KNOWLEDGE OF PRE-ECLAMPSIA AND ITS PREVENTIVE STRATEGIES AMONG PREGNANT WOMEN ATTENDING ADEOYO MARTERNITY HOSPITAL, YEMETU, IBADAN NORTH LOCAL GOVERNMENT AREA, NIGERIA

BY

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A DISSERTATION SUBMITTED TO THE DEPARTMENT OF HEALTH PROMOTION AND EDUCATION, FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH

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DEDICATION

This study is dedicated to my Parents Chief, Mr and Mrs P.J.A Okhue for their financial and moral support through out the period of the research work

ABSTRACT

Pre-eclampsia is a pregnancy-related hypertensive disorder occurring usually after 20 weeks of gestation. If left untreated, it progresses to eclampsia. However, most studies on maternal morbidity and mortality have not adequately focused on pregnant women's knowledge and preventive strategies against pre-eclampsia. This study was therefore designed to investigate knowledge of pre-eclampsia and its preventive strategies among pregnant women attending antenatal clinic in Adeoyo Maternity Hospital, Yemetu, Ibadan, Nigeria.

A descriptive cross-sectional design was adopted and a systematic random sampling technique was used to select 400 consenting respondents from the antenatal clinic records of the hospital. Semi-structured questionnaire was used to elicit information on respondents' socio-demographic characteristics, Knowledge of Pre-eclampsia (KP), Preventive Strategies against Pre-eclampsia (PSP) such as place of care, resting techniques and social habits using 19-point and 30-point KP and PSP scales respectively. Knowledge scores ≤ 6, >6-12, and >12 were categorised as poor, fair and good, respectively. Preventive strategies scores ≤ 15, >15 were categorised as poor, and good respectively. Blood pressure measurements taken with readings greater than 140/90 mmHg were considered to be elevated. Four Focus Group Discussion (FGD) sessions were conducted using FGD guide. Quantitative data were analysed using descriptive statistics, Chi-square test at p=0.05, while qualitative data were analysed using thematic approach.

Age of respondents was 28.6±5.2 years and 92.0% were married. Less than half of the respondents (42.0%) had heard about pre-eclampsia. Antenatal clinic (37.1%) topped the list of sources of information on pre-eclampsia while church was the least (12.9%). Only 35.5% knew the correct definition of the health condition while 18.8% knew that the cause of pre-eclampsia is unknown. Respondents' knowledge score was 11.1±4.0. Respondents with poor, fair and good knowledge relating to pre-eclampsia were 14.0%, 41.2% and 44.1%, respectively. Incidence of elevated blood pressure was 4.5%. Twenty-one percent mentioned that they experienced swelling of the feet, ankle, hand and face, while 8.5% had tested positive to protein in the urine during pregnancy. Few (0.8%) had experienced pre-eclampsia

in their earlier pregnancy and had their deliveries through caesarean section. Another 5.9% had a family history of the health condition. Respondents' preventive strategies score was 24.0±3.9. Many of the respondents had good preventive strategies (95.3%) while 4.7% had poor preventive strategies respectively. The hospital (92.4%) topped the list of places where respondents sought care whenever they experienced symptoms suggestive of pre-eclampsia, while 6.5% reported that they rested at home. Respondents' age was significantly associated with knowledge of pre-eclampsia. Respondents were knowledgeable of preventive strategies against pre-eclampsia, though they attributed causes of pre-eclampsia to stress and anxiety regarding financial issues and fear of delivery.

There are gaps in awareness and level knowledge of pre-eclampsia among pregnant women attending antenatal clinic in Adeoyo Maternity Hospital, Yemetu. Health education interventions such as health talks focusing on creating awareness, improving knowledge of preeclampsia and uptake of preventive practices are hereby advocated.

Keywords: Antenatal care, Pre-eclampsia knowledge, Preventive strategies

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CERTIFICATION

I certify that this project was carried out by Relobheghe Kelly OKHAE in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

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GLOSSARY OF ABBREVATIONS

DIC	Disseminated intravascular coagulations
HELLP Syndrome	Haemolysis Elevated Liver enzymes, Low Platelets
HLAG	Human leucocytes antigen
MgSO4	Magnesium sulphate
PlGF	Receptor placenta growth factor
SFlt	films like tyrosine kinase
SEng	Soluble Endoglines
VEGF	Vascular endothelia growth factor
WHO	World health organisation
FGD	Focus Group Discussion
RCT	Randomised control trial
PE	Pre-eclampsia
PEK	Pre-eclampsia knowledge
MCH	Maternal Child health

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Preeclampsia is pregnancy-related hypertensive disorder occurring usually after 20 weeks of gestation, with proteinuria, Blood pressure reading ≥140/90 mmHg, and Edema. If left untreated, it progresses to eclampsia (Medicine for Africa, 2008). Preeclampsia and eclampsia are not distinct disorders but the manifestation of the spectrum of clinical symptoms of the same condition. The mildest disorder in this continuum is pregnancy-induced hypertension. In preeclampsia, hypertension and proteinuria are present, and when convulsions occur in addition to these signs, the condition is referred to as eclampsia (Shah, 2009). Preeclampsia and eclampsia are a life-threatening multisystem disorder affecting 2 to 8% percent of all pregnancies worldwide This has substantial effect on maternal and newborn health (Ghulmiyyah and Sibai, 2012).

Preeclampsia and eclampsia are two of the most common causes of maternal and perinatal morbidity and mortality in low and middle income countries (Duley, 2012). Globally, approximately 63,000 women die each year of preeclampsia which accounts for an estimated nine percent of maternal deaths in Asia and Africa, and about one quarter of maternal deaths in Latin America and the Caribbean (Khan, 2006). In Nigeria, the incidence of preeclampsia is reported to be nine (9) to ten (10) percent of the pregnancy-induced hypertension cases. It affects mostly the primigravidae after the 20th to 24th weeks of gestation, and frequent occurrences are often seen at term (Jones, 1992; James, 2009). The effect of maternal death on household income, household productivity and household disintegration has been widely described. More so, maternal deaths cause one million children to become motherless annually. Therefore concern for the significant mortality and morbidity associated with pregnancy-induced hypertension is prominent on global health agendas (Ojo, 1992; James, 2009).

Recent evidence suggests that part of the problem showing no reduction in maternal mortality is as a result of inadequate knowledge, negative attitude and lack of preventive

practice on the part of the patients believing so much in *juju* (mystical power). Studies have demonstrated that health system factors which include service delivery, equipment and inter personal aspects of care also play an important role (Calder and Dunlop. 1993; Oyira. 2009). Beliefs and negative attitude may also be related to the issues of pregnancy-induced hypertension, and further suggest that maternal deaths could be prevented if women were able to have adequate knowledge and positive attitude towards attending antenatal clinic leaving their practices of *juju* and utilising good quality health services, especially when complications arise.

However, in reality, most women experience serious barriers to services. Even if such services reach the women, the services provided by health personnel are often of insufficient quality. Health personnel are now widely advocated as the single most crucial intervention to reduce maternal mortality owing to pregnancy-induced hypertension.The rationale is based upon the potential of trained health workers to manage cases appropriately and prevent complications.

Usually, there are three primary characteristics of preeclampsia. These are high blood pressure (a blood pressure reading higher than 140/90 mm Hg or a significant increase in one or both pressures), protein in the urine and, oedema, i.e swelling in the limb. It is also known to be associated with hydatidiform mole, multiple pregnancy and maternal conditions, where there is greater mass of placental tissue (Bennett and Brown. 1999).

1.2 Statement of the Problem

Hypertensive disorders in pregnancy affect about ten percent of all pregnant women around the world (Steegers. 2010). This group of diseases and conditions include preeclampsia and eclampsia. Chronic hypertensive disorders of pregnancy are important cause of severe acute morbidity, long-term disability and death among mothers and babies in Asia and Africa (Khan, 2006). The Majority of deaths related to hypertensive disorders can be avoided by providing timely and effective care for women presenting with the preeclamptic phase. (Campbel. 2006). Thus optimization of health care for women during pregnancy to prevent and treat hypertensive disorders of pregnancy is a necessary step towards achievement of the Millennium Development Goals (MDGs).

A positive history of pregnancy-induced hypertension is also considered a risk factor for development of Coronary Heart Disease in the future (Haokkamaa, 2004). As the underlying mechanism for the cause of preeclampsia is still unknown and has not progressed beyond hypothetical discussions, the best way for reducing mortality and morbidity due to the condition is early detection, careful monitoring, and cessation of pregnancy if necessary (Schneider, 2004). In Nigeria, approximately 37,000 women die annually because of preeclampsia and eclampsia-related complication (WHO, 2004). Eclampsia, the end result of pre-eclampsia, is the third leading cause of maternal and perinatal mortality in Nigeria with a prevalence rate of 16.7% (Olopade, 2008).

Population Council Report (2008) shows that the occurrence of preeclampsia and eclampsia is very high in Nigeria, with a regional variation in incidence rates of three (3) to nine(9) percent in the North, and approximately one to three percent in the South. The incidence of preeclampsia, the precursor to eclampsia, varies greatly worldwide. WHO estimates the incidence (or number of new cases) of preeclampsia to be seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%) which is due to poor health-seeking behaviours, availability of health care facilities and personnel (Dolea & Abou Zahr, 2003).

Reliable statistics about women dying due to eclampsia are difficult to obtain because of the poor quality of vital statistics registration systems and hospital records in many developing countries. In addition, a sizable number of deliveries take place at home, and thus there are no records at all for these births.

In Northern Nigeria, if preeclampsia appears in labour, it is often treated with certain harmful traditional practices such as "hot bath" or swallowing of *kanwa-kanwa*, which is salt from a lake, perceived to be very rich in sodium. This practice prevails because pregnant women who display the symptoms of eclampsia are often believed to be possessed by evil spirits and are usually put in the care of a traditional healer (Dahiru, 2010).

In Bimin-Kudu, eclampsia contributes 43.1% of all maternal deaths (Tukur, 2007) while in Yenagoa and Ilorin, the contribution was 40% (Ighafe, 2004) and 27.5% (Aboyeji, 2004)

respectively. Studies have shown that prevalence of eclampsia, the end stage of preeclampsia, in African countries such as South Africa, Egypt, Tanzania, and Ethiopia vary from 1.8% to 7.1% (Thiam, 2003). In Nigeria, prevalence ranges between two (2) to 16.7% (Olopade, 2008).

1.3 Justification

Most women do not access antenatal care and services due to their belief that pregnancy is a natural phenomenon which does not need any special care. Globally preeclampsia and eclampsia remain one of the leading causes of maternal morbidity with higher incidence in developing countries than developed countries due to inadequate and poor utilization of maternal health care facilities (Oladokun, 2000). Unfortunately there has been little progress in preventing the disorder compared to advances made in eliminating other major obstetric problems. Preeclampsia and eclampsia are common causes of maternal mortality worldwide but particularly in the developing countries.

Nigeria has one of the highest rates of maternal mortality in the world, and eclampsia (the end state of pre-eclampsia) has been noted to be among the most common causes of maternal mortality in Nigeria. The review of maternal deaths in Kano State for example, showed that eclampsia was the most common cause of the deaths and contributed 46.3% of all the deaths in one study (Society of Obstetrics and Gynaecology of Nigeria, SOGON, 2004) and 31.3% in another (Adamu, 2003; Tukur 2009). National Demographic Health Survey, NDHS, (2013) documented the incidence of hypertention in pregnancy including preeclampsia as well as eclampsia to be five percent (5%) in Nigeria.

To disprove superstitious beliefs and practices concerning preeclampsia and eclampsia, it is necessary to investigate and document current knowledge levels and preventive strategies against pregnancy-induced hypertension among pregnant women. This study will help to provide information on the knowledge of pregnant women on preeclampsia and the practices they adopt to prevent or manage the condition. This evidence-based information will be very useful to health workers and the scientific community, especially for the development of suitable interventions to improve knowledge, correct harmful practices and reinforce healthy practices.

1.4 Research Question

This study set out to answer the following four research questions:

1. Are pregnant women aware of preeclampsia as a condition during pregnancy?
2. What is the level of knowledge of pregnant women on preeclampsia?
3. How common is preeclampsia among pregnant women attending antenatal care?
4. What preventive measures do pregnant women adopt to prevent preeclampsia?

1.5.1 Broad objective

The broad objective of this study was to investigate the knowledge of preeclampsia and its preventive strategies among pregnant women attending Adeoyo Hospital, Ibadan Oyo State.

1.5.2 Specific objectives

The specific objectives of this study were to:

1 Determine the awareness of pregnant women on preeclampsia as a condition during Pregnancy

2 Assess the level of knowledge of pregnant women on preeclampsia

3 Determine the proportion of preeclampsia among pregnant women attending antenatal care; and

4 Identify known practices taken by pregnant women to avoid pre-eclampsia.

1.6 Hypotheses

The following hypotheses were tested:

1 There is no association between age of respondents and knowledge of preeclampsia.

2 There is no association between educational level of respondents and knowledge of preeclampsia.

3 There is no association between place of residence of respondents and knowledge of preeclampsia

4 There is no association between age of respondents and preventive strategies against preeclampsia

5 There is no association between level of education of respondents and preventive practice.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Burden of Preeclampsia

Worldwide, the incidence of preeclampsia ranges between two and ten percent of pregnancies (Osungbade and Ige, 2011). World Health Organisation documented the incidence of preeclampsia to be seven times higher in developing countries (2.8% of live births) than in developed countries (0.4% of live births) (WHO, 2005). The incidence of eclampsia in developed countries of North America and Europe is similar and estimated to be about 5 to 7 cases per 10,000 deliveries.

Preeclampsia and related hypertensive disorders of pregnancy impacts 5-8% of all births in the United States (Villar, Say, Gulmezoglu, Meraldi, Lindheimer, Betran and Piaggio 2003) Incidence rates for preeclampsia alone - in the United States, Canada and Western Europe, range from 2-5% (Ronsmans and Graham 2006). In the developing world, severe forms of preeclampsia and eclampsia are more common, ranging from a low of 4% of all deliveries to as high as 18% in parts of Africa (Villar et al 2003). The variation in incidence rates is driven by the diversity of definitions and other criteria (including procedures, tests and their methodologies). In Latin America, preeclampsia is the number one cause of maternal death. (Preeclampsia foundation 2010). Ten million women develop preeclampsia each year around the world. Worldwide about 76,000 pregnant women die each year from preeclampsia and related hypertensive disorders. And, the number of babies who die from these disorders is thought to be on the order of 500,000 per annum. (Kuklina E.V, et al 2009)

The rate of eclampsia from African countries such as South Africa, Egypt, Tanzania and Ethiopia varies from 1.8% to 7.1% (Teklu and Gaym, 2006; Kimbally, 2007) while on the other hand, in developing nations incidence of preeclampsia varies widely, ranging from one case per 100 pregnancies to one case per 1700 pregnancies (Asha, 2009; WHO, 2004).

In Nigeria, prevalence ranges between 2% to 16.7% (Omole-Ohonsi & Olopade. 2008). In a descriptive prospective study conducted at the University of Benin Teaching Hospital, Benin in Edo State by Ebegbe and Aziken (2010) between years 2000 and 2005 on early onset of preeclampsia and eclampsia, it was documented that out of 6,493 deliveries recorded in the hospital within the period of the research 734 were complicated with hypertension in pregnancy/pregnancy-induced hypertension of early onset occurring at or before 32 completed weeks of gestation. This contributed 46 cases (6.3%) of hypertension in pregnancy, less than a percent (0.7%) of all deliveries (1 in 141 deliveries). The study revealed that more than half of the women (56.5%) were booked for antenatal cares in the hospital while the rest were either referred because of complication. It was recorded that two fifths (39.1%) were nulliparous and the majority presented as cases of severe preeclampsia (32.6%) while 30.4% were eclamptic. Most cases presented between 28 and 32 weeks were gestational hypertension (78.2%), patients who had essential hypertension with superimpose preeclampsia contributed (15.2%) of all cases, while 13.0% and 8.7% had pregnancy-induced hypertension and early onset of pregnancy-induced hypertension respectively in the previous pregnancy. However, the incidence of eclampsia lies in the range of 0.3 per 1000 deliveries in Calabar (Cross River State) to as high as 9 per 100 deliveries in Bimin Kudu Jigawa State (Ilam etal 2003)

A study conducted in calabar on the prevalence of pre-eclampsia among pregnant women in the University of Calabar Teaching Hospital, revealed that out of the 104 cases, Eleven of the pre-eclamptic patients (18.6%) had family history of hypertension, 2 (3.4%) were hypertensive with superimposed pre-eclampsia and 2 (3.4%) had personal history of pre-eclampsia. Out of the two with personal history of pre-eclampsia, one had a family history of hypertension while the other was hypertensive with superimposed.The most common (39%) gestational age at presentation was in the range of 34-38 weeks Mary Esien et al 2014.

