing 48% have BMI between 30 and 39. The percentage of responses with BMI between 26 and 39 is 84%. 4 of the respondents have BMI above 40.

The study also analysed data on the Marital Status of respondents

**Table 3.3: Marital Status**

<b>Marital Status</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
Single	6	24	24
Married	19	76	100
Divorced	0	0	100
Widowed	0	0	100
<b>Total</b>	25	100	100

**Source: Field data, 2019**

The analysis on respondent's marital status revealed that 6 of the respondents, representing 24% were single whilst the remaining 19 respondents, representing 76% were married. None of the respondents were neither divorced nor widowed.

The analysis of respondents' demographic included analysis of respondents' level of education

**Table 3.4: Respondents' Level of Education**

<b>Level of Education</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
Primary	4	16	16
JHS	17	68	84
Secondary	0	0	84
Tertiary	3	12	96
None	1	4	100
<b>Total</b>	<b>25</b>	<b>100</b>	<b>100</b>

**Source: Field data, 2019**

Table 3.4 shows that 4 of the respondents, representing 16% had up to primary education whilst 17 of the respondents, representing 68% had up to JHS education. The result of the analysis also shows that none of the respondents has only secondary education. From primary to JHS education bracket the study shows that there are 84% of the respondents. The 3 of the respondents, representing 12% had tertiary education whilst 1 of the respondent, representing 4% had no education.



The study analysed the religious affiliations of the respondents

**Table 3.5: Religious Affiliation of Respondents**

<b>Religion</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
Christian	21	84	84
Muslim	4	16	100
Traditionalist	0	0	100
Others	0	0	100
<b>Total</b>	<b>25</b>	<b>100</b>	<b>100</b>

**Source: Field data, 2019**

From the results of the data analysis in Table 3.5 all respondents are either Christians or Muslims. 21 of the respondents, representing 84% were Christians whilst 4 of the respondents, representing 16% were Muslims.

The study also analysed the occupation of the respondents as shown on Table 3.6

**Table 3.6: Occupation of Respondents**

<b>Occupation</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
Housewife	4	16	16
Trader	15	60	76
Public Servant	4	16	92
Civil Servant	2	8	100
Others	0	0	100
<b>Total</b>	25	100	100

**Source: Field data, 2019**

The result of the analysis shows that 4 of the respondents, representing 16% were housewives. 15 of the respondents, representing 60% were traders whilst 4 of the respondents, representing 16% were public servants. Table 3.6 also shows that 2 of the respondents, representing 8% were civil servants.

The study also analysed parity of respondents.

**Table 3.7: Parity of Respondents**

<b>Parity</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
Two	13	52	52
Three	8	32	84
Four	2	8	92
Five	0	0	92
Above five	2	8	100
<b>Total</b>	25	100	100

**Source: Field data, 2019**

The result as shown on Table 3.7 shows that 13 of the respondents, representing 52% have had pregnancy twice whilst 8 of the respondents, representing 32% have had pregnancy thrice. The analysis also shows that 2 of the respondents, representing 8% have had pregnancy four times with 2 of the respondents, representing 8% having pregnancy more than five times. It is imperative to note that 92% of the respondents have had pregnancy from two to four times.

The study also analysed the trimester of pregnancy in which the respondents are.

**Table 3.8: Trimester of Pregnancy**

<b>Trimester of Pregnancy</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>	<b>Cumulative Percentage</b>
First trimester	4	16	16
Second trimester	15	60	76
Third trimester	6	24	100
<b>Total</b>	25	100	100