A book review by Okpomeshin (2011) on "preeclampsia among Nigeria women" shows that approximately one third of the maternal death in Nigeria are due to the complication of pregnancy toxemia, known as preeclampsia (Abubaka *et al.*, 2009). Chigbu, Okezie and Odugbu (2009) studied "women in their second pregnancies" and determined the significance of preeclampsia between women who had moved from their original partner and

women who remained with the same partner. In all part of southern Nigerian the incidence of preeclampsia increased with women who had partner change for subsequent pregnancy, and the duration of sexual cohabitation among those with change partner for conception at inter-pregnancy interval. At 24 weeks of gestation there was no significant difference among women who changed patners in serum-free radical and decreased amount of antioxidant vitamin. To prevent preeclampsia, calcium and magnesium-sulphate were given to Nigeria women with preeclampsia and eclampsia. The result indicated reduction of extracellular calcium and magnesium among these women corresponding with preeclampsia (Idogun, Imarengiaye and Momoh; 2007).

A prospective cohort study by Chigbu *et al.* (2009) revealed that hypertensive Nigeria women have a higher risk for preeclampsia in the middle trimester of pregnancy. High blood pressure can influence foetal brain development and be a factor in preexisting chronic hypertension. Uboh *et al.* (2008) suggest that an increase in malomyldialdehyde and a decrease in antioxidant vitamins are the main cause for preeclampsia in Nigeria women. Pregnancy-induced hypertension was documented as one of the leading complications among adolescents. This elevated blood pressure, if unrecognized, may lead to preeclampsia and later to eclampsia. The adverse results of untreated eclampsia are kidney and retina problem, chronic hypertension, congestive heart failure stroke or death

Igberase and Ebiegbe (2006), and Olopade and Lawoyin (2008) conducted a study in Nigeria and found that of pregnant women who were 15 years old and younger, 40% had preeclampsia. In the United States the range of preeclampsia is two (2) to six (6) percent in first-time pregnancies whereas in developing countries, range is reported to be 4-18%.
In Nigeria it was documented that 75% cases of preeclampsia were mild while 25% were severe. Ten percent (10%) occur in pregnancies of less than 34 weeks gestation. The estimation is that eclampsia occurs in one of every 200 cases of preeclampsia without early detection or prompt administration of magnesium sulphate. Okafor and Ezegwui's (2010) study on "seasonal variation in caesarean section deliveries" showed that patients with a history of preeclampsia and eclampsia were counseled to plan pregnancies in advance to reduce the morbidity and mortality associated with seasonally induced preeclampsia. Okafor,

women who remained with the same partner. In all part of southern Nigerian the incidence of preeclampsia increased with women who had partner change for subsequent pregnancy, and the duration of sexual cohabitation among those with change partner for conception at inter-pregnancy interval. At 24 weeks of gestation there was no significant difference among women who changed partners in serum-free radical and decreased amount of antioxidant vitamin. To prevent preeclampsia, calcium and magnesium-sulphate were given to Nigeria women with preeclampsia and eclampsia. The result indicated reduction of extracellular calcium and magnesium among these women corresponding with preeclampsia (Idogun, Imarengiaye and Momoh; 2007).

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Efetie, Igwe, and Okezie (2009) found that the cause of foetal demise in developing countries was preeclampsia and eclampsia. Their study shows that the only treatment during preeclampsia is to maintain placenta blood supply, thereby reducing perinatal mortality.

2.5 Symptoms of Preeclampsia

Mild preeclampsia can be worsened and become severe. This usually occurs over several days to weeks of its onset. Severe preeclampsia may be characterized by one or more signs or symptoms. However, the signs of both mild and severe preeclampsia may be subtle, and patients should not hesitate to mention any concern about possible signs of preeclampsia to their provider (Vannessa & John, 2012). Blood pressure ≥140/90 mmHg is a symptom of severe preeclampsia. Women with blood pressures in this range have an increased risk of stroke. Following are other severe symptoms of preeclampsia.

Persistent severe headache, Visual problems (blurred or double vision, blind spots, flashes of light or squiggly lines, loss of vision); Decreased urination (urinating less than 500mL, in 24 hours); Fluid in the lungs, which may cause shortness of breath, Low platelet count, platelets help the blood to clot, which may cause easy bruising or bleeding; Liver abnormalities (detected by blood tests), symptoms may include nausea, vomiting, or pain in the mid or right upper abdomen (similar to heartburn), Destruction of red blood cells (haemolytic, which is detected by blood tests), and Partial or complete Separation of the placenta from the uterus (called abruption); is also a major sign of preeclampsia; symptoms include vaginal bleeding, uterine pain, and/or decreased fetal activity.

2.8 Risk Factors for the Development of Hypertensive Disorders of Pregnancy

Women with preeclampsia have smaller than normal blood vessels feeding the placenta, although the exact cause of this abnormality is not known. There are no tests that can reliably predict who will get preeclampsia, and there is no way to prevent it. Women with one or more of the following characteristics have an increased risk of developing preeclampsia.

First pregnancy (excluding miscarriages), High blood pressure, kidney disease, lupus, or diabetes prior to pregnancy, Gestational diabetes, multiple gestation (e g, twins or triplets),

a family history of preeclampsia in a sister or mother, a previous history of preeclampsia; Age less than 20 years and possibly age over 35 to 40 years, and Obesity. Conversely, women who do not develop preeclampsia in their first pregnancy are at low risk of developing it in a subsequent pregnancy (Vanessa, 2012).

2.1 Awareness of Preeclampsia among Pregnant Women

In a review by Osungbade and Ige (2011) on "Public Health Perspectives of Preeclampsia in Developing Countries" the scholars documented that delayed responses at the household level to obstetric emergencies such as preeclampsia often arise as a result of inadequate information on appropriate time to seek help and sometimes on where to seek help Akinola (2008). Thus, this is worsened by lack of decision-making power, poverty, and the rising cost of health care Begum (2004). Souza *et al.* (2007) conducted a study using focus group discussion which involved 28 pregnant women. Pregnant women included in the study had Preeclampsia during pregnancy and preterm delivery. Its findings show that the subjects lacked knowledge about preeclampsia and its association with premature births. In the study, 20 women (71%) said they were not aware of preeclampsia during prenatal care. They were aware only after hospitalization and preterm delivery. In a study conducted in Brazil on "maternal perception of premature birth and the experience of preeclampsia" among 28 pregnant women in a facility specialized in high-risk pregnancies in the state of *Rio Grandedo Notre*, North-eastern Brazil, in 2004, twenty analysis units showed they were unaware of this condition during prenatal care. They only became aware after hospitalization or by the immment premature delivery, as illustrated in the following discourses:

"I didn't know. During prenatal care the doctor told me to rest and not to eat salt but she didn't say my pregnancy was high-risk".

"I realized when I got here. My blood pressure started to go up before seven months but the doctor thought it would go down. I came to all prenatal visits and she only told me to lie down. I didn't know that high blood pressure was bad".

In the same context maternal awareness of factors related to prematurity was assessed. Only four reports showed an association with gestational hypertension. Factors linked to religion, diet and family problems predominated. As illustrated in the following discourses:

"I think God wanted it this way"

"I think it was because I was angry and didn't cry".

Thus, the ideas that emerged from the interviews show that pregnant women (constituted the study population) were unaware of their preeclampsia, which might have contributed to deficient preventive care and even to early hospitalization caused by the severity of their condition (Nilba Lima de Souza *et al*., 2007).

2.3 Knowledge of Pregnant Women on Preeclampsia

A survey carried out on "women's experiences of preeclampsia in Australia" captures 68 women (61% response rate) and 64 partners, close relatives, (57% response rate). Respondents who experienced preeclampsia were 53, eclampsia, 5 and HELLP-syndrome, 26. In the survey it was documented that 77% women reported lacking knowledge of preeclampsia preceding diagnosis, and after diagnosis, 50% did not appreciate the seriousness of their condition. Access to knowledge about preeclampsia was very important to women, their partners, relatives or friends. Fifty-one percent (51%) of respondents thought that preeclampsia was not serious or life threatening. Thus the quality and readability of information need to be appropriate for women with varying levels of health literacy (East *et al.* 2011).

Oyira *et al.* (2009) carried out a study to find out "the knowledge, attitude and preventive practices towards preeclampsia among pregnant women". The research was based on pregnant women's knowledge and their attitude about preeclampsia. A sample of 100 pregnant women was used for the study. Their finding shows that maternal deaths could be prevented if women were able to have adequate knowledge and positive attitude towards attending antenatal clinics while leaving local practices of *fuji*. Nilba Lima de Souza *et al*., 2007) conducted a qualitative study using focus group techniques involving 28 women to analyze the subjects' maternal experience of preeclampsia in pregnancy. The results of the study showed that there was lack of knowledge with regard to preeclampsia and its association with premature births. This study indicates that maternal mortality may probably be on the increase unless proper health education is given to pregnant women on various ways to prevent preeclampsia in pregnancy. In the study, the researchers recruited and studied a total of 240 pregnant women with pre-eclampsia. The recruitment was based on the

respondents' knowledge about preeclampsia. From this study, it was shown that the quality of information provided to pregnant women about pregnancy with preeclampsia during prenatal care was inadequate or inappropriate to their level of understanding.

A descriptive study by Oyira *et al.* (2009) indicates that maternal mortality was to due inadequate knowledge by pregnant women about preeclampsia. In a cohort study carried out by East *et al.* (2011) shows that out of 112 pregnant women recruited for the study, 77% had no knowledge of preeclampsia prior to diagnosis. Once diagnosed 50% of the subjects did not appreciate how serious preeclampsia was because of lack of sufficient knowledge on the disorder. In the study, women indicated their eagerness to access information about preeclampsia.

In a similar research conducted in Iran by Derakhshan et al (2006) on "knowledge of pregnancy-induced hypertention among Iranian pregnant women, it was shown that awareness of the condition in pregnant women is a key factor for early diagnosis to prevent preeclampsia Surprisingly in this study, it was shown that the subjects lacked knowledge of this important issue in pregnancy, despite attending the health center regularly. More than 50% of them had very low or low level of knowledge. However this knowledge and attitude improved after a targeted education programme.

2.4 Preventive Practices on Preeclampsia among Pregnant Women

A descriptive survey was carried out on "the knowledge, attitude and preventive practices of pregnancy-induced hypertension on pregnant women" in Calabar by Oyira *et al.* (2009). The study documented the preventive measures taken by pregnant against pre-eclampsia: findings indicate that 62% used antenatal care; 12% did it by resting; 14%, by avoiding stress and 12%, by avoiding intake of excess sugar. A similar research conducted in Zimbabwe on self-care knowledge and hypertension control among pregnant women documented that out of 78 study participants, 53 (69.9%) were able to define pregnancy-induced hypertension (PIH) correctly.Only 14 (17.9%) knew that PIH can occur as a result of renal disease and 36 (46.2%) knew that PIH may be caused by stress. However, the majority, 75 (96.2%), knew that PIH is not caused by bad spirits. When participants were assessed on knowledge of what to do when one has PIH, 59 (75.6%) knew that one had to attend clinic on scheduled dates.

Another45 (57.7%) did not know that one has to rest for two (2) to four (4) hours a day if diagnosed with pregnancy-induced hypertension. When asked about what to do for features of pregnancy-induced hypertension, 53 (67.9%) knew that they should seek medical care for oedema of the feet. Fifty-four (69.3%) knew that they should seek medical care for constant headache and 49 (62.8%) knew that they should seek medical care for palpitations. (Pswarayi, 2010)

2.6.0 Chronic hypertension with superimpose preeclampsia

Chronic hypertension is defined as a blood pressure ≥140/90 mmHg diagnosed before pregnancy, before the 20th week of pregnancy, or that persists more than 12 weeks after delivery (Vanessa, 2012). In a literature review from a study conducted in the United States on preeclampsia association with chronic hypertension among African-American and White women, revealed that there is a link between chronic hypertention and preeclampsa.The study was a case control which assess the risk of preeclampsia among women with chronic hypertension in two separate identical models: one for African-American and another for White women. Cases were pregnant women who developed preeclampsia. Controls were women without preeclampsia. The main exposure was chronic hypertension. Logistic regression was used to derive odds ratios (OR) a 95% confidence intervals (CI). Population attributable risk percent associated between chronic hypertension and preeclampsia was calculated for each ethnic group. Evidences from the study reportedly that preeclampsia was more than eleven times likely developed among women with chronic hypertension compared to normotensive women for both African-American (OR = 12.4, 95% CI = 10.2-15.2) and White women (OR = 11.3, 95% CI = 9.7-13.2). Among African-American women, we found an interaction between chronic hypertension and region on preeclampsia. Samadi, Mayberry and Reed (2001)

2.61 Gestational hypertension

Women with gestational hypertension have all of the following:

Blood pressure ≥140/90 mmHg, Protein in the urine (proteinuria), ≥20 week's pregnancy, and no previous history of high blood pressure. Over time, some pregnant women with gestational hypertension will develop proteinuria and be considered preeclamptic, while

others will be diagnosed with chronic hypertension because of persistently high blood pressure after delivery (Vannessa, 2012).

2.9.0 Diagnosis of Preeclampsia

2.9.1 Mild to moderate

Mild-to-moderate preeclampsia is defined as systolic blood pressure of 140mmHg and/or diastolic blood pressure of 90mmHg or higher measured on at least two occasions over several hours, combined with proteinuria >300 mg total protein in a 24-h urine collection, or ratio of protein to creatinine >30 mg/mmol.

2.9.2 Severe preeclampsia

This is defined as systolic blood pressure 160-170 and/or diastolic blood pressure of 110mmHg or higher measured on at least two occasions over several hours, combined with proteinuria >300 mg total protein in a 24-hour urine collection, or ratio of protein to creatinine >30 mg/mmol. All are usually accompanied by other haematological, neurological, hepatic or renal derangements (Text book: Current medical diagnosis and treatment, Lawrence, Tierney, Stephen, Maxine 2006)

2.10 Maternal Complication Associated with Preeclampsia

The following conditions are associated with preeclampsia in pregnancy:

Placental abruption, Disseminated intravascular coagulation (DIC). HELLP Syndrome (Haemolysis, Elevated Liver enzymes, Low Platelets), Pulmonary Edema. Acute renal failure

2.11 Management of Preeclampsia

Delivery is the only curative treatment for preeclampsia (Sibai and Dekker *et al.*, 2005). Management is multidisciplinary, involving an obstetrician, an anaesthetist, and a paediatrician. In some cases, consultation of internal fetal medicine and hypertension or nephrology subspecialists may be required. Management decisions must balance the maternal risks of continued pregnancy against the fetal risks associated with induced preterm delivery (Pottecher, 2009). The criteria for delivery are based on two often interrelated factors - gestational age at diagnosis (estimated fetal weight) and severity of preeclampsia. Severe

preeclampsia requires treatment with a dual aim that is, preventing the harmful effects of elevated maternal blood pressure and preventing eclampsia. At admission, daily clinical cardiotocographic, laboratory, and ultrasound testing are required to detect the severity of preeclampsia and tailor management accordingly (Pottecher and Luton; 2009). Regardless of the severity of preeclampsia, there is no advantage in continuing the pregnancy when preeclampsia is discovered after 36–37 weeks (Haddad and Kayem; 2007). Prolongation of pregnancy in the event of mild preeclampsia can be discussed and re-evaluated on a regular basis. At 34–37 weeks, management depends on the severity of the preeclampsia. Expectant management is possible for mild preeclampsia to limit the risk of induced preterm delivery, but for severe preeclampsia, delivery remains the rule due to the increased risk of maternal and foetal complications (Pottecher and *Luton et al.*, 2009). Similarly, at 24–34 weeks, management depends on the severity of preeclampsia. The presence of one or more of the following signs indicates the need for immediate delivery: uncontrolled severe hypertension (not responsive to dual therapy), eclampsia, acute pulmonary oedema, abruption placenta, sub capsular hepatic hematoma, or thrombocytopenia <50,000/mm^3.

Delivery after corticosteroid therapy for pulmonary maturation is necessary if any of the following criteria is present: persistent epigastric pain, signs of imminent eclampsia (headaches or persistent visual disorders), derove creatinine >120 µmol/l, Oliguria below 20 ml/hour, progressive HELLP syndrome, prolonged or severe variable decelerations with short-term variability less than milliseconds. When emergency delivery is not required, labour can be induced by cervical ripening.

2.12 Treatment of Preeclampsia

There has been a general consensus that blood pressure greater than 170/110 mmHg requires treatment in the maternal interest, although this is not supported by randomized trials (Martin, 1999). However, a clear rationale supported by the desire to prevent the known risk of vascular damage due to uncontrolled hypertension also justifies treatment. The confidential enquiries into maternal deaths have suggested a lower threshold of 160 mmHg systolic (Lewis, 2006).

The preferred therapeutic agents are Labetalol, Nifedipine and Hydralazine. Labetalol has the advantage that it can be given initially by mouth in severe hypertension and then, if needed, there is continuing debate concerning women with a blood pressure between 100 mmHg and 110 mmHg diastolic. Maternal treatment is associated with a reduction of severe hypertensive crisis and a reduction in the need for further antihypertensive therapy. However, there appears to be a small reduction in infant birth weight, with the possibility of treating a prolongation of pregnancy of an average of 15 days as long as there is no other reason to deliver (Magee, 1999). Methyldopa has been proven safe in long term follow-up of the delivered babies, while some studies have suggested some benefits of Labetalol (El-Qarmalawi, 1995). Agiothesin Converting Enzymes inhibitors (ACE) and Agiotesin Receptors Blockers would appear to be contraindicated because of unacceptable foetal adverse effects. Diuretics are relatively contraindicated for hypertension and should be reserved for pulmonary oedema intravenously. A review has suggested that hydralazine may be less preferable, although the evidence is not strong enough to preclude its use (Magee and Chan; 2003). There is also a consensus that if the blood pressure is below 160/100 mmHg. there is no immediate need for antihypertensive therapy. An exception may be if there are markers of potentially more severe disease, such as heavy proteinuria or disordered liver or haematological test results. Since, in this situation, alarming rises in blood pressure may be anticipated, anti-hypertensive treatment at lower blood pressure levels may be justified (Lewis, 2004).

Magnesium sulphate ($MgSO_4$) has been considered for women as the best treatment for preeclampsia in women for whom there is concern about the risk of developing eclampsia Duley, Gülmezoglu, Henderson-Smart and Chou (2010). This is usually in the context of severe pre-eclampsia once a delivery decision has been made and in the immediate postpartum period. In women with less severe disease the decision is less clear and will depend on individual case assessment. In the Nigeria context, study in Kano State has shown that the use of $MgSO_4$ has recorded reduction in maternal mortality than the use of diazepam (Ekeche et al 2012). There is long standing evidence from the multi-country RCT, the Magpie trial, released in 1995, and subsequent Cochrane Reviews combining MgSO4 as the most effective, inexpensive treatment for ceasing eclamptic seizures and protection against

the progression of preeclampsia to eclampsia (Woelk, 2009). Although magnesium sulfate has been the standard treatment in developed countries for more than 20 years, less effective and higher-risk drugs such as diazepam and phenytoin are still widely used in most developing countries (Adewole, 2000; Lanier, Villar, Tell, Kim and Kennedy, 2008; Tukur, 2009).

A review completed in 2002 in southern eastaren Nigeria, Nnewi has suggested that diazepam has remained the most popular regimen in the management of eclamptic fits in our hospitals. It also appears to enjoy wide acceptability in other centres in Nigeria. (Ikechebelu and Okoli, 2002). Other regimens such as lytic cocktail, phenytoin and magnesium sulphate are not popular (Ikechebelu *et al* 2002). Effectiveness of MgSO4 in developing, sub-Saharan African countries was shown with the inclusion of Mozambique, South Africa and Zimbabwe in the Magpie Trial. MgSO4 was proven to reduce risk of eclampsia by more than half (58%) and save maternal lives with relatively low incidence of mild side effects (headache, nausea and vomiting), which were reported in 25% of the women who participated (Altman *et al.*, 2002; Duley, Henderson-Smart, Walker, and Chou, 2010). The articles chosen for review suggest that researchers in academic settings and providers in public hospitals in Nigeria are well aware of the superior therapeutic effects of MgSO4. There is an ongoing need for consistent provision of the first line, effective therapeutic MgSO4 for prevention of the disease.

2.13 Prevention of Preeclampsia

Prevention of preeclampsia should focus on the intervention and correction of patho-physiological changes (Dekker and Sibai, 2001). Currently there are no well-established measures for prevention of preeclampsia (Wagner, 2004). However, low dose aspirin, calcium and anti-oxidants are believed to be used as effective and inexpensive preventive measures to reduce the risk of preeclampsia.

Calcium

Calcium supplementation reduces the risk of high blood pressure in pregnancy particularly for women at high risk of gestational hypertension and in communities with low dietary calcium intake (Dekker and Sibai *et al*., 2001). Atallah, Hofmeyr and Duley *et al*. (2010) in their study observed reduction in the incidence of high blood pressure with calcium supplementation (RR=0.58, 95% CI 0.43 -0.79) in 10 trials of 6,634 women.

Evidence from Cochrane studies revealed a significant reduction in the risk of pre-eclampsia with calcium supplementation (11 trials, 6894 women: RR 0.35, 95% CI 0.20 to 0.60). The effect was greatest in women at high risk of hypertension (five trials, 587 women: RR 0.22, 95% CI 0.12 to 0.42), and those with low baseline calcium intake (six trials, 1842 women: RR 0.29, 95% CI 0.16 to 0.54), Hofmeyr, Atallah, and Duley (2002).

Anti-platelet drugs

Anti-platelet drugs, such as low dose aspirin, have small to moderate benefits when used for prevention of preeclampsia (Duley, Henderson-Smart, Knight, King *et al*., 2001). Compared to women with normal pregnancies, women with preeclampsia have a relative excess thromboxane A2 compared to prostacyclin. It has been hypothesized that the correction of thromboxane, prostacyclin ratio, by aspirin could prevent preeclampsia and its complications. Sibai, Caritis, Thom et al 1985, (Beaufils, Donsimoni, Uzan, et al 1985). In a large standardized controlled trial among 3,135 low risk nulliparous women, the use of 60 mg aspirin reduced the incidence of preeclampsia from 6.3% to 4.6% but was associated with significant increase in abruptio placenta. The effect of aspirin was also observed only in women whose blood pressure was >120 mmHg (1). In the Cochrane review study of Duley *et al* (2001), the use of anti-platelet drugs was associated with a 15% reduction in the risk of preeclampsia (32 trials, 29331 women; RR = 0.85, 95% CI 0.78 -0.92). There was also an eight percent (8%) reduction in the risk of pre-term birth (32 trials 28, 268 women, RR = 0.92, 95% CI 0.88 to 0.97) and a 14% reduction in foetal and neonatal death (30 trials, 30093 women, RR = 0.86, 95% CI 0.76 to 0.98) for women allocated to the anti-platelet group (Churchill & Duley, 2004). Small gestational age babies (SGAB) were reported in 25 trials (20,310 women) with no overall differences between the groups (RR=

0.92 to 1.01). There were no significant differences between treatment and control groups in the frequency of infants who were SGA (RR=0.91; CI=0.83-1.00) placental abruption, and induction of labour or caesarean section. The Cochrane reviewers concluded that, despite the potential benefits overall, it is not possible to make clear recommendations for the use of Aspirin (Knight and Duley, 2004). In a randomized clinical trial conducted on 990 healthy nulliparous women in Tehran between April 1998 and March 2001, preeclampsia was observed in 4.6% of the aspirin group, in four percent (4%) of the calcium group and in 10.1% of the control group. There were significant differences between the aspirin and control group (P<0.05), and calcium and control group (P<0.05) but there was no significant difference between the aspirin and calcium groups (Duley, Henderson-Smart, Mecher, & King; 2007).

Fish oil

Intake of fish oil is also believed to lower the risk of preterm delivery. Makrides , Duley and Olsen (2006) In a trial which included women with previous preterm delivery, intrauterine growth restriction, preeclampsia and twin pregnancies, a reduction in the risk of preterm delivery from 33% to 21% (OR=0.54; CI 0.30-0.98) was observed but did not affect any of the other outcomes (Dekker and Sibai *et al*., 2001).

Anti-Oxidants

The effects of vitamins C and E on markers of oxidative stress, endothelial activation and the frequency of preeclampsia have been assessed by Chappell and Seed *et al.* (2002). Two hundred and eighty three (283) women were identified as being at risk of preeclampsia by abnormal two-stage uterine artery doppler and were randomly assigned vitamins C and E or placebo at 16-22 weeks' gestation. In the cohort who completed the study, the OR for preeclampsia was 0.24 (95% CI 0.08-0.70, P=0.002). They concluded that supplementation with vitamins C and E may be beneficial in the prevention of preeclampsia in women at increased risk of the disease (Chappell and Seed *et al* 2002). For prevention of recurrent seizures in women with eclampsia magnesium is more effective and has fewer risks than phenytoin and diazepam. If propbylactic anticonvulsant is to be used magnesium is the drug of choice (Duley and Henderson-Smart, 2003)

2.1.4 Theoretical Framework

The conceptual framework to be used in this study is the Health belief Model (HBM). The model proposes people believe whether they are susceptible to a disease or not, and their perceptions of the benefits of trying to avoid it influences their readiness to act. Factors that affect young women vitamin supplementation behaviour can be identified and explained using the Health Belief Model.

The health belief model is a very useful theoretical framework for predicting preventive health behaviour, and remains one of the most widely used in health promotion and education. The model explains and predicts health behaviour with special reference to preventive health behaviour by focusing on the perceptions and beliefs of individuals. The model was developed in 1950s by social psychologists Hochbaum, Rosestock and Kegels in the United State public health service (National Cancer Institute, 2005). Thickey tenets of the model are perceived susceptibility, perceived benefit, perceived barriers, self-efficacy and cues to action.

Perceived susceptibility

Perceived susceptibility measures an individual's perception of his or her risk for a health condition or disease while perceived severity measures feelings surrounding the seriousness of the condition and the effects of leaving it untreated (Glanz *et al.*, 2002). The combination of perceived susceptibility and perceived severity is considered a threat or, more broadly, fear of a disease or health condition. For example it is well documented in clinical medicine that pregnant women are susceptible to preeclampsia due to the fact that it is a pregnancy health-related condition and more so it has been documented as leading cause of maternal mortality. Thus in this model, if pregnant women could be aware of the perceived susceptibility and severity of preeclampsia, they would initiate a positive health behaviour that would prevent maternal and perinatal morbidity.

Perceived benefits

Perceived benefits include positive consequences of adopting behaviour. Pregnant women who initiate positive health behaviour perceive that they stand to gain better chances of pregnancy outcomes, for example by making use of antenatal care.

Perceived barriers

Perceived barriers include the perceived negative consequences of adopting a behaviour (Janz & Becker; 1984). Though these barriers and benefits can be health-related, often they are not. Instead, they might be associated, to a great degree, to one's environment, lifestyle, or social surroundings. In this case they represent those factors that may prevent the young women from taking antenatal care. For example high cost of antenatal care, non availability of quality care in antenatal clinic and distance of antenatal clinic from their place of residence all can constitute barriers to attending antenatal sessions.

Cues to action

Cues to action refer to cues such as bodily events and environmental events that instigate action (Glanz *et al*., 2002). They are the reminders in our everyday lives that signal us to act in one way or another. The ability to receive information, encouragement and positive feedback to support healthy habits is a critical contributor toward individual's adoption and maintenance of healthy behaviours at a broad level. House *et al*., (1998). Pregnant women may require external factors such as advice from close relatives, a physician, and daily reminders such as posters, radio and television documentaries to promote use of antenatal care for monitoring of pregnancy.

In applying this theory to this study, questions were raised to learn about perception of pregnant women on preeclampsia. The questionnaire was designed to tease out information about pregnant women's perceived vulnerability, knowledge and preventive strategies against preeclampsia as well as severity and consequence of preeclampsia. Questions on belief about efficacy of using antenatal clinic and medications to reduce maternal mortality from preeclampsia were also included in the quest.

Health Belief Model Applied To Knowledge and Preventive Strategies against Preeclampsia

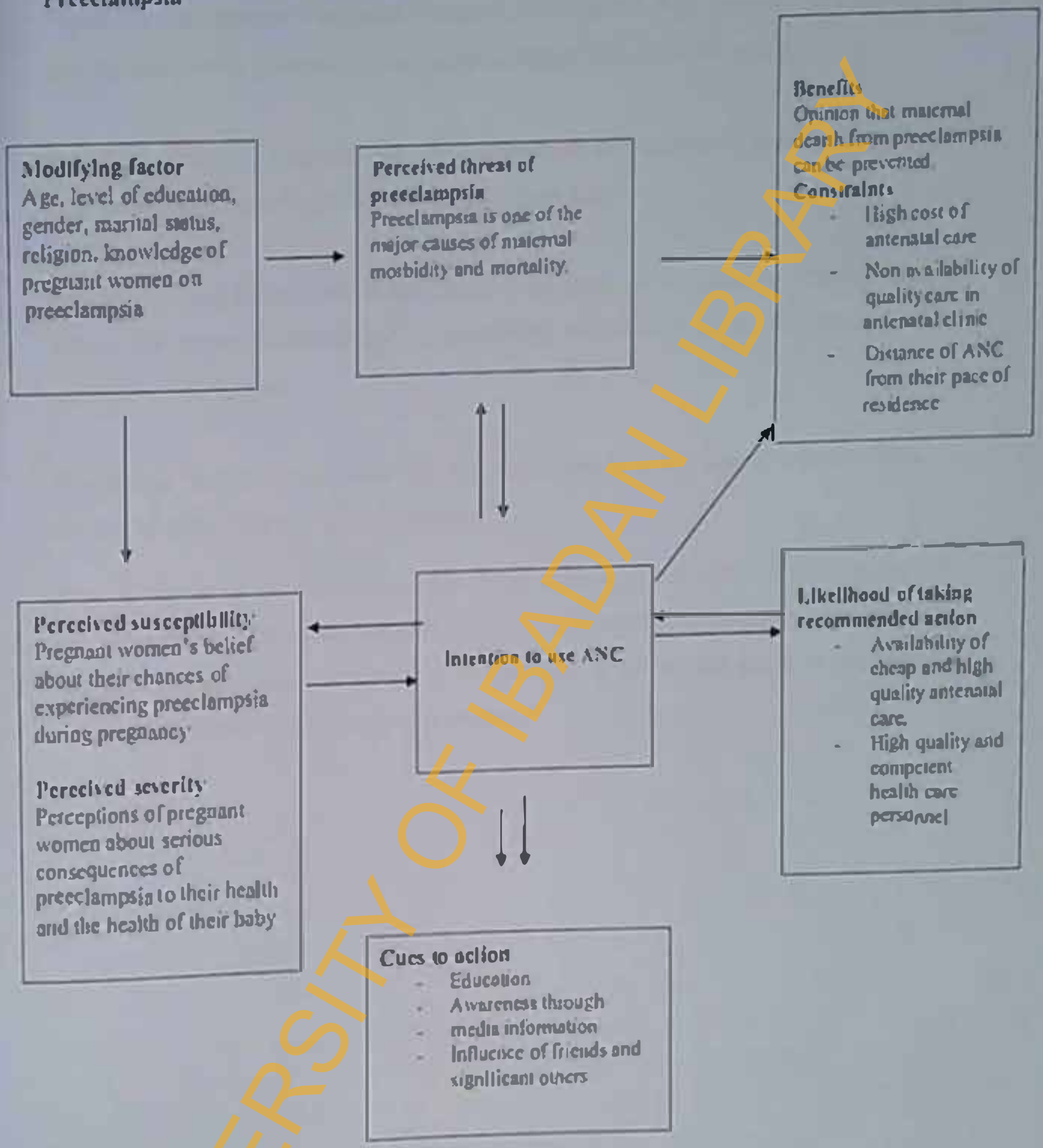

Figure 2.1: Health Belief Model Applied To Knowledge and Preventive Strategies against Preeclampsia *Adapted from Change Process- A Social and Behavioral Foundation for Health Education and Health Behavior and Health Education Theory. Research and Practice*

Application of this model to this study as illustrated in the Diagram above Fig 2.1

Perceived susceptibility: Pregnant women's belief about their chances of experiencing preeclampsia during pregnancy as the health condition only affects pregnant women.