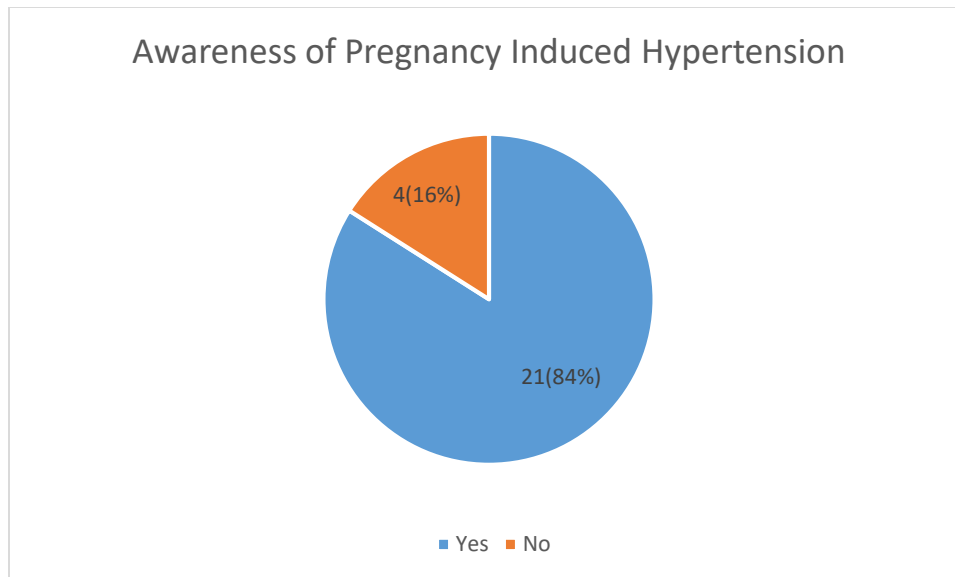
**Source: Field data, 2019**

The results of the analysis as shown on Table 3.8 indicated that 4 of the respondents, representing 16% were in their first trimester of their pregnancy whilst 15 respondents, representing 60% were in their second trimester of their pregnancy. This means that 76% of the respondents were in their first and second trimester of pregnancy. The result of the analysis also indicates that 6 of the respondents, representing 24% were in their third trimester.

### Measures Pregnant Women use to Prevent Pregnancy Induced Hypertension

The study, as part of efforts to achieve its objectives analysed the measure pregnant women adopt to prevent pregnancy induced hypertension.

The study specifically analysed the extent to which pregnant women are aware of pregnancy induced hypertension.

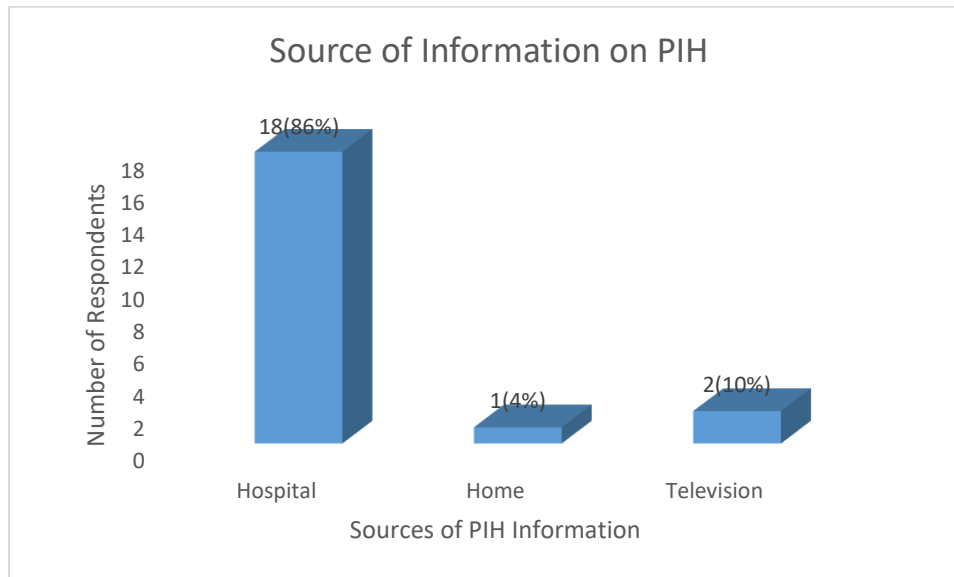


**Figure 3.1: Awareness of Pregnancy Induced Hypertension**

**Source: Field data, 2019**

Figure 3.1 presents a pie chart which shows absolute values of the number of respondents and percentage of respondents in parenthesis. Figure 1 shows that 21 respondents, representing 84% were aware of pregnancy induced hypertension whereas 4 of the respondents, representing 16% were not aware of pregnancy induced hypertension.