Perceived severity: Perceptions and belive of pregnant women about serious consequences of preeclampsia to their health and the health of their baby

Benefits: Opinion that maternal death from preeclampsia can be prevented. this will inturn enhace their usage of antenatal clinic for monitoring of their fetus and for ealy detection of nny sign of preeclampsia

Constraints High cost of antenatal care, non availability of quality care in antenatal clinic distance of ANC from their pace of residence

Cues to action: They are the reminders in our everyday lives that signal us to act in one way or another.In this context these are level of eduention,awareness,medin information influence of friends and significant others that will influence a pregnant women action in utilization of antenantal clinc for propermonitoring of her baby

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of Study Area

Adeoyo Maternity Teaching Hospital, Yemetu Ibadan is a tertiary hospital. It was founded in 1927 and it is one of the biggest maternity hospitals in the capital city of Ibadan, Oyo State, South Western Nigeria. The hospital is located in Ibadan North Local Government Area which has a population of about 300,937 people of which 150,837 are males and 149,100 are females. The principal inhabitants are mainly Yoruba. It covers areas from Beere roundabout through Oke-Are to Mokola, Oke Itunu, and Ijokodo. It also covers are Beere roundabout through Gate, Idi-Ape to Bashorun and up to Lagos/Ibadan expressway, Secretariat, Bodija, University of Ibadan and Agbowo Areas. The Ibadan North Local Government comprises 12 wards. The ward where the proposed hospital is located is a semi urban community. Malaria transmission is perennial in this part of the country.

Adeoyo Maternity Teaching Hospital serves Ibadan municipality with all its five urban local government areas. It is mostly patronized by Ibadan residents especially those of low and middle socio-economic class. Being one of the major maternity hospitals in Oyo State, it serves as a 6-referral center for Primary Health Care (PHC) centres and other secondary health centres in Ibadan. It was upgraded to the status of a teaching hospital in 2004. It is very close to the University College Hospital, which serves as a tertiary institution where referrals are sent from Adeoyo Maternity Hospital. It has a bed capacity of 247. There are about 37 doctors, 208 nurses, eight pharmacists and 40 laboratory workers as well as other health staff. The hospital has seven main service departments: Obstetrics and Gynaecology, Paediatrics, Casualty, Pharmacy, Medical Records, Transport and Administration. On a monthly basis, about 1,600 women register for antenatal care and about 3,800 women attend the immunization clinic. The Obstetrics and Gynecology Department has its clinic days from Monday through Friday every week from 9 am. Its location is accessible by taxi and buses from most part of the city and entire state. Average daily attendance by pregnant women at

this clinic is more than 100/day. The choice of Adeoyo hospital is based on its large and diverse clientele and its central location.

3.2 Study Design

This study was a descriptive cross sectional survey. This was used to study the knowledge and preventive practice of preeclampsia among pregnant women attending antenatal care in Adeoyo Hospital in Ibadan, Oyo state.

3.3 Scope of the Study

The scope of the study was limited to the knowledge of and preventive strategies against preeclampsia among pregnant women attending antenatal clinic in Adeoyo hospital Yemetu, Ibadan Oyo state.

3.4 Study Population

Pregnant women receiving antenatal care in Adeoyo hospital constituted the study population for the purpose of this research.

3.5 Inclusion Criteria

Only women who were pregnant and receiving antenatal care in Adeoyo maternity hospital during the period of data collection were included in the study.

3.6 Sample Size Determination

The desired sample size was obtained using the statistical formula for estimating single proportion as follows:

$$n = \frac{Z^2pq}{d^2}$$ (Leslie Kish Formula)

Where z= 1.96, (level of significance of 4%)

Prevalence of eclampsia in Nigeria is between 2% and 16.7% (Okopaic 2008)

(For the purpose of this study prevalence of 16.7% was used)

P =0.167

q = 1-0.167=0.833

d = 4% (degree of accuracy i.e. precision) constant

n = minimum sample size

$$n = \frac{1.96^2 \times 0.167 \times 0.833}{0.04^2} = 334$$

To take care of possible non-response rate, 10% of calculated sample size was added resulting to a total number of sample size of 367. This was rounded up to 400 for the purpose of this study.

3.7 Sampling Technique

Systematic random sampling method was used to select pregnant women that participated in this research guided with the following procedure.

(a) An estimated list of all pregnant women receiving antenatal care in Adeoyo hospital was compiled within the period of one month; this formed the sampling frame.

(b) Using formula N/n, a sample interval k was determined.

i.e. N/n=k

Where k is constant i.e. value within which the first respondent was selected

N = total population of pregnant women attending antenatal clinic at Adeoyo hospital (1400, estimate within a month), this is based on the average of 100 women pregnant women received at the antenatal clinic of Adeoyo Hospital per day, as shown in the register at the center.

n = sample size of women that participated in the research (400)

Hence, K =1400/400 =3.2 approximately 3

(c) Simple random sampling was used to select the first respondent within the range of estimated kth.

Upon selection the first respondent i.e. x (where x represents the first respondent), the next respondent was x plus kth. This procedure was repeated until the required sample size was reached.

3.8 Method of Data Collection

Both quantitative (semi-structured questionnaire) and qualitative (focus group discussion) instruments were used for data collection.

3.9 Variables

The independent variables in this study are social demographic characteristics of the respondents while the dependent variables are knowledge and preventive strategies against the prevention of preeclampsia among pregnant women attending antenatal care in Adeoyo hospital.

3.10.1 Qualitative method

The qualitative method used in this study was Focus Group Discussion (FGD). A focus group discussion guide was developed to explore issues relating to knowledge and preventive strategies against preeclampsia. Four (4) Focus Group Discussions were conducted which consisted of the pregnant women. A group contained 8-10 members based on voluntary participation. Each group contains those who answer questions on the questionaire and those who did not. The audio voice of the participant was recorded using a tape recorder which the participant consented to prior to the commencement of the discussion; each session lasted for about 45 minutes. This was also complemented with note taking.

3.10.2 Quantitative method

For quantitative data collection, a semi-structured questionnaire was designed first in English language by the principal investigator through literature review from related studies. The questionnaire comprised of different sections such as socio demographic section, knowledge and preventive strategies of preeclampsia among pregnant women. The questionnaire was

then translated to Yoruba and back-translated to English. This was done by a colleague who specializes in speaking and writing of Yoruba language as well as English language. The questionnaire was pre-tested in a similar setting; amendments and corrections were made where necessary. The instrument was administered in Yoruba language.

3.13 Validity

To ensure validity of the instrument, relevant literatures were consulted. A draft of the instrument was developed and was reviewed by the researcher's supervisor and experienced researchers in the field of public health and in data processing. Instruments were also subjected to n peer review.

3.14 Reliability

For reliability of the instrument used, 10% of the instrument was pre-tested in a place with similar demographic characteristic as the study area, Adeoyo Hospital, Ring Road, Ibadan. The following steps were taken to ensure reliability of instruments:

3.15 Training of Research Assistants

The instruments were modified and standardized after which three research assistants were trained for data collection by the principal investigator. Educational qualification of the assistants was at least Ordinary National Diploma (OND) and its equivalence. They were fluent in English and Yoruba languages. The research assistants were trained for two days. A time table was drawn for this period which took three (3) hours 9a.m-12 noon daily. The research assistants were trained in the following areas by the principal investigator in English language with a colleague who was versed in Yoruba language for proper interpretation to the research assistants. The researcher clarified the objectives of the study, basic facts on sampling procedure as well as a review of the instrument item in order to ensure adequate understanding of the instruments, appropriate recording of responses and seeking clarification in case of unclear responses and communication skills. In addition, ethical issues such as translation of the research instrument to Yoruba language, obtaining informed consent, respect for privacy and confidentiality of information were explained to the research

assistants. A manual of field operation was prepared to explain how entries would be made and the number of questionnaire copies to be administered and how variables would be coded

1 The two instruments used for data collection were pre-tested to ascertain suitability and appropriateness to field situations, determine whether the questions were clear and simple enough for participants comprehension and determine the trend in the response of participants and the average amount of time it took to administer each questionnaire copy. Two Focus Group Discussions were conducted and 40 pregnant women were interviewed with the questionnaire representing 10% of the sample size for this study.
2 Content validity of the questionnaire was achieved through the incorporation of the preliminary pretested Focus Group Discussion result.
3 Cronbach Alpha technique was used to determine the reliability co-efficient of the questionnaire at 0.7
4 At the end of the exercise, items that were not easily understood were reframed; those that were found to be irrelevant were removed. For instance, questions that had no response, some open ended questions, were made close ended to make them easy for the respondents to answer.

3.16 Data Collection Procedure

The research assistants, with the principal investigator were involved in the data collection. Which was intervier administered. Data collection took place mostly in the morning when it was easier to get the participants at the antenatal clinic; they were collected in Yoruba language. Short briefing sessions were held at the end of each day where the day's work was reviewed and the next plan of action disseminated to the research assistants.

The data collected were checked for completeness and accuracy in the field. Serial number was assigned to each questionnaire copy for easy identification while daily cleaning and editing of data collated from the field was done, and entered into the computer. Management of data was carried out using the Statistical Product and Service Solution (SPSS) version 15.

3.17 Blood Pressure Measurement

Blood pressure was measured using manual sphygmomanometer in a sitting position. This exercise was conducted by a qualified nurse working in the facility before the client received service. The systolic blood pressure and diastolic blood pressure were recorded. The purpose of this was to determine how common high blood pressure was among the participating pregnant women.

3.18 Data Analysis

Quantitative data were entered into computer and analysis was done using descriptive statistics of mean, median and standard deviation. Chi-Square analysis was used to test for association. Findings were summarized and presented in tables and charts. The questionnaire comprised of 19 knowledge questions. Each question was scored one point. Participants who scored >12 and above were rated as having good knowledge. >6-12 were scored as fair knowledge, while those who scored ≤6 were scored as poor knowledge score. The scores were then summed up to give a composite knowledge score for each respondent. Knowledge was categorized into high, fair and poor. Preventive practice scores of ≤ 15, and >15 were categorized as poor, and good respectively. This was based on 30-point preventive practice questions. Focus group discussion responses were transcribed and analyzed using thematic approach.

3.19 Ethical Consideration

Prio to the commencement of this study the research protocols was submitted to Oyo State Ethical Committee for ethical approval. Informed consent form was gven to the participants which were both in verbal or awritten form. Participation in the study was voluntatry. The nature of the study, benelits and objectives were explained to the participant and were also assured that the information given will be treated with utmost confidentiality.

However, participants were given equal opportunities to withdraw their consent freely during the study. Confidentiality of each participant was maximally maintained during and after the collection of his or her information. Information gathered from respondents were stored in the computer for analysis by the researcher while questionnaire filled by the respondents will be kept for maximum of ten years after the purpose of the study had been accomplished.

Finally, participant's right of confidentiality and the right of responsibilities of the respondents was maintained throughout the course of the study.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-Demographic Characteristics

This chapter presents the results of the analyzed study findings. Results on socio demographic characteristics are displayed on table 4.1. According to the results the age of respondents ranged from 16 to 43 years while the mean age was 28.6±5.2. The gestational age of pregnancy ranged from one month (1) week to (36) weeks (20.6%) with a mean gestational age of 24±2.0 weeks. Table 4.1 shows that more than half (57%) of respondents resided in urban area; 28%, semi urban; and 14%, rural. The table also shows findings from marital status, level of education, religion, ethnicity and occupation. Ninety-two percent of respondents were married 0.3% were separated, 6.5% were single while 1.3% were cohabiting. In terms of level of education, majority (40%) of respondents' attained secondary education, 5.5% attained primary education while others (13.3%) held first degree. Ordinary National Diploma (OND) Certificate holders constituted 16.3%. Higher National Diploma (HND) Certificate holders were 13% while Master degree holders were 1.5%. In terms of ethnicity, 94% of respondents were Yoruba while a considerable percentage (15%) were Igbo. It was noted that (39%) of respondents were traders. In terms of religion, 57% were Muslims, 48.5% were Christians while 0.5% affiliated themselves with traditional religious practices.

Table 4.1 Social demographics characteristics of respondents (N=400)

Variable	F	%
Age years		
16-20	24	6.0
21-25	94	23.5
26-30	144	36.0
31-35	104	26.0
36-40	31	7.8
41-45	3	0.8
Tribe:		
Yoruba	376	94
Igbo	15	15
Hausa	3	0.85
Cross Rivers	3	0.8
Edo	2	0.5
Tiv	1	0.3
Parity		
Primigravida	138	34.5
Primipara	139	34.8
Multipara	120	29.6
Grandmultipara	3	0.9
Age of pregnancy in months:		
1st Trimester	23	5.8
2nd Trimester	128	32
3rd Trimester	240	62.2

Table 4.2 showing of social demographics characteristics of respondents (N=400)

Varinble	F	%
Respondents occupation		
Trading	156	39.0
Self employed	129	32.3
Civil servant	71	17.8
Unemployed	26	6.5
Private	10	2.5
Student	8	2.15
Partners occupation		
Self employed	131	32.8
Civil servant	111	27.0
Trading	106	26.5
Artisan	20	5.0
Unemployed	8	2.0
Clergy	8	2.0
Banker	1	0.3
Private	4	1.0

4.2 Awareness of Preeclampsia among Respondents

When respondents were asked if they had ever heard of preeclampsia, 170 (42%) confirmed having heard about it while 230 (57.0%) said they had never heard about the health

4.3 Sources of Information on preeclampsia

Those who indicated having heard about it were asked their sources of information. 77.1% reportedly heard about from antenatal clinic, 37.1% from mass media, 30.0% from their relatives, 9.5% from their work place, 26.5% from newspaper, 23.5% from their spouse, 17.6% from the internet, 16.5% from seminar, 15.3% heard about the health condition from the mosque while 12.9% from the church.

Findings from focus group discussions were in support that most respondents were aware of preeclampsia. The following quotes reflect some of their comments.

- *I have not heard about it before, this is the first time i am hearing it*

- *I am aware that pregnant woman can have preeclampsia, it may be due to stress or the fact that the person had it before or the person may not have it at all. I am aware but I don't know the cause.*

- *I have heard about it before. I came to the clinic during my first pregnancy and I was told i had pregnancy-induced hypertension and because of that I was told I cannot deliver my baby without going through operation. So i had my first child with Caesarean Section"*

- *The hospital was the first place I heard about it. I was told it was a dangerous thing to happen to a pregnant woman. During that period I was on drugs, and you know if one doesn't follow the prescription very well it can lead to convulsion and constant headache; it is a very dangerous disease that should be looked into immediately. It is discovered because of the mother and child's health."*

4.4 Knowledge of Pregnant Women on Preeclampsia

From the study, questions were asked on the definition of preeclampsia. Sixty respondents (35.5) said yes, 36 (21.2%) said no while 74 (43.5%) respondents said they did not know as shown in Table 4.3 below. Questions were also raised on the causes of preeclampsia during pregnancy. Majority 138 (81.2%) got it wrong while 32 (18.8%) knew that the cause of preeclampsia is unknown.

Though the focus group discussants could not give the meaning and the exact causes of preeclampsia, they however noted their own understanding of the health condition. Typical responses which relate to the meaning of preeclampsia and causes include:

- *Preeclampsia means when someone has high blood pressure during pregnancy which can be caused by too much thinking especially about how to get money for treatment.*

- *I don't know what preeclampsia is. I haven't had one before so I can't really explain what it means. What I know is that, after the antenatal care meetings with the nurses, they do tell some of the pregnant women to stay back so that they can see the doctor because they have preeclampsia*

- *One of the major reasons i feel is the cause of pre-eclampsia is stress and anxiety regarding financial issues and fear of delivery.*

- *"Like I have said. I have read it in a book before, what they said about it is that the blood pressure will be higher than what it should normally be. The cause isbecause of what we are eating such as smoking cigarette and drinking alcohol. If the pregnant woman is eating too much of sugary foods, starchy foods and so on. Also when one is not eating fruits and vegetables proteinous food such as crayfish, snails, etc. and when the person is not eating balanced diet, all these can cause preeclampsia. If the person is also having terrible dreams like if she dreamed that her baby died after delivery, all these can lead to thinking which can cause preeclampsia*

- *I said some people used to take alcohol before pregnancy and some still continue during the pregnancy. I can't really say if all these things can cause preeclampsia.*

because I have never experienced it before. What I know is that during the antenatal lectures, we were told that we should not eat food containing too much storch and salt. For those that are smoking and drinking, that may be their habit and it may be what they had been doing before they got pregnant, so it is left to them if they will be able to stop.

- To me, I think taking too much salty food can cause preeclampsia, and then a pregnant woman that is smoking is at the risk of preeclampsia. The starchy food too must not be too much.

- I don't think eating starchy food can cause anything to pregnant woman, but pregnant woman that is smoking and drinking is killing herself gradually. Taking too much salt is not too good because it can cause preeclampsia.

- Medically, all those things you have mentioned are not suitable for pregnant women's consumption, because carbohydrate is not too good for babies. Salty food causes swollen hands and legs. Smoking cigarette also can cause preeclampsia. People who are drinking too can be exposed to preeclampsia.

- It is not good for a pregnant woman to be taking too much salty food and food that lacks vitamins. It is not also good for a pregnant woman to be smoking and drinking.

Table 4.3 Respondents knowledge of pre-eclampsia N= (170)

Variables	F	%
Definition		
Pre-eclampsia is high blood pressure that occurs in pregnanc after 20 weeks of gestation characterised with proteinuria, oedema and elevated blood pressure reading above 140/90 mmHg.		
Yes	60 *	35.5
No	36	21.2
Don't know	74	43.5
Cause of pre-eclampsia		
Cause known	44	25.9
Cause Unknown	32*	18.8
Don't know	52	30.6
Bad spirit	4	2.4
Thinking	24	14.1
Stress	3	1.8
Fear	2	0.1
Hereditary	2	1.2
Lack of sleep	1	1.2
Unhappiness	1	0.6
Lack of rest	5	2.9

*correct answer

4.4 Factors Contributing to Preeclampsia

Respondents' knowledge on contributing factors that could worsen hypertension in pregnancy was assessed, questions were asked about a set of predisposing dietary and social habits that may induce or worsen pregnancy induced hypertension as indicated in Table 4.4 above. More than half of the respondents (62. 4%) knew that high salt diet can induce hypertension in pregnancy, while 21.8% did not know, (36.5%) new that high cholesterol diet can induce hypertension in pregnancy while majority emerged (42.9%) did not know that high cholesterol is a predisposing factor to preeclampsia. Above two third (77.1%) of the respondents new that stressful situations can worsen pregnancy induced hypertension. while (10.6%) did not know. Information from literature indicate that multiple pregnancy can induce preeclampsia, only 32.4% knew about it while in terms of social habit that could induce preeclampsia majority of the respondents 41.2% did not know that cigarette smoking could induce the health condition. Respondents were asked. if drinking alcohol is a contributing factor to preeclampsia (42.9%) said yes (11.8%) said no while (45.3%) said they don't know.

4.4 Factors Contributing to Preeclampsia

Respondents' knowledge on contributing factors that could worsen hypertension in pregnancy was assessed, questions were asked about a set of predisposing dietary and social habits that may induce or worsen pregnancy induced hypertension as indicated in Table 4.4 above. More than half of the respondents (62. 4%) knew that high salt diet can induce hypertension in pregnancy, while 21.8% did not know, (36.5%) new that high cholesterol diet can induce hypertension in pregnancy while majority emerged (42.9%) did not know that high cholesterol is a predisposing factor to preeclampsia. Above two third (77.1%) of the respondents new that stressful situations can worsen pregnancy induced hypertension, while (10.6%) did not know. Information from literature indicate that multiple pregnancy can induce preeclampsia, only 32.4% knew about it while in terms of social habit that could induce preeclampsia majority of the respondents 41.2% did not know that cigarette smoking could induce the health condition. Respondents were asked, if drinking alcohol is a contributing factor to preeclampsia (42.9%) said yes (11.8%) said no while (45.3%) said they don't know.

Table 4.4 Factors contributing to Preeclampsia among pregnant women N= (170)

Variables	F	%
High Salt diet		
Yes	106*	62.4
No	27	15.9
Don't know	37	21.8
High Cholesterol diet		
Yes	62*	36.5
No	35	20.6
Don't Know	73	42.9
Stressful Situation		
Yes	131*	77.1
No	21	12.4
Don't know	18	10.6
Lack of Exercise		
Yes	107*	62.9
No	32	18.8
Don't know	31	18.2
Smoking Cigarettes/snuff		
Yes	66*	38.8
No	34	20.0
Don't Know	70	41.2
Sleeplessness		
Yes	127*	74.7
No	20	11.8
Don't know	23	13.5
Worrying		
Yes	126	74.1
No	15	8.8
Don't know	29	17.1
Mulitple Gestation		
Yes	55*	32.4
No	54	31.8
Don't Know	61	35.9
Drinking Alcohol		
Yes	73	42.9
No	20	11.8
Don't know	77	45.3

*Correct answer

4.5 Knowledge of health condition that could predispose pregnant women to be preeclamptic

Responses displayed on the table 4.5 below indicate conditions that could predispose pregnant women to be preeclamptic. Above forty perfect (44.1%) knew that caution is needed when diagnosed with chronic hypertension, 42.9 % knew that they had to take careful when carrying multiple pregnancies and 40.0% knew that caution is needed in case of obesity.

Table 4.5 Condition that could predispose pregnant women to be preeclamptic

N= (170)

Varinbles	F	%
Conditions that could predispose pregnant women to be preeclamptic?		
Chronic Hypertension		
Yes	75*	44.1
No	26	15.3
Don't Know	69	40.6
Multiple gestation		
Yes	73*	42.9
No	42	24.7
Don't Know	55	32.4
Obesity		
Yes	68*	40.0
No	26	15.3
Don't Know	76	44.7

*Correct answer

4.6 Action taken when diagnosed with Pre-eclampsia (N = 170)

In terms of action to be taken when diagnosed to be preeclamptic, 95.3% knew that they had to attend clinic on schedule dates. However 91% knew that they had to rest for two (2) to four (4) hours a day if diagnosed with pregnancy-induced hypertension. Respondents were asked on how they could prevent or reduce maternal mortality from preeclampsia as illustrated on table 4.6 below. Respondents were asked whether better health services could reduce preeclampsia-caused maternal mortality. In response, 94.9% agreed with their choice of "yes"; 2.5% responded with "no" while 2.5% did not have any response. When asked concerning availability of periodic health care services, 81.8% confirmed with "yes", and 4.7% responded with "no" while 6.5% did not know.

Table 4.6 Actioo taken when dingnosed with Pre-eclampsia (N = 170)

Variables What should you do if you are diagnose to be preeclamptic?	F	%
Do nothing		
Yes	21*	12.4
No	134	78.8
Don't know	15	8.8
Attend clinic on scheduled dates to have condition monitored		
Yes	162*	95.3
No	4	2.4
Don't know	4	2.4
Give myself 2 – 4 hours rest per day		
Yes	155*	91
No	7	4.1
Don't know	8	4.7
Likelihood of dying from pre-eclampsia be reduced		
Yes	158*	92.9
No	12	7.1
How can the likelihood of dying from preeclampsia be reduce or prevented?	**(N = 158)**	
Better health care service		
Yes	150*	94.9
No	4	2.5
Don't know	4	2.5
Periodic Health service		
Yes	139*	81.8
No	8	4.7
Don't know	11	6.5

*correct answer

4.7 Knowledge Score among Respondents

Table 4.7 shows knowledge score of the respondents, which were scored into Poor 97 (24.3%) Fair 175 (43.8%) and High 128 (32.0%) respectively

Knowledge score among respondents

Variable		F	%
Poor	<6	25	14
Fair	6-12	70	41.2
Good	>12	75	44.1
Total		170	100
Mean(x) knowledge score		11.1 ±4.0	

4.8 Preventive Strategies against Symptoms of Preeclampsia among Respondents

Respondents were asked what to do if they experienced symptoms of preeclampsia. Almost ninety-three percent (92.4%) knew that they should seek medical care for oedema of the feet; 94.1% knew that they should seek medical care for constant headache; 92.9% knew that they should seek medical care for palpitations while 94.1% knew that they should seek medical care for breathlessness, as documented in table 4.8a. Respondents' knowledge on what to do when predisposed to preeclampsia was sought. Ninety-eight percent (98.8%) knew that they should book early for clinic while 94.7% knew that they should keep review dates. Majority (95.9%) knew that they should monitor foetal movements. 91.2% knew that they should have adequate rest. Another 88.0% knew that they should have regular exercise; 94.7% knew that they should take a balanced diet with low salt and 98.2% knew that they should take drugs as prescribed.

The interviewees agreed that going to the hospital to receive care against preeclmpsia was the right step, rather than going to churches and mosque for prayers. Their typical responses include the following.

- *There is nothing wrong in using herb; I don't really see anything bad in using herb*
- *Although the Yoruba use herbal concoctions, but we don't really use it in my own culture. Herb is good, it is good to use herb.*
- *I don't agree in taking the pregnant woman to the church or mosque. I think the best thing is to take her to the hospital immediately*
- *I totally agree, since the Pastor or Imam is not a doctor. She should be taken to the hospital. They are not doctors, so hospital is the best place to take her to.*
- *I think going to the hospital is the best thing. Although the Federal Government has said that courses on traditional herbal medicine should be taught in the universities. I think they have now realized the important of herbal medicine. Probably, when that has been established, but for now hospital is the best option.*

- *The best thing I thing a pregnant woman can do is come to the hospital to be monitored. If the person has high blood pressure before or if it is even induced, by the time they come to the hospital, the doctor will be able to direct them on what to do and the person should not miss her appointment time with the doctor for any reason.*

- *What I can say is that, since we already know all the things that cause preeclampsia, we should just do away from those things. And again, the doctor is always there for us, who will tell us exactly what we need to do about it. I am not against prayers, but we know it is better to obey than to make sacrifices. We should just listen to the doctors and try to do whatever they tell us.*

- *What I think we can do is that, once we should abide by all the instructions that have been given to us, we should also not be thinking and we should not stress ourselves. Aside that, if a woman who has given birth to girls should go for a scan and the pregnancy again turned out to be another girl, she will surely be depressed. My advice is that, there should be proper counseling for people like that so that it will not result into preeclampsia for them.*

Table 4.8a Preventive strategies for pre-eclampsia among respondents N= (170)

Preventive strategies for preeclampsia	F	%
What should respondents do if the develop the following condition?		
Swelling of the feet		
Seek medical care		
Rest at home	157*	92.4
Seek help at faith healer	11	6.5
	2	1.2
Palpitation (Irregular heart beat)		
Seek medical care		
Rest at home	158*	92.9
Seek help at faith healer	12	7.1
	-	-
Constant headache		
Seek medical care		
Rest at home	160*	94.1
Seek help at faith healer	10	5.9
	-	-
Breathlessness		
Seek medical care	160*	94.1
Rest at home	10	5.9
Seek help at faith healer	-	-
Pregnant women with Preeclampsia predisposing factors should		
Book early for clinic	168*	98.8
Yes	-	-
No	2	1.2
Don't know		
Keep review date	161*	94.7
Yes	6	3.5
No	3	1.8
Don't know		
Monitor fetal movements	163*	95.9
Yes	2	1.2
No	5	2.9
Don't know		
Lie on left lateral positions	125*	73.5
Yes	17	10.0
No	28	16.5
Don't know		
Have adequate rest 2-3hr perd day	155	91.2
Yes	9	5.3
No	6	3.5
Don't know		

*Correct answer

Table 4.8b Preventive strategies against pre-eclampsia (N=170)

Variable	F	%
Take balance diet with low salt		
Yes	161*	94.7
No	2	1.2
Don't know	7	4.1
Take drugs as prescribed		
Yes	167*	98.2
No	1	0.6
Don't know	2	1.2
Regular exercise		
Yes	151*	88.8
No	6	3.5
Don't know	13	7.6

*Correct answer

4.9 Resting Techniques among Respondents

When asked about resting techniques, as shown in Table 4.9 below, 60.6% knew that lying down in bed with left side is a resting technique. 65.9 % knew that sitting with legs elevated on a stool is a way of resting.

4.10 Food and Social Habits to Avoid among Respondents

Results on Table 4.9 also show findings on food to avoid by pregnant women. Slightly above fifty nine-percent (59.4%) knew that they should avoid fatty food while 80.0% knew that they should avoid salty food. Above seventy one percent (71.2%) knew that they should avoid too much starch. Concerning questions on social habits to avoid, 68.2% knew that they should avoid alcohol and another 65.3% knew that they should avoid cigarettes smoking.

Table 4.9 Resting techniques, food and social habits to avoid in reducing the risk of developing Pre-eclampsia

N (170)

Resting Techniques, food and social habits	F	%
Lie down in bed on left side		
Yes	103*	60.6
No	24	14.1
Don't Know	43	25.3
Sit down with legs elevated on stool/chair		
Yes	112*	65.9
No	24	14.1
Don't know	34	20.0
Food / habits pregnant women should avoid?		
Fatty foods		
Yes	101*	59.4
No	22	12.9
Don't know	47	27.6
Salty food		
Yes	136*	80.0
No	22	12.9
Don't know	12	7.1
Too much starch		
Yes	121*	71.2
No	27	15.9
Don't know	22	12.9
Cigarette smoking		
	111*	65.3
Yes	36	21.2
No	23	13.5
Don't know		
Alcohol	166*	68.2
Yes	24	14.1
No	30	17.6
Don't know		

*Correct answer

4.11 How Pregnnnt Women should Exercise aod Use Medication

Results of knowledge on how to exercise showed that 82.4% knew that doing household chores is a way of exercise and 80.0% knew that taking walks is a way of exercising. Only 47.1% and 53.5% knew that they should always perform mental and body relaxation respectively to manage stress. Almost sixty-eight percent (67.7%) mentioned that mental relaxation can be achieved through sleeping, 15 .3% said it can be achieved through watching movie while 4.1% and 13.5% said it can be achieved through storytelling and reading books respectively. Respondents were asked about the extent to which medications should be taken and how what efforts are necessary to lose extra weight. Almost ninety-four percent (92.9 %) knew that prescribed medications should always be taken.

Table 4.12 Perceptio of pregnant women on exercise and use medications (N=170)

Variable	F	%
How to exercise in order to reduce hypertension in pregnancy?		
Carry out house chores		
Yes	140*	82.4
No	16	9.4
Don't know	14	8.2
Take walks		
Yes	136*	80.0
No	24	14.1
Don't know	10	5.9
Extent of engngement in stress manogement?		
Mental relaxation		
Never	21	12.4
Rarely	11	6.5
Somctimes	58	34.1
Always	80*	47.1
Body relnxation		
Never	10	5.9
Rarely	9	5.3
Somctimes	60	35.5
Always	91*	53.5
Activitles that give mentol rdnxation		
Reading		
Story telling	23	13.5
Sleeping	7	4.1
Watching movic	114	67.7
Compliance with prescribed medication	26	15.3
Always		
Never		
Dont know	158	92.9
	5	2.9
	7	4.1

*Correct

Table 4.13 Preventive Strategies score of respondents

Variable		F	%
Poor	≤15	8	4.7
Good	>15	162	95.3
Total		170	
Mean preventive strategies score		24.0 ± 3.9	

4.12 Occurrence of Preeclampsia among Respondents

Blood pressure measurements were collected using a mercury sphygmomanometer and a stethoscope. The cut-off blood pressure level indicating a well-controlled blood pressure was 140 mmHg for systolic pressure and 90 mmHg for diastolic pressure. Any values above these figures represent uncontrolled hypertension, as seen in Table 4.11 below. Ninety five (95.5%) had a normal blood pressure while 4.5% had a blood pressure measurement between 140/90 and above on one measurement. Detail knowledge about their health condition during pregnancy was explored. The results showed that 9.5% respondents had blood pressure detected by a midwife while 90.5% did not experience it. Also protein in the urine test by a laboratory scientist was positive in 8.5% but negative in 91.5 subjects. Twenty-one percent (21%) reported experiencing swollen of the feet, ankle, hand and face while 78.9 % did not have the experience Twenty-seven percent (27%) conceded having experienced severe headache while 72.5% reported no such experience. Slightly above fourteen percent (14.3%) experienced vision problems such as blurring and seeing flashing light but the remaining 85.8% did not have such experience. Concerning vomiting 38% chose "yes" while the remaining 62% chose "no". Finally, 14.3% conceded having experienced excessive weight gain due to fluid retention while 85.8% indicated having no such experience.

The interviewees disclosed further signs and symptoms of preeclampsia that pregnant women experience during pregnancy, with the following discussion as documented bellow.