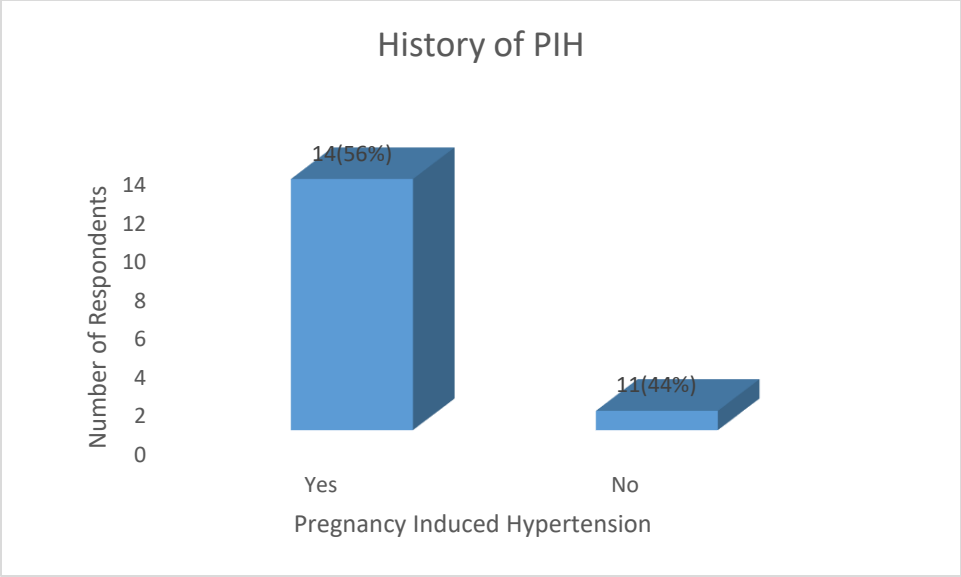
The study analysed the source of information on pregnancy induced hypertension for the 21 respondents who stated they have heard of pregnancy induced hypertension.



**Figure 3.2: Sources of Information on PIH**

**Source: Field data, 2019**

Figure 3.2 shows that out of the 21 respondents who have information on pregnancy induced hypertension 8 of them, representing 86% got information on pregnancy induced hypertension from the hospital. One (1) of the respondents, representing 4% got the information from home whilst 2 respondents, representing 10% got information on pregnancy induced hypertension on the television. This makes the hospital the most important source of pregnancy induced hypertension awareness.

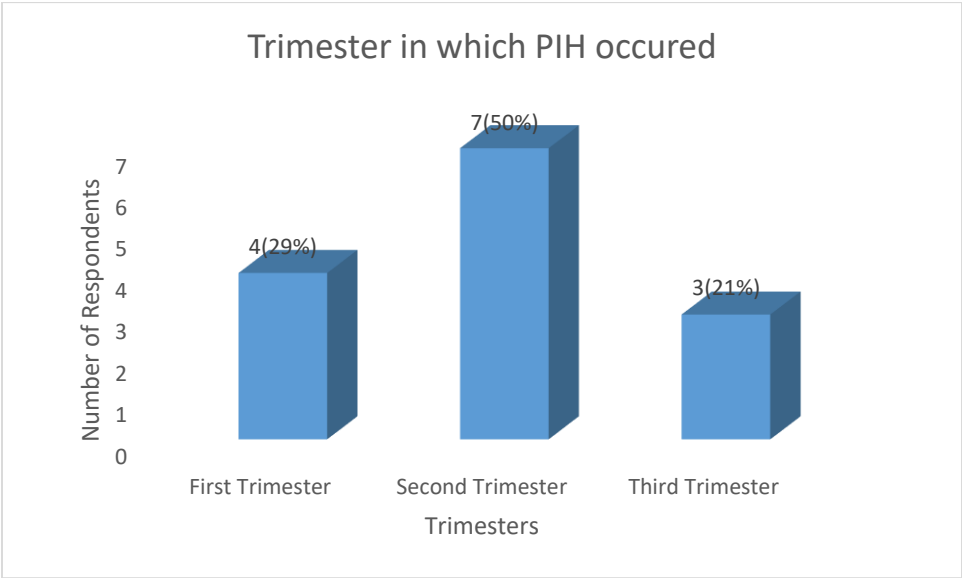


**Figure 3.3: History of Pregnancy Induced Hypertension**

**Source: Field data, 2019**

Figure 3.3 shows that 14 of the respondents, representing 56% have had pregnancy induced hypertension whilst 11 of the respondents, representing 44% have never had pregnancy induced hypertension.

The study analysed responses on the trimester the respondents had pregnancy induce hypertension.