- *Part of the orientation we were given when we came for antenatal is that if you noticed that you have a swollen hand or swollen leg, it may be a signal of preeclampsia.*
- *If one is having sleepless night, it could really be a signal of preeclampsia. If the person should go to the hospital to complain, they may ask her to check her blood pressure to confirm if she has preeclampsia*
- *The signs I can mention is that if both the hand and the leg of a pregnant woman are swollen, it could be a sign of preeclampsia. And again, it is not good for a pregnant woman to be thinking all the time. If one is constantly fearful or scared, it means the person has developed preeclampsia*

Table 4.14 Blood pressure measurement among respondents N= (400)

Variables	Frequency	percentage
Blood pressure reading between 139/89 and below	383	95.5
Blood pressure reading between 140/90 and above	18	4.5

Table 4.14 Symptoms of preeclampsia among respondents (N = 400)

Variables	Frequency	percentage
Ever experienced the following symptoms during pregnancy		
High blood pressure detected by a mid-wife.		
Yes	38	9.5
No	362	90.5
Protein in the urine detected by a lab scientist		
Yes	34	8.5
No	366	91.5
Swollen of the foot ankle and face		
Yes	85	21.0
No	315	78.8
Severe headaches		
Yes	110	27.5
No	290	72.5
Vision problem, such as seeing flashing light		
Yes	57	14.3
No	343	85.8
Vomiting		
Yes	152	38.0
No	248	62.0
Excessive weight gain due to fluid retention		
Yes	57	14.3
No	343	85.8

4.13 Respondents Family History on preeclampsia

As revealed by the study 5.9% had a family history of preeclampsia with 2.4% metioned that her aunty had experience the health condition, and another 1.8% reportedly that her mother and her sister had expericed preeclampsia respectively, see table below:

Table 4.14 Respondents Family History on preeclampsia (N=170)

Variable	F	%
Have any of your family members ever been diagnosed of pre-Eclampsia?		
yes	10	5.9
No	160	94.1
What is your relationship with the family members who had experience pre-eclampsia?		
Auty	4	2.4
Sister	3	1.8
Mother	3	1.8

4.14 Experience of Pre-eclampsia in earlier Pregnancy

Result shows that 3 (0.8%) respondents had experienced preeclampsia in earlier pregnancy, and they all had their baby through caesarean section. One of the respondents reportedly had experienced bleeding (post partum haemhorage) after her experience.

Table 4.15 Experience of preeclampsia in early pregnancy

Variables	Frequency	Percentage
Ever experience pre-eclampsia in earlier Pregnancy		
Yes	3	0.7
No	397	99.3
At what level of pregnancy was it diagnosed		
Above20weeks	3	100
At what age was the pregnancy of your baby delivered		
20 weeks	2	66.7
28 weeks	1	33.3
What was the delivery method	3	100
Cesarean section		
N		
What was your baby weight at birth	1	33.3
1-1.5kg	2	66.7
2kg		
Any complications at birth	1	33.3
Yes	2	66.7
No		
Type of complication did you suffered	1	33.3
Bleeding	2	66.7
No complication		
How would you rate the care you received from health care Professionals When you experience pre-eclampsia in your earlier pregnancy	1	33.3
very good	2	66.7
good		
Average		

4.13 Test of Hypotheses

Hypothesis 1

There is significant association between age and knowledge of preeclampsia among pregnant women receiving antenatal care in Adeoyo Maternity Hospital, Yemetu, Ibadan.

Table 4.16 shows respondents' level of knowledge on preeclampsia by selected socio-demographic characteristics. The selected socio-demographic characteristics were age, level of education and place of residence. The distribution of respondents with good knowledge of preeclampsia among different age brackets reflected. (≤ 24yrs) (> 24 yrs). Good knowledge of preeclampsia increased with age group. Overall there was a significant relationship between age and knowledge of preeclampsia. We therefore reject the null hypothesis since there was a significant association between age and knowledge of preeclampsia among respondents.

Table 4.16 Association between age and Knowledge of pre-eclampsia (N=170)

Characteristics	Knowledge of pre-eclampsia			Total	X^2	P-Value
	Poor	Fair	Good		11.036	0.004
Age						
≤ 24yrs	10(34.5%)	10(34.5%)	9 (31.0%)	19(100)		
>24 yrs	15(10.6%)	60(42.6%)	66(46.8%)	141(100)		

Hypothesis 2

There is no significant association between educational level and knowledge of preeclampsia among pregnant women receiving antenatal care in Adeoyo Maternity Hospital, Yemetu, Ibadan. Table 4.17 shows respondents' level of education and their knowledge of pregnancy-induced hypertension. The distribution of respondents' good knowledge as regards to their level of education showed primary (28.6%), secondary (40.6%), and tertiary. Overall there was no significant association between level of education and knowledge of pre-eclampsia, hence the null hypothesis was accepted (upheld).

Table 4.17 Association between Level of Education and Knowledge of pre-eclampsia

Characteristics	Knowledge of pre-eclampsia			Total	X^2	P-Value
Edu. Level	Poor	Fair	Good			
Primary Edu	3(14.3%)	8(57.1%)	4 (28.6%)	15 (100)	9.421	0.151
Secondary Sch.	15(23.24%)	23(35.9%)	26(40.6)	64 (100)		
Tertiary	8(8.8%)	39(37.7%)	44(39.6%)	91 (100)		

Hypothesis 3

There is no significant association between place of residents and level of knowledge of pregnant women receiving antenatal care in Adeoyo Maternity Hospital Yemetu, Ibadan.

Table 4.18 shows respondents' level of knowledge and some selected socio-demographic characteristics. The selected socio-demographic characteristics were age, level of education, and place of residence. The distribution of respondents' place of residents and level of knowledge showed urban (20.0%), rural (28.6%) and semi-urban (30.7%). Overall there was no significant association between place of residence and level of knowledge of preeclampsia among respondents. Therefore, the null hypothesis was accepted (upheld).

Table 4.18 Association between Location and Knowledge of pre-eclampsia (N=170)

Characteristics	Knowledge of pre-eclampsia			Total	X^2	P-value
Location	poor	Fair	good			
Urban	11(44.0)	9(36.0)	5(20.0)	25(100)		
Rural	40(57.1)	10(14.3)	20(28.6)	70(100)	8.33	0.800
Semi Urban	43(57.3)	9(12.0)	23(30.7)	75(100)		

Hypothesis 4

There is no association between age and preventive strategies against preeclampsia among pregnant women receiving antenatal care in Adeoyo Maternity Hospital, Yemetu, Ibadan.

Table 4.19 shows respondents' preventive strategies against preeclampsia by selected socio-demographic characteristics. The selected socio-demographic characteristics were age and educational level. The distribution of respondents' good preventive strategies scores among age groups ≤ 24yrs, >24 yrs were 89.7% and 96.5% respectively. Overall, there was no significant association between age of respondents and preventive strategies against preeclampsia. Hence the null hypothesis was accepted (upheld).

Table 4.19 Association between Age preventive strategies

Characteristics	Preventive Strategies		Total	χ^2	P-value
Age	Poor	good		2.479	0.115
≤ 24yrs	3(10.3%)	26(89.7%)	29 (100)		
>24 yrs	5(3.5%)	136(96.5%)	141(100)		

Hypothesis 5

There is no significant association between educational level and strategies against the prevention of preeclampsia among pregnant women receiving antenatal care in Adeoyo Maternity Hospital, Yemetu, Ibadan. The distribution of respondents' good preventive practices scores as regards their level of education showed primary (15.0%), secondary (95.3%) and tertiary education (94.5%). Overall, there is no significant association between educational level and preventive strategies against preeclampsia among pregnant women attending antenatal care in Adeoyo Maternity Hospital, Yemetu, Ibadan. Thus, the null hypothesis was accepted (see table 4.20 for details).

Table 4.20 Association between Educational level and preventive Strategies

Characteristics	Preventive strategies		Total	X^2	P-value
	Poor	Good		0.86	0.833
Primary	NA	15(100%)	15(100)		
Secondary	3(4.7%)	61(95.3%)	64(100)		
Tertiary Edu.	5(5.5%)	86(94.5%)	91(100)		

CHAPTER FIVE

5.0 DISCUSSION, CONLUSION AND RECOMMENDATION

5.1 Introduction

This chapter focuses on the findings of the study and it encompasses the socio-demographic information; awareness and knowledge of pre-eclampsia, preventive strategies, occurrence of pre-eclampsia. This chapter ends with conclusion and recommendation.

5.2 Socio-demographic Characteristics

The age of respondent's ranges from 16 to 43 years, the selected respondents made it possible to investigate knowledge and preventive strategies against preeclampsia among young and middle aged pregnant women. In terms of marital status, the findings revealed that majority (92.0%) of the respondents were married. (6.5%) were single and another (1.3%) were cohabiting. this was contradicted by Seedat, (2000) who stated ineffective blood pressure control increased among married urban women and rural widowed females in South Africa. In terms of level of education 5.5% attained primary education, 41.5% attained secondary education while 29.6% attained tertiary education; this was in line to the outcome on a related study in Calabar Nigeria by (Oyira et al. 2009). With regards to religion above half (57.0%) were Moslems and (48.5%) were Christians. This is probably due to the fact that the study location-Ibadan has a fairly high percentage of Muslims faithful than Christian. Evidence from Ethnicities shows that majority of the respondents were Yoruba (94.0%) This is reflecting the fact that the location of the study. Ibadan is a south western part of the county were Yoruba are predominate. Respondents occupation showed that 39.0% were petty traders, this is followed by those who were self- employed 26.8% respondents next to this were civil servant(17.8%). A reasonable percentage (6.5%) were unemployed. they do not have paid employment due to the unemployment rate in the country (23.9%) as documented by National Bureau of Statistics (2011).

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5.3 Level of awareness of pre-eclampsia among pregnant women

From the study it was documented that less than half of the respondents 170 (42.0%) were aware of pre-eclampsia while majority 230 (57.0%) were not aware. This was contrary to findings from a recent survey of 1,591 in the United State of America (Pre-eclampsia foundation, 2014). It was documented in the study that 83.0% of respondents had heard of pre-eclampsisa and of those women, 99.0% knew that it is extremely serious, even life-threatening for mother and baby. The reason behind this could be that United States a developed nation may have better structure in educating and creating awareness among pregnant women on the health condition, unlike Nigeria which is a developing nation. This current finding on awareness of pre-eclampsia was supported by similar study in Brazil on maternal perception of premature birth and the experience of pre-eclampsia among 28 pregnant women in a facility specialized in high-risk pregnancies in the state of *Rio Grandedo Notre*, North-eastern Brazil (Nilba Lima de Souza *et al*., 2007). It reported twenty analysis units showed they were unaware of this condition during prenatal care. They only became aware after hospitalization or by the imminent premature delivery, the reason behind this could be Brazil with similar setting like Nigeria is also a developing nations of the world

5.4 Knowledge of Pre-eclampsia Among pregnant women

Several dimensions were used to ascertain knowledge of pre-eclampsia among respondents ranging from definition of the health condition, causes, predisposing factors. Questions pertaining to women's understanding of the term pre-eclampsia were asked (35.5%) knew the correct answer. This current finding was in contrary to a related study conducted in Zimbabwe (Pswarayi, 2010) where majority of the respondents knew the correct definition of pre-eclampsia, the reason behind this could be that pregnant women had received detailed health talk on the health condition during antenatal clinic. However, a large proportion of the participants, (81.2%) lacked more specific knowledge that the exact cause of pre-eclampsia is unknown. Evidence has been presented to indicate that the exact cause of pre-eclampsia is unknown and may be determined by a single recessive gene (Chesley 1999). This shows that whatever one does if the person has gene to developed preeclampsia it will developed the health condition since it has a genetic cause as the problem will be inherited in the person

On contributing factors to preeclampsia only (62.4%) knew that high salt diet can predispose one to pre-eclampsia, this evidence shows that half of the respondents never knew that high salt diet can predispose one to preeclampsia. Continued reinforcement on the dangers of salt in predisposing to pregnancy induced hypertention in some susceptible patients is necessary so that this kind of knowledge does not become extinct with time Chockalingham et al. (2000) concurred and stated that people should refrain from adding salt when cooking and at the table. However, more knowledge needs to be imparted on other predisposing causes of preeclampsia such as multiple pregnancies and cigarette smoking, high cholesterol diet. Higher percentage, 67.7% did not know that multiple pregnancy can predispose to preeclampsia Sixty nine percent (63.5%) did not know that high cholesterol can predispose one to pre-eclampsia. Sixty Eight (61.2%) percent did not know that smoking cigarette can predispose one to pre-eclmmpsia and only 57.1% new that alcohol intake can induced pre-eclampsia. This findings was supported by a related in study conducted in Zimbabwe by (Pswarayi et al, 2010) were few percentage of the respondents had good knowledge on contributing factors to pre-eclampsia.

On knowledge of condition that could predispose pregnant women to preeclampsia, in this current study it was documented that only less than half of the respondents knew that they have to take cautions in health conditions like Obesity, Multiple gestation, and chronic hypertention at 40.0%, 42.9%, and 44.1% respectively. This lack of knowledge particularly for obesity might prove to be detrimental to health since most Africa women might take obesity to be an acceptable prestigious sign of being well or looked after (Bhardari, 2005) hence they are reluctance in losing weight. However weight reduction of 5 to 10% is recommended in obese people (meiters & van Gall, 2000). Manyemba (1997) in his study in Zimbabwe revealed that obese women has ineffective blood pressure control.

The total knowledge scores on pre-clampsia in the present study sample demonstrated a minimum knowledge score of 25(14%), average 70 (41.2%) and a maximum knowledge score of 75(44.1%) out of 100%. Generally, participants therefore had good knowledge on pre-eclampsia since majority 75 (44.1%) had hihest score. This current findings was in line with finding by (Mamitha Jose, et al 2010) in Indian on assess the knowledge regarding pre-

eclampsia and its self care measure among pregnant women the reason behind this could be that Indian and Nigeria are both developing nations of the world.

5.5 Preventive practices on pre-eclampsia among pregnant women

Good knowledge on preventive strategies were demonstrated on either seeking medical care or resting at home when one has swollen of the feet, constant headache, breathlessness and palpitations. Participants were also generally knowledgeable on precautions to take when predisposed to preeclampsia. More so, participant generally scored high on knowledge of foods and social habits to avoid in preventing pre-eclampsia. This finding was supported by a study in Zimbabwe (Pswarayi, et al 2010) where majority of respondent were knowledgeable on food and social habit to avoid in preventing pre-eclampsia. The reason behind this could be as a result of respondents' birth experience, because most of the respondents had given birth more than once. On resting techniques during pregnancy Sixty four (65.9%) percent knew that they have sit down with legs elevated on stool while another 60.6% knew that pregnant women have to lie in bed with left side. A sizeable proportion of respondents were knowledgeable on the fact that attending clinic was essential for preeclamptic patients. However, majority (90.0%) appeared to know that resting for 2 to 4 hours a day was equally important. This finding was in line with a related study in Calabar Nigeria (Oyira et a l. 2009) who documented in his study that resting for 2-4 hr during pregnancy can reduce the risk of developing preeclampsia

Physical activity has been noted to reduce body fat, peripheral resistance and cardiovascular load thereby enhancing blood pressure control (Taylor-Tolbert et al, 2000; WHO, 2002) thus on how to exercise to reduce the risk of developing pregnancy induced hypertension more than half of the respondents (82.4%) knew that carrying house chores is a mild way of exercising in reducing pregnancy induced hypertension and another (80.0%) knew that taking a walk is another way of exercising. Non-strenuous physical activities such as house chores and walking are recommended and are initial steps to attain blood pressure control (Hughes, Park & Brown, 2000). Blumental et al , (2001) further states that combined physical activity and weight reduction contribute to increase blood pressure control which is a major sign of preeclampsia. Over 70% of the study sample in the present study knew about the importance

of physical activities using various techniques ranging from taking walks to doing household chores.

On stress management, findings from this current study revealed that half of the respondents (53.5%) engaged in body relaxation always while (35.5%) did it sometimes. Finding on mental relaxation shows that only (47.1%) do it always and another (12.4%) had never engaged in stress management. This findings was contradicted by related study in Zimbabwe pswarayi. (2010) were majority of respondents admitted that they engaged in stress management sometimes.

Clients experiencing stress are encouraged to adopt stress management interventions including breathing exercises, and listening to music (Bailey et. al. 2001). Listening to music or watching television enables one to feel relaxed there by reducing stress. Exercise should be done routinely in moderation. Stress management techniques need to be integrated with the clients everyday living as a way of promoting health. Stress contributes to very high blood pressure (Carrol. 2000). Therefore mental relaxation is essential. It was encouraging to note that the majority of respondents at least knew that mental relaxation or physical relaxation should be done always. More than half of the respondents (67.5%) at least knew that reading books was a way of achieving mental relaxation

5.7 Occurrence of pre-eclampsia among Respondents

Occurrence of elevated blood pressure was determined among respondents. Findings show that few of the respondents 18 cases (4.5%) had elevated blood pressure which is one of the major sign of preeclampsia. This current finding was in line with the study by Ebegbe and Aziken, 2000-2005 were it was documented that out of the total deliveries recorded in the hospital within the period of the research 46 cases (6.3%) were complicated with elevated blood pressure. On symptoms of pre-eclampsia during pregnancy findings revealed that 8.5% of respondents had experience protein in the urine during pregnancy. this current findings was contradicted by a related study in sri lanka in Korean republic were micro proteinuria determined was 43 cases of 256 (16.7%) respondents (Weerasekera & Hemantha, 2003). Twenty one percent (21.0%) had experience swelling of the feet which are the main features

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of pregnancy induced hypertension this was contradicted by Nkwo, (2009) in a similar study in eastern part of Nigeria whose finding document (8.5%) prevalence of leg Oedema among 1000 consecutive pregnant Igbo women over a 10 month period.

On those who had experienced pre-eclampsia in previous pregnancy, findings revealed that 3 cases (0.8%) of respondents admitted they had experienced the health condition in their previous pregnancy. This current finding was contradicted by a related study in Malawi which record 8 cases among 52,489(0.2%) deliveries. This current study finding also revealed that 0.5% of respondents who had experience preeclampsia in their earlier pregnancy were complicated with post-partum hemorrhage after their experience of preeclampsia. Postpartum hemorrhage is one of the leading causes of maternal morbidity and one of the top three causes of maternal mortality in both high and low per capita income countries. Studies have showed that 1 in 100,000 deliveries in the United Kingdom versus 1 in 1000 deliveries in the developing countries (Prata& Oerdis, 2010).

Findings from this study showed that a positive relationslup was found between age of the respondents and knowledge on pre-eclampsia at ($p<0.05$). This implies that respondent age has effect on the level of knowledge on pre-clampsia i.e as age increase, their level of knowledge on preeclampsia also increase. The reason behind this is not well understood. The reason behind this could be as a result of their birth experience. In the long run there was no significant association between level of education place of residence and knowledge of pre-eclampsia

Place of residence and level of education was not significant associated with preventive strategies, the study conducted by (Nanitha et al 2010) in Indian revealed otherwise. The reason behind this is not well understood. More so, respondent's knowledge on preventive strategies against the health condition could be as a result of their personal experience.

5.8 Implications of findings for Population nnd Reproductive Health Education

There is no gainsaying that the findings from this study have health promotion and education implications and simply the need for multiple interventions directed at tackling the preeclampsia nmong pregnant women. The responsibility of health education focuses on the modification of people's behavior and antecedents (WHO, 1998; Green and Kreuter, 1991). Health education is concerned with helping people developed practices that ensure the best possible well-being (WHO, 1998) which could be individual or collective. Health education principles, strategies and methods can be employed to address the negative findings identified in this study.

Firstly this study identifies below average level of awareness of pre-eclampsia among respondents and good knowledge of preeclampsia among those who had heard about the health condition.This overall poor awareness and in-depth understanding of the health condition signifies that there could be an increase in maternal mortality and perenatal morbidity arising from preeclampsia since majority of the respondent were not aware of the health condition. In light of this, there is need for health promotion and education strategies to address this phenomenon. To achieve this pregnant women tutor (Public health nurses) at the antenatal clinic, therefore need to continue strengthening knowledge of preeclampsia and its preventive strategies to their client's. The health education talk during antennal clinic among other things should focus on following: knowledge with inclusion of a general overview on definition of pre-eclampsia, causes, predisposing factors, testing techniques, food and social habit to avoid in the prevention ofthe health enndition. Maternal child health (MCH) education for nurses and midwives should include latest recommended evidence based literature on preeclampsia. This could foster channels on reaching pregnant women on awareness, knowledge and how to prevent pre-eclampsia.

It is imperative at this salient period in the development of programs in the county to appraise the training curriculum of health professionals (midwifes) with an intention to determine the presence and scope of content element relating to knowledge of pre-eclampsia and its preventive strategies which need to be infused into them.

Secondly, the findings also indicate a deficiency of many communication channels to educate respondents about pre-eclampsia. As a matter of policy, health facilities in Nigeria should be provided with resource centers which need to be equipped with educative resource materials on pre-eclampsia in Nigeria. Public enlightenment programs which combine techniques such as the use of posters, handbills, jingles and documentaries could therefore be helpful because they have the potential for reaching large numbers of people. The fact that less than half of respondents were not aware of pre-eclampsia suggests that delineation of campaigns should address interventions among pregnant women, educating them on the importance of taken appropriate preventive measure against pre-eclampsia

Finally, it is important for government through the federal ministry of health to play its role in sensitizing health professionals at all levels and with different professional affiliations on knowledge of pre-eclampsia and its preventive strategies among pregnant women in Nigeria. This could be archived using the following strategies and activities:

1. Organising conferences on pre-eclampsia among stakeholders, developing, printing, and distributing communications tools that will promote knowledge and preventive strategies against pre-eclampsia
2. Partnering the Federal Ministry of Education which oversees the education of past, present and future health professionals
3. Developing the capacity of health professionals to handle and care for pre-eclamptic and eclamptic patient.
4. Developing appropriate data bank in various health facilities across the country reporting incidence and prevalence of pre-eclampsia
5. Partnering the various media organization to educate the public on knowledge of pre-eclampsia and its preventive strategies, disseminate information on the health condition.
6. Partnering Non-Governmental organization to achieve the aforementioned strategies and activities.

5.9 Conclusion

The research explored the level of awareness, knowledge, occurrence and preventive strategies against pre-eclampsia among pregnant women attending antenatal care in Adeoyo maternity hospital, Yemetu, Ibadan Oyo state. Less than half of the respondents had heard about pre-eclampsia and antenatal clinic was the predominate sources of information. Level of knowledge of pre-eclampsia was fair among respondents and majority of the respondent knows what to do to prevent preeclampsia.

The study is limited to pregnant women in Ibadan north local government and the sample size cannot really reflect all the pregnant women in Ibadan

5.10 Recommendations:

Based on the findings from this study, the following recommendations are offered:

1. Public enlightenment at the community level focusing on pre-eclampsia using various media outlet such as Television, radio, magazine, billboard, and internet facilities should be used to create awareness on the health condition among pregnant women.

2. Health education intervention such as health talk focusing on improving knowledge of pre-eclampsia among pregnant women attending antenatal clinic and uptake of preventive practices are hereby advocated

Limitation to the Study

Limitation in the study was language barrier on the part of the researcher. However, this was overcome by the help of research assistants who were versed in the speaking and writing of Yoruba language as well as English.

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Appendix I

FGD Guide

I am Okhae Kelly Relobhegbe, a student in the Department of Health Promotion and Education, college of medicine, university of Ibadan. We have approached you to conduct an interview on knowledge of pre-eclampsia and its preventive strategies among pregnant women with a view to know your level of knowledge and preventive strategies on this health condition. We will also crave your indulgence to allow us to use a tape recorder to record this interview so that no information is lost. Do you have any questions?

Thank you for your co-operation.

Date .....

Mobile: 08062343986, Email: rokhae@yahoo.com

S/N	MAIN QUESTIONS	FOLLOW UP QUESTIONS
1	Pre-eclampsia is common nowadays among pregnant women, are you aware of this condition?	✣ What are your sources of information on pre-eclampsia? probe for: Antenatal care Husband Mothers, mother/in-laws From other pregnant women Church, mosque, media ✣ Can you describe what you understand by pre-eclampsia? ✣ What are the causes of pre-eclampsia? ✣ What are the signs and symptoms of pre-eclampsia?
2	What are the risk factor that predisposes pregnant women to pre-eclampsia?	probe for: ✣ Alcohol ✣ Cigarettes Smoking ✣ Fatty food ✣ Too much starch in diet ✣ Salty food

3	What are the preventive measures for pre-eclampsia?	Probe for : Traditional ✣ tying of safety pin ✣ drinking of human urine ✣ drinking herbal preparation probe for: Spiritual ✣ Church ✣ Mosque Probe for : Orthodox Which of this method do you prefer?
4	What should pregnant women who are pre-eclamptic do to reduce the risk of dying from the disease?	Probe for: ✣ Regular medical check up ✣ Keep appointment date with health worker ✣ Monitor fetal movement ✣ Regular exercise ✣ Take balance diet with low salt ✣ Take medication as prescribe by the physician

Appendix II

Questionnaire

INFORMED CONSENT FORM

My name is Mr OKHAE Kelly relobhegbe a postgraduate student at the University of Ibadan Department of Health Promotion and Education, Faculty of Public Health. Presently I am undertaking a research project titled *knowledge of pre-eclampsia and its preventive strategies among pregnant women attending Adeoyo maternity hospital Ibadan, Oyo State*. I request your permission to participate in the study, your participation is voluntary and you are allowed to withdraw at any time if you choose to without any reprimand penalty.

All information obtained from you will be treated privately and confidentially. The interview will take 30 minutes or more and you will be asked questions about yourself what you know about pre-eclampsia and its preventive practices The knowledge gained will be used to improve quality of information skills and competences imparted to women with pre-eclampsia you can contact me for any questions or clarifications

Please kindly indicate by ticking the appropriate box below to indicate or show your willingness to participate or not

Would you like to participate?

YES ☐ NO ☐

Date .....

Mobile: 08062343986, Email: roklue@yahoo.com

SECTION A: SOCIAL DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Please Tick any of the response that apply to you in the boxes ☐ provided or complete the blank space provided.

1. How old were you in your last birthday? _____

2. How many children do you have? _____

3. Is this your first pregnancy or later pregnancy? 1 Yes ☐ 2No ☐ (if No pick the one that apply)

(1)2nd Pregnancy (2)3rd Pregnancy (3) Others please specify _____

4. How old is this pregnancy in months _____

5. Where do you reside? 1. Urban ☐ 2. Rural ☐

6. What is your marital status? 2 Cohabiting

1Single ☐ 2 Cobabiting ☐ 3Married☐ 4separated ☐ 5Divorced ☐

Others specify ——————————————————————

7. Which ethnic group do you belong to?

1. Yoruba ☐ 2.Igbo ☐ 3.Hausa ☐ 4.Others ——————————

8. Occupation 1. Civil servant ☐ 2. Artisan ☐ 3. Self employed ☐ 4. Trading ☐

5. Unemployed

9. Partner's occupation 1 Civil servant ☐ 2. Artisan ☐ 3. Self-employed ☐

4. Unemployed ☐ 5.Farmer ☐ 6. Others please specify_____

10. Religion 1. Christianity ☐ 2. Islam ☐ 3.Traditional ☐ 4.Others please specify_____

11. Highest Educattonal level 1. No formal education ☐ 2. Primary ☐ 3. Junior secondary☐ 4. Senior secondary ☐ 5. Technical school ☐ 6. OND ☐ 7. HND 8. First degree ☐ 9. Masters ☐ 10. PHD ☐ Others please specify_____

12. How far is the nearest public health facility to your place of residence?

1. Less than 5 km ☐ 2. 5 km to 10 km ☐ 3. More than 10 km ☐

SECTION A: LEVEL AWARENESS OF PRE-ECLAMPSIA AMONG RESPONDENTS

13. Have you ever heard of pre-eclampsia?

1. Yes ☐ 2. NO ☐ if no go to question 15

14. What are your sources of information on pre-eclampsia?

(Tick all that apply)

		1.Yes	2.No	3.Dont know
14.1	My husband			
14.2	Antenatal clinic			
14.3	Mass/media			
14.4	Work place			
14.5	Internet			
14.7	Seminal			
14.8	Relatives			
14.9	News paper/magazine			
14.10	Church			
14.11	Mosque			
14.12	Others please specify			

SECTION B: LEVEL OCCURENCE OF PRE-ECLAMPSIA AMONG PREGNANT WOMEN

15. I would like to record your blood pressure while sitting in upright position

Systolic blood pressure in mmHg	Diastolic blood pressure in mmHg

16. Have you ever experienced the following symptoms during pregnancy?

(Tick all that apply)

S/N		1.Yes	2.No	3.Dont know
16.1	High blood pressure diagnosed by midwife			
16.2	Protein in the urine detected by a lab scientist			
16.3	swollen of the feet, ankle, hand and face			
16.4	Severe headaches			
16.5	Vision problem, such as blurring and seeing flashing light			
16.6	Vomiting			
16.7	Excessive weight gain due to fluid retention			

SECTION C: KNOWLEDGE OF PREGNANT WOMEN ON PRE-ECLAMPSIA

17. Pre-eclampsia is high blood pressure that occurs in pregnancy after 20 weeks of gestation to 42 days post delivery?

1. Yes 2. No 3. Don't know

18. What is the cause pregnancy pre-eclampsia?

1. Cause known ☐ 2.cause unknown ☐ 3. Bad spirit ☐ 4.dont know

5. Others please specify.....

19. Which contributing factor may worsen or increase the risk of developing pre-eclampsia?

(Tick all that apply)

S/N	Statement	1.Yes	2.No	3.Dont know
19.1	High salt diet			
19.2	High cholesterol diet			
19.3	Stressful situations			
19.4	Lack of exercises			
19.5	Lack of adequate rest			
19.6	Smoking cigarettes/snuff			
19.7	Sleeplessness			
19.8	Drinking alcohol			
19.9	Multiple gestation(e.g twins or triplets)			

20. Which of the following conditions require a woman with Pre-eclampsia to take extra caution?

	Statement	1.Yes	2. No	3.Dont know
20.1	Chronic hypertension			
20.2	Multiple preynancies(twin/triplets)			
20.3	Obesity			

21. Can the likelihood of dying from pre-eclampsia be reduced?

1. Yes ☐ 2. No ☐ (if no go to question 23)

22. How can the likelihood of dying from pre-eclampsia be reduced or prevented?

S/N	Statement	1.Yes	2.No	3.Dont know
22.1	Better health care service			
22.2	Periodic health care service			
22.3	Keep to medications as prescribed by physician			

23. Has any of your family members ever been diagnosed of pre-eclampsia?

1. Yes ☐ 2. No ☐ (if no go to question 25)

24. What is your relationship with the family members who had experience pre-eclampsia?

Please specify.....

SECTION D: PREVENTIVE STRATEGIS AGAINST PRE-ECLAMPSIA AMONG PREGNANT WOMEN

25. What should you do if you are diagnosed to be pre-eclamptic

S/N	Statement	1.Yes	2.No	3.Don't know
25.1	Do nothing about it			
25.2	Attend clinic on scheduled dates to have my condition monitored			
25.3	Give myself 2 – 4 hours rest per day			

26. What should you do if you have the following condition?

(Tick all that apply)

S/N	Statement	1. Seek medical care	2. Rest at home	3. Seek help at faith healer	4. Seek help from traditional healer
26.1	swollen of the feet				
26.2	Constant headache				
26.3	Breathlessness				
26.4	Palpitation				

27. What should pregnant women with Pre-eclampsia predisposing factors do? (Tick all that apply)

S/N	Statement	1.Yes	2.No	3.Dont know
27.1	Book early			
27.2	Keep review date			
27.3	Monitor fatal movements			
27.4	Have adequate rest for 2 – 4 hours per day			
27.5	Lie on left lateral position			
27.6	Regular exercises			
27.7	Take balanced diet with low salt			
27.8	Seek medical care on time			
27.9	Take drugs as prescribed			

28. What should pregnant women with Pre-eclampsia do in order to rest themselves?

S/N	Statement	1.Yes	2.No	3.Dont know
28.1	Lie down in bed on left side			
28.2	Sit down with legs elevated on stool/chair			

29. Which of the following food / habits should pregnant women avoid to reduce the risk of developing pre-eclampsia?

S/N	Statement	1.Yes	1.No	3.Dont know
29.1	Fatty foods			
29.2	Salty food			
29.3	Too much starch			
29.4	Alcohol			
29.5	Cigarette smoking			

30. How should you exercise in order to reduce hypertension in pregnancy?

S/N	Statement	1.Yes	2.No	3.Dont know
30.1	Carry out house chores			
30.2	Take walks			
30.3	Do strenuous exercises			
30.4	Do Nothing			

31. To what extent do you engage in stress management?

S/N	Statement	Never	Rarely	Sometimes	Always
31.1	Metal relaxation				
31.2	Body relaxation				
31.3	Not involve in hard labour				
31.4	Others specify				

s 32. Which of the following activities give mental relaxation?