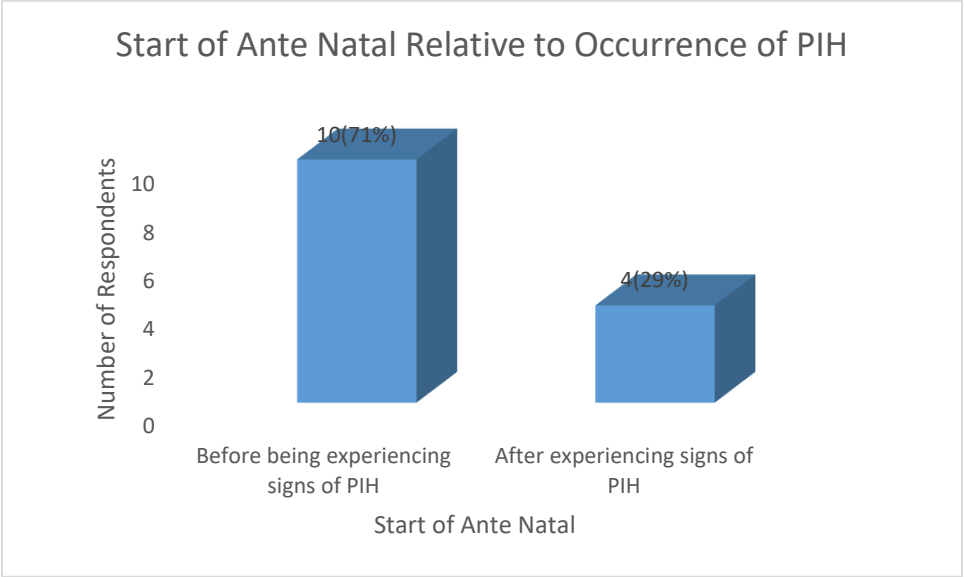


**Figure 3.4: Trimester of PIH Occurrence** Source: Field data, 2019

From figure 3.4 the results of the analysis indicated that out of the 14 respondents who have history of pregnancy induced hypertension (figure 3.3), 4 of them representing 29% has PIH in their first trimester, 7 of the respondents, representing 50% has PIH in their second trimester whilst 3 of the respondents, representing 21% had PIH in their third trimester.



The study analysed responses on when respondents started attending ante natal clinic relative to occurrence of PIH.

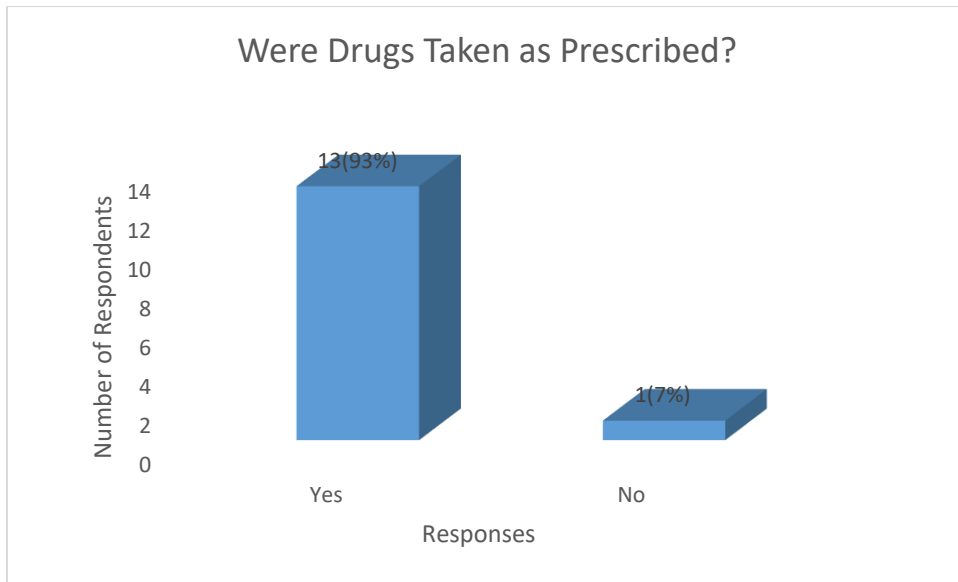


**Figure 3.5 Visit to the Ante Natal Relative to Occurrence of PIH**

**Source: Field data, 2019**

Figure 3.5 shows that out of the 14 respondents who have a history of PIH, 10 of them representing 71% started attending ante natal clinic before experiencing signs of PIH whilst 4 of the respondents, representing 29% started attending ante natal clinic before experiencing signs of PIH.

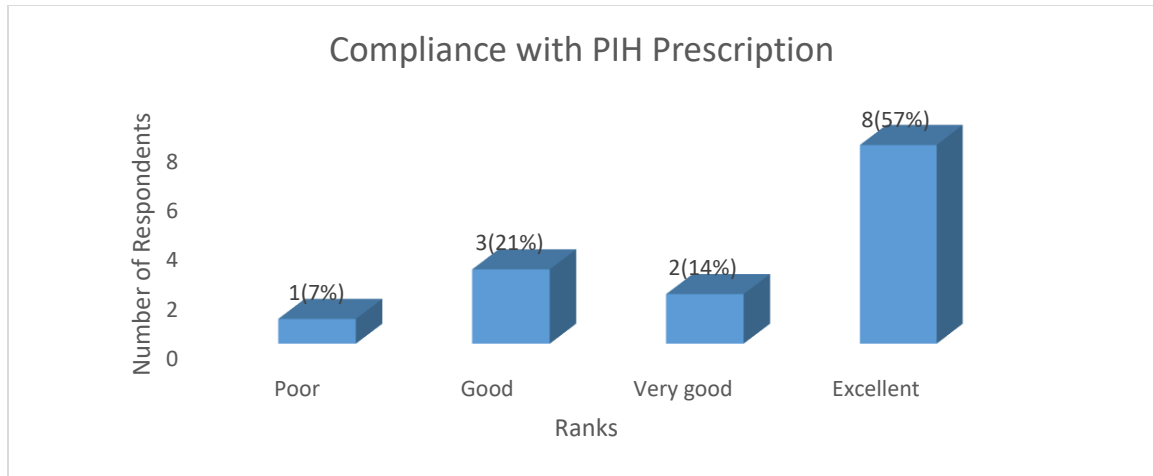
The study analysed data on drugs used for treating PIH.



**Figure 3.6: How Patients used PIH Drugs**

**Source: Field data, 2019**

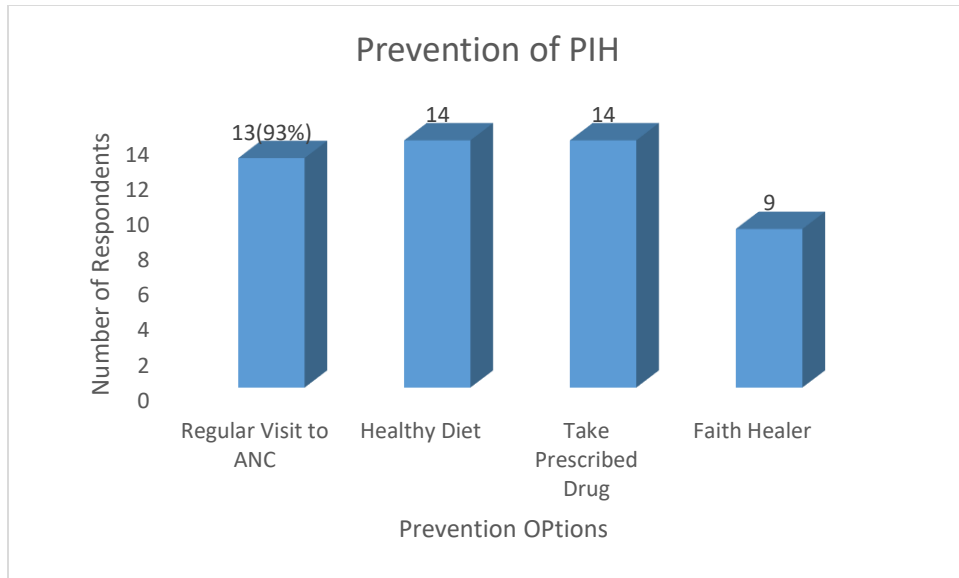
Figure 3.7 shows that 13 out of the 14 respondents with PIH history stated that they took the drug as prescribed with only one (1) of the respondents, representing 7% stated no to the question: “Were drugs taken as prescribed?” The study analysed the challenges with complying with treatment regime. The only respondent who could not comply with the treatment regime stated that forgetfulness is the reason for failing to comply. The study analysed responses on the opinions of respondents on PIH preventive measures.



**Figure 3.7: Ranking Compliance with Prescription**

**Source: Field data, 2019**

In ranking respondents with respect with compliance figure 3.8 shows that 1 respondent, representing 7% poorly complied with prescription, 3 of the respondents, representing 21% stated their compliance was good. The result of the analysis also shows that 2 of the respondents, representing 14% has a very good compliance with prescription whilst 8 of the respondents, representing 57% had an excellent prescription compliance.



**Source: Field data, 2019**

From figure 3.8 regular visit to Ante Natal Clinic (ANC) as a means of preventing PIH has 13 (93%) responses, 14 (100%) respondents for healthy diet, 14 (100%) respondents to the effect that taking prescribed drugs prevents PIH. 9 of the respondents, representing 64% stated that faith is important in preventing PIH.

### 3.3 Management of Pregnancy Induced Hypertension

The study is also aimed at investigating how PIH is managed.

The study analysed the various ways respondents think is best for managing PIH.

**Table 3.9: Management of PIH**

Management Options	Number of Respondents	Percentage of Respondents
Orthodox Drugs	14	100
Herbal Medicine	7	50
Exercise	14	100
Stress Reduction	14	100
Prayer	10	71

**Source: Field data, 2019**

Table 3.9 shows that in managing PIH, 100% of respondents suggested the use of orthodox drugs are important, 7 of the respondents, representing 50% suggested herbal medicine as being important in managing PIH. 100% of respondents stated that exercise is important in managing PIH. 100% of respondents stated that stress reduction is important in managing PIH. 10 of the respondents, representing 71% stated that prayer is important in managing PIH.

The study also analysed coping strategies of patients when they are diagnose of PIH.

**Table 3.10: Coping Strategies**

<b>Coping strategies</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>
Prayer	14	100
Friends	3	21
Family	6	43
Finance	10	71

**Source: Field data, 2019**

Table 3.10 shows that 100% of respondents adopt prayer as a coping strategy when diagnose with PIH. 3 of the respondents, representing 21% cope with consolation from friends whilst 6 of the respondents, representing 43% cope with consolation from family members. 10 of the respondents, representing 71% stated they are consoled by financial capabilities.

The study analysed responses on whether respondents will encourage other pregnant women with PIH to report to the nearest hospital.

**Table 3.11: Encourage others to report PIH to Hospital**

<b>Report PIH to Hospital</b>	<b>Number of Respondents</b>	<b>Percentage of Respondents</b>
Yes	13	93
No	1	7

**Source: Field data, 2019**

Table 3.11 shows that 13 respondents, representing 93% will encourage others with PIH to report to hospital whilst 1 of the respondents, representing 7% stated that she will not encourage a person with PIH to report to the hospital.

### **3.3 DISCUSSION**

The findings of the research organised according to the research objectives and discussed to provide answers to research questions.

#### **3.3.1 Demographic data**

Pregnancy induced hypertension is an increased blood pressure (more than 140/90mmHg) maintained over a long period of time during pregnancy. Hypertension in pregnancy, if not properly managed, can lead to fetal and maternal morbidity, and it is known to be a leading cause of maternal deaths (Uzan et al. 2011).

In this project work with 25 respondents 12 of the respondents, representing 48% were aged between 23 and 28 years. Table 3.1 also indicated that 8 of the respondents, representing 32% were aged between 29 years and 34 years. This means that 80% of the respondents were aged between 23 years and 34 years. 4 of the respondents, representing 16% were aged between 35 years and 40 years. This brings to 96% the percentage of respondents aged between 29 years and 40 years. One of the respondents, representing 4% was above 40 years. Researchers also recorded the BMI of the 25 participants and 12 (48%) amongst the participants had BMI above 30; 4 (16%) participants with BMI above 40. This indicates that pregnancy induced hypertension is more prevalent amongst people aged between 29 and 40 as well as pregnant women with BMI above 30. This finding is consistent with the finding of NM Saleh (2013) which states that the maternal age > 30 and increased BMI, were found to be significantly associated with increased risk of PIH in Arab women and could be potentially modifiable risk factors.

Also researchers analyzed the parity of respondents, results of the analysis indicated that out of the 25 respondents, 13(52%) had a parity of two, whilst 8 of the respondents, representing 32% have had pregnancy thrice. The analysis also showed that 2 of the respondents, representing 8% have

had pregnancy four times with 2 of the respondents, representing 8% having pregnancy more than five times. This finding agrees with the assumption that in women with parity two or less are not familiar with the fetus and may see it as “non-self” but in future pregnancies it adapts better to the fetus by Do et al. (2002).

### **3.3.2 Prevention of pregnancy induced hypertension**

Figure 3.3 shows that 14 of the respondents, representing 56% had history of pregnancy induced hypertension whilst 11 of the respondents, representing 44% have never had pregnancy induced hypertension this indicates that the probability of the recurrence of PIH is high if one has a history of it. Zhang et al. (2001) also confirmed this finding that first time pregnancy-induced hypertensive women have higher risk of recurrence of PIH.

According to the clinical practice guideline of the King Edward Memorial hospital 2015, Gestational hypertension is the new onset of hypertension arising after 20 weeks gestation, which resolves within 3 months postpartum. The results of the analysis in figure 3.3 indicated that out of the 14 respondents who have history of pregnancy induced hypertension (figure 3.3), 4 of them representing 29% has PIH in their first trimester, 7 of the respondents, representing 50% has PIH in their second trimester whilst 3 of the respondents, representing 21% had PIH in their third trimester. This result shows that, pregnancy induced hypertension occurs mostly in the second trimester of pregnancy.

The study specifically analysed the extent to which pregnant women are aware of pregnancy induced hypertension. 21 (64%) of the respondents answered yes when they were queried on their awareness of PIH; amongst which 18(86%) had their information from the hospital, 1 (4%) from home and 2 (10%) from the television.



Due to the awareness of majority of the respondents on PIH, 13 (93%) out of the 14 respondents with PIH history of the respondents complied with the treatment regimen. 14 respondents with history of PIH were managed with Nifedipine and methyldopa. Methyldopa was the commonest prescribed antihypertensive as monotherapy as well as in combination therapy methyldopa and Nifedipine. Methyldopa was the commonest prescribed antihypertensive in monotherapy and combination, as it is safest during pregnancy. (Sajith et al 2014). According to Cífková et al. (2006), pharmacological therapy should include labetalol i.v. or methyldopa or Nifedipine administered orally. Nifedipine is a calcium channel blocker and according to Papatsonis (2001) calcium channel blocker has the ability to inhibit contractility in smooth muscle cells. And has already established a role in the treatment of pregnancy induced hypertension.

The research results indicated that 71% of the study respondents were visiting the ante natal clinic before they were diagnosed with PIH, whereas 29% visited the ante natal clinic after they were experiencing signs of PIH. 93% (13) of the respondents voted regular visits to the ante natal clinic as one of the major ways to prevent it. This corresponds with the study finding of Sajith et al (2014) which indicated that early diagnosis and treatment through regular antenatal checkup is a key factor to prevent PIH and its complications.

### **3.3.3 Management of pregnancy induced hypertension**

In managing PIH, 100% of respondents suggested the use of orthodox drugs important; 57% of the respondents marked excellent, 21% good, 14% and 7% recording very good and poor respectively when ranked based on their compliance with their drug prescription as a way of managing PIH. 100% of respondents stated that exercise is important in managing PIH. 100% of respondents stated that stress reduction is important in managing PIH. 10 of the respondents, representing 71% stated that prayer is important in managing PIH.

Pregnancy induced hypertension is highly prevalent in the sub Saharan region and obesity, lack of exercise, stress and unhealthy diet are the main contributing factors to the condition. Although the actual cause is unknown, modification of these contributing factors can help prevent it. Just as Senah (2003) referred to Dubos (1965) who propounded that the virulence of specific causative organisms is not responsible for the occurrence and prognosis of diseases but rather the lifestyle of people. Lifestyle modification, previously termed non-pharmacologic therapy, plays an important role in hypertensive as well as non-hypertensive individuals, (Greef 2006). In hypertensive individuals, lifestyle modifications can serve as initial treatment before the start of drug therapy and as an adjunct to medication in persons already on drug therapy. (Greef 2006)

### **3.4 SUMMARY AND CONCLUSION**

This study was conducted at the Tema General Hospital which is located at Tema community 9 in the Tema metropolis. The objective of the study research was to determine the measures to prevent pregnancy induced hypertension and assess the various ways of managing pregnancy induced hypertension; literature was reviewed according to the study objectives of which several articles and journals were used and referenced accordingly.

The researchers used the quantitative cross sectional research design and progressive sampling technique to select study respondents. The Cochran's Sample size formula was used to calculate the sample size for the study. A well-structured, researcher assisted questionnaire, mainly made up of close ended questions was used to collect data for study. Permission was sought from the hospital and respondents on the day of data collection using an introductory letter from the Central University Nursing Department. Researchers ensured that the findings of the study would not cause harm to respondents.

A total number of twenty five (25) respondents were sampled for the study. Data analyzed with Statistic Package for Social Sciences (SPSS version 22) software after coding the individual questions. The results were presented as mean scores, percentages and frequencies in tables, pie charts and graphs.

Results indicated that majority (84%) representing 21 of the respondents were aware of pregnancy induced hypertension whereas minority (16%) representing 4 respondents were not aware of pregnancy induced hypertension.

Additionally, out of the 21 respondents who had information on pregnancy induced hypertension 18 of them representing 86% got information on pregnancy induced hypertension from the hospital. one (1) of the respondents representing 4% got the information from home while 2 respondents representing 10% got information on pregnancy induced hypertension on the television, making the hospital the most important source of pregnancy induced hypertension awareness. General awareness of PIH amongst respondents was fair and 100% of respondents suggested the use of orthodox drugs important in managing PIH. 100% of respondents stated that exercise is important in managing PIH. 100% of respondents stated that stress reduction is important in managing PIH. 10 of the respondents, representing 71% stated that prayer is important in managing PIH. Respondents also stated compliance with treatment regime and regular visits to the ante natal clinic as one of the major ways to manage and prevent it.

It has been realized from our study that majority of the participants had good knowledge on pregnancy induced hypertension. Pregnancy induced hypertension is highly prevalent in the sub Saharan region. Obesity, lack of exercise; stress and unhealthy diet are the main contributing factors to the condition. Although the actual cause is unknown, modification of these contributing factors can help prevent it.

### **3.5 RECOMMENDATION**

- From the findings of the study respondents recommended that the ministry of health and the Ghana health service should find measures to reorient pregnant women about pregnancy induced hypertension and the importance of seeking early medical treatment for better outcome.
- Secondly it was also recommended that, health providers must make it a priority to provide a healthy work environment in order to make pregnant women with pregnancy induced hypertension feel at ease to communicate their challenges and also make the hospital a place of rest to relieve them from stress.
- Finally PIH women must be educated on the role of the National Health Insurance Scheme in helping pay hospital bills since it is a problem to majority of them financially. With NHIS, it will enable pregnant women seek medical care even when there is financial constraints.

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**APPENDICES**

**RESEARCH QUESTIONNAIRE**

**CENTRAL UNIVERSITY**

**SCHOOL OF MEDICINE AND HEALTH SCIENCES**

**DEPARTMENT OF NURSING**

**KNOWLEDGE OF PREGNANT WOMEN ON PREVENTION AND MANAGEMENT  
OF PREGNANCY INDUCED IN HYPERTENSION: A STUDY AT THE TEMA  
GENERAL HOSPITAL**

Dear Respondent,

We are final year students of Central University, department of nursing conducting a study on the topic “prevention and management of pregnancy induced hypertension”. The questionnaire is for academic purposes only, hence your honest responses will be treated with utmost confidentiality.

You are required to respond by ticking [ ] in the brackets provided.

**SECTION A**

**DEMOGRAPHIC DATA**

**NUMBER OF RESPONDENTS = 25**

1. Age: 18-22 [ ]      23-28 [ ]      29-34 [ ]      35 -40 [ ]      above 40 [ ]
2. BMI 26-29 [ ]      30-39 [ ]      Above 40 [ ]
3. Marital status: Single [ ]      Married [ ]      Divorced [ ]      Widowed [ ]
4. Level of education: Primary [ ]      JHS [ ]      Secondary [ ]      Tertiary [ ]      None [ ]
5. Religion: Christian [ ]      Muslim [ ]      Traditionalist [ ]      other  
(specify).....

6. Occupation: Housewife [ ] Trader [ ] Public Servant [ ] Civil Servant [ ] others  
(specify).....
7. Parity: Two [ ] Three [ ] Four [ ] Five [ ] Above five [ ]
8. Trimester of pregnancy: First trimester [ ] Second trimester [ ] Third trimester [ ]

## SECTION B

### MEASURES PREGNANT WOMEN USE TO PREVENT PREGNANCY INDUCED HYPERTENSION.

1. Have you heard of pregnancy induced hypertension? Yes [ ] No [ ]
2. If yes, from where? Hospital [ ] Home [ ] TV [ ]
3. Have you had any history of PIH? Yes [ ] No [ ]
4. During which trimester did you experience PIH?  
First trimester [ ] Second trimester [ ] third trimester [ ]
5. When did you start attending the Ante Natal Clinic?
  - a) Before being experiencing signs of pregnancy induced hypertension [ ]
  - b) After being diagnosed with pregnancy induced hypertension [ ]
6. What drugs were you given?  
Nifedipine  
Methyldopa
7. Did you take the drug as prescribed? Yes [ ] No [ ]
8. If No, what are the challenges in complying with treatment regimen?

9. How would you rank yourself with respect to compliance with drugs?

A) Very poor [ ]

B) Poor [ ]

C) Good [ ]

D) Very good [ ]

E) Excellent [ ]

10. In your opinion, what are the preventive measures of PIH? (You may tick more than one option)

a) Regular visit to the ANC [ ]

b) Healthy diet [ ]

c) Take prescribed drugs [ ]

d) Faith healer [ ]

e) Others (specify).....

## SECTION C

### MANAGEMENT OF PREGNANCY INDUCED HYPERTENSION

1. Which of the following is the best form of managing PIH? (You may tick more than one)
  - a. Drugs [  ]
  - b. Herbal medicine [  ]
  - c. Exercise [  ]
  - d. Stress reduction [  ]
  - e. Prayer [  ]
2. What were your coping strategies when you were diagnosed with PIH? (You may tick more than one)
  - a. Prayer [  ]
  - b. Friends [  ]
  - c. Family [  ]
  - d. Finance [  ]
3. Would you encourage other pregnant women with PIH to report to the nearest hospital?  
Yes [  ]    No [  ]