✓ Tick all that apply

32.1. Reading books ☐

32.2. Story telling ☐

32.3 Sleeping ☐

32.4 Watching movie ☐

32.5 Others please specify.....

33. To what extent should you take medicines as prescribed?

1. Always ☐ 2. Never ☐ 3.Don't know ☐

33. To what extent should you try to lose weight?

1. Always ☐ 2. Never ☐ 3.Don't know

QUESTION 35-45

(FOR THOSE WHO HAD EXPERIENCE PRE-ECLAMPSIA IN THEIR EARLIER PREGNANCY)

34. Have you ever experienced pre-eclampsia in your earlier pregnancy? If yes answer 36-46

1. Yes 2. NO

35. How was pre-eclampsia dingnosed?

1. Urine text ☐ 3.Blood pressure measurement ☐ 4 don't know ☐

36. At what level of pregnancy was it dingnosed?

1. Before 20 weeks ☐ 2. Within 20 weeks ☐ 3. Above 20weeks ☐

37. At what age was the pregnancy of your baby delivered?

1. 20 weeks ☐ 2. 28week ☐ 3. 36week ☐ d

38. What was the delivery method?

1. Cesarean section ☐ 2. Normal Delivery ☐

39. What was your baby weight at birth?

1.1-1.5 Kg ☐ 2. 2kg ☐ 3. 2.5-3.5kg ☐ 4. 4kg ☐

40. Did you had any complication during your experience of pre-eclampsia ?

1. Yes ☐ 2. No ☐

41. What type of complication did you surfer? .....

42. How would you rate the care you received from health professionals when you experience pre-eclampsia in your earlier pregnancy?

1. Very good ☐ 2. Good ☐ 3. Average 4. Poor ☐

FGD guide in Yoruba

Mo je akekoonipelekejiniile-iwegigatiile Ibadan nibiilimotinkoekonipaitera. Nibayi, mon se ayewoloriIfumo *Ifumpa Giga NinuOyunitiAwonOna Ti Angba Dena Re LaarinAwonObirinOloyun Ti Won Lasi Ile IwosunAdeoyo. Yemetu, Ibadan. Ilu Oyo.*

Gbogboidahuntimobagbaniyio je mosinu-mosikuntikosini je ohuntiawonaraelomiranyio mo si. Iforogbanilenuwoyio to bi ogboniscjutabijubeelomaasiunbeereibeereloriara yin atiloriawonnkan tie mo nipaifunpagiganinuoyunatiawononati an gbadena re.

Idahunwa fun isecycwolasanni. Kositidaliun to daralabicyitikodara, maanlendahunti o je otito

Ese fun ifowosopo yin

Ojo.....

Foonu: 08062343986, Apo ifi oronranse: rokhae@yahoo.com

S/N	MAIN QUESTIONS	FOLLOW UP QUESTIONS
1	Ifunpagiganinuoyun je nkanti o wopolaarinawonoloyun. njeeyintigboni pa elcyi.	~~Nbonictigbonipaifunpagiganinuoyun~~ • Beerenipa: Ipadeawonoloy Oko Iyatabiiyaoko Laaiodoawonoloyun iiina Soosi. Nosolasi. oniare • Njeclesalayeohunti e mo nmuifunpagiganinuoyu • Kiniawonohunti o maanfaifunpagiganmuoyun • Kiniawonanticuiyan ma fin mo ifunpagiganinuoyun

2.	Iruawonigbesewololejasikiobinnniifunpagigatu o baloyun	Beerenipa: ✣ Olimimu ✣ siga ✣ Awonounjeolora ✣ Awonounjeonisilashipupo ✣ Awonounjeoniyopupo
3.	Bawoniose le denaifunpagiganinuoyun	Beerenipa: asaabalaye ✣ lilipinisebaso ✣ Mimuiloeniyan ✣ Mimuagbo Beerenipa: Elesin ✣ soosi ✣ mosolasi Beerenipa: Onisegunibile Ewoninugbogboonawonyinielaramo?
4.	Kinikiawonobirinti o baniifunpagiga se latijekiarunnaa pa won	Beerenipa ✣ Siseeyewoniosibitudeode ✣ Ririawoneletoileranigbokugbauade hunbawapelu won ✣ Sise ere idaraya ✣ Ijeounjeasaraloorenuiyo re kopo ✣ Liloawonoogunudokitabako

Questionnir in Yoruba

IWE IBEERE LORI IMO IFUNPA GIGA NINU OYUN ATI AWON ONA TI ANGBA DENA RE LAARIN AWON OBIRIN OLOYUN TI WON LOSI ILE IWOSAN ADEOYO, YEMETU, IBADAN, ILU OYO

Foomu imo lori ise ati igbaaye lati dahun ibeere

Oruko mi ni ogbeni OKHAE Kelly Refobhegbe, mo je akeko onipele keji ni ile-iwe giga ti ile Ibadan nibiti motin ko eko nipa ilera. Nibayi, mon se ayewo lori *Imo Ifunpa Giga Ninu Oyun Ati Awon Ona Ti Angba Dena Re Laarin Awon Obirin Oloyun Ti Won Losi Ile Iwosan Adeoyo, Yemetu, Ibadan, Ilu Oyo.*

Gbogbo idahun timo ba gba niyio je mosinu-mosikun tikosi ni je ohun ti awon ara elomiran yio mo si. Iforogbanilenuwo yio to bi ogbon iseju labi ju beelo maasi tun beere ibeere lori ara yin ati lori awon nkan tie mo nipa ifunpa giga ninu oyun ati awon ona ti an gba dena re. Awon imo ti a ni nipa re yoi wulo lati jeki awon ohun ti an gbo ti a sin so nipa re ki o munadoko lati le se itoju ti o peye fun awon obirin tio ni ifunpa giga ninu oyun. Eie wa ba mi fun imoran ati ibeere

Ejowo e je ki amo ti e ba fe kopa nipa fifi ila si okan ninu awon aye tio wa ni isale

Se e nife lati kopa?

Beeni ☐ Becko ☐

Ojo .....

Foonu 08062343986. Email: tokhag@yahoo.com

Ejowo e fa ila si eyikeyi ninu awon idahun ti e ba fe wo si tabi ki e ko idahun yin si aaye ti a fi sile fun idahun ibeere

1. Omo odun melo niyin ni ojo ibi ti e se koja ----------

12. Omo melo ni e ni ----------

3. Se igba akoko ti e ma koko loyin tabi oyun ti o gbeyin? (1) Beeni (2) Becko (ti o ba je becko, enu okan ti o je mo tiyin)

4. Kini iyc osu oyun yin je.....

5. Ibo ni en gbe? 1. Agbegbe olaju ☐ 2. Abule☐

6. Kini eto igbeyawo tie se?

1. apon ☐ 2 enba am yin gbe ☐ 3 eti se igbeyawo ☐4 eti pin ya ☐5 eto ko ara yin sile ☐

omiran (esalaye) .....

7. Eya wo ni e to si? 1. Yoruba ☐ 2.Igbo ☐ 3.Hausa ☐ 4.Omiran .....

8.Ise 1 ise ijoba ☐ 2 ise owo ☐ 3 ise adani ☐ 4 ise owo ☐ 5 eko ni ise lowo

9.Ise ti oko yin nse 1 ise ijoba ☐ 2 ise owo ☐ 3 ise adani ☐4 eko ni ise lowo☐ 5 ise agbe ☐

6. omiran jowo se alaye.....

10. Esin 1 igbagbo ☐ 2 musulumi ☐ 3 esin ibile ☐ 4 omiran jowo salaye.....

11.Ipile ti gaju ti e kawe de 1 eko ka iwe Kankan ☐ 2 iwe alakobere ☐ 3iwe girama kekere ☐ 4 iwe girama agba ☐ 5 iwe onimo ero ☐ 6 OND ☐ 7HND ☐ 8 ile iwe giga oni pele akoko☐ 9 ile iwe giga onipele keji☐10 PHD☐ omiran jowo salaye.....

12. Bawo ni ile ti en gbe se jina si ile iwosan ti o sunmo bin julo si?

1 o kere ju ibuso marun lo ☐ 2 larin ibuso marun si ibuso mewa ☐3 oju ibuso mewa lo ☐

Ipele a: Bi imo ifunpa giga ninu oyun se po to laarin awon obirin oloyun

13. Se eti gbo nipa ifunpa giga ninu oyun ri?

1 Beeni ☐ 2 Beeko ☐ ti o ba je beeko lo si ibeere kerundinlogun

14. Nibo ni e ti gbo nipa ifunpa giga ninu oyun?

(fala si ibi ti o ba yin lamamu)

		1. Beeni	2. Beeko	3. Mio mo
14.1	oko mi			
14.2	Ile iwosan awon oloyun			
14.3	Ori redio tabi telifison			
14.4	Ibi ise			

14.5	Ori ero ayclujara			
14.7	Nibi eto			
14.8	Ebi			
14.9	Iwe iroyin/ magacini			
14.10	Soosi			
14.11	Mosolasi			
14.12	Ibomiran jowo salaye			

Ipele B: Bi ifunpa giga ninu oyun se wopo laarin awon obirin oloyun to

15. Maafe lati wo ye ifunpa yin wo nigba ti cba joko dasd

Ifunpa oke	ifunpa isale

16. Nje eti ni awon ami wonyi ri nigbati o wa ninu oyun?

(E fa ila si gbogbo eyi to jeino yin)

SN		1.Beeni	2.Beeko	3.Mooo
16.1	Ifunpa giga ti Noosi sope owa			
16.2	Awon ohun liko ye kosi ninu ito ti awon elcto ilera sayensi sawari re			
16.3	ese, orokun, owo ati oju ti o wu			
16.4	Ori fifo ti ole			
16.5	Awon arun oju bi ki oju ma wo baibai ati bio ma riran daadaa			
16.6	Bibi			
16.7	Sisan ra ju eleyi ti o sele lori ami di ojiji ara			

Ipele C: Imo awon oloyinu nipa ifunpa giga ninu oyun

17. Ifunpa giga ninu oyun je eyiti o maan waye nigba ti oyun bati pe bi ose ogun si ojo mejilelogoji ki a bimo?

1. Beeni 2. Becko 3. Mio mo

18. Kini o maan fa ifunpa giga ninu oyun?

1 Amo ohun ti o fa ☐ 2. akomo ohun ti o fa ☐ 3. Emi buruku ☐ 4. Mio mo ☐ 5. Onuran ☐

19 Kini awon nkan ti o maan sokun fa ifunpa giga ninu oyun tabi ti omaan jeki oru soke si?

(Iala si gbogbo awon ti o jemo)

S/N	Oro	1 Beeni	2 Becko	3 Mio mo
19.1	Iyo pupo ninu ounje			
19.2	Oru pupo ninu ounje			
19.3	Ise wahala			
19.4	Aikin se ere idaraya			
19.5	Aikin sinmi to			
19.6	Siga lifa			
19.7	Aikin sun daadaa			
19.8	Mimu oti lile			
19.9	Oyun toju omo eyokan lo (ibeji tabi ibeta)			
19.10	Ironu ti ko wulo			

20. Igba wo ni oburin ti o ba ni ifunpa giga ninu oyun je ko ma ran?

	Oro	1 Beeni	2 Becko	3 Mio mo
20.1	Eje ninu ti o ti pe			

Ipele C: Inno awon eloyun nipa ifunpa giga ninu oyun

17. Ifunpa giga ninu oyun je eyiti o maan waye nigba ti oyun bali pe bi ose ogun si ojo mejilelogoji ki a bimo?

1. Beeni 2. Beeko 3. Mio mo

18. Kini o nnnn fa ifunpa giga ninu oyun?

1 Amo ohun ti o fa ☐ 2. nkomo ohun ti o fa ☐ 3. Emi buruku ☐ 4. Mio mo ☐ 5. Onuran ☐

19. Kin awon nknn ti o maan sokun fa ifunpa giga ninu oyun tabi ti omoan jeki oru soke si?

(fala si gbogbo awon ti o jemo)

S/N	Oro	1.Beeni	2.Beeko	3.Mio mo
19.1	Iyo pupo ninu ounje			
19.2	Ora pupo ninu ounje			
19.3	Ise wahala			
19.4	Aikin se ere idaraya			
19.5	Aikin sinmi lo			
19.6	Siga fifa			
19.7	Aikin sun daadaa			
19.8	Mimu oti lile			
19.9	Oyun loju omo eyokan lo (ibeji tabi ibeta)			
19.10	Ironu ti ko wulo			

20. Igba wo ni obirin ti o ba ni ifunpa giga ninu oyun ye ko ma rora?

	Oro	1.Beeni	2.Beeko	3.Mio mo
20.1	Eje riru ti o ti pe			

20.2	Oyun ibeji tabi ibeta			
20.3	Sisanra ju			

21. Nje oseese ki igbemi ini ti omaan se yo nipa ifunpa giga ninu oyun dinku?

1. Beeni ☐ 2. Beeko ☐ (ti o baje beeko, losi ibeere iketelelogun)

22. Bawo ni a sele dena de tabi din iku ti o maan sele nipa ifunpa giga ninu oyun ku?

S/N	Oro	1.Beeni	2 Beeko	3 Mio mo
22.1	Eto ilera to muna doko			
22.2	Ati mua se ayewo ilera lorekore			
22.3	Ati maa lo awon ogun ti awon onimo isegun oyinbo ba ko			

23. Nje enikeni ninu ebi ti ni ifunpa giga ninu oyun ri?

1 Beeni ☐ 2 Beeko ☐ (ti o ba je beeko, losi ibeere kanundinlogbo)

24. Bawo ni ebi ti o ni ifunpa giga ninu oyun seje siyin?

Jowo salaye. .....

IPELE D: DIDENA DE IFUNPA GIGA NINU OYUN LAARIN AWON OBIRIN OLOYUN

25. Kini oye ki ese ti awon inmo segun oyunbo ba sope ewu ifunpa giga ninu oyun?

S/N	Oro	1 Beeni	2 Beeko	3 Mio mo
25.1	Mo se nkankan nipa re			
25.2	Losi ile iwosan ni awon ojo ti a ti yan lati maa sayewo			
25.3	Sisinmi fun wakati meji si meta lojoojumo			

26. Kini emaa se ti e ba ni awon nkan wonyi?

(fala si gbogbo eyi ti o ba jema) 1 2 3 4

S/N	Oro	Lofun ayewo ilera	Sinmi nile	Gba iranlowo lodo awon awonisan onigbagbo	Gba iranlowo lodo awonisan ibile
26.1	Ese wiwu				
26.2	Ori lifo orekoore				
26.3	Isemi				
26.4	Isesuke				

27. Kini ki awon loyun ti oseese ki won ni ifunpa giga ninu oyun se?

(fala si gbogbo eyi ti o ba jemo)

S/N	Oro	1.Beeni	2.Beeko	3.Mo mo
27.1	Tete lo foruko sile nile iwosan			
27.2	Losi ile iwosan ni ojo ti o ba ye			
27.3	Maa fojusi bi omo sen yira pada			
27.4	Maa simi daadaa fun bi wakati meji si meta lojoojumo			
27.5	Maa fi egbe osi sun gbalaja			
27.6	Maa se ere idaraya lorekoore			
27.7	Maa je ounje to peye ti iyo re ko po			
27.8	Yara maa gba eto ilera			
27.9	Lo awon ogun ba won se ni ki o lo			

28. Kini ki awon oloyun tio oni ifunpa giga se lati sinmi?

S/N	Oro	1.Beeni	2.Beeko	3.Mimo
28.1	Fi egbe osi sun lori ibusun			
28.2	Joko pelu gbigbe ese sori apoti tabi ijoko			

29. Ewo ninu awon ounje wonyi ni ki oloyun ti oseese ki o ni ifunpa giga yago fun lati din ninu ifunpa giga ninu oyun ku?

S/N	Oro	1.Beeni	2.Bee	3.Mmo
29.1	Ounje olora			
29.2	Ounje oniyo			
29.3	Sitasi topo			
29.4	Oti lile			
29.5	Siga lifu			

30. Bawo ni e se lese ere idaraya lati din ifunpa giga ninu oyun ku?

S/N	Oro	1.Beeni	2.Beeko	3.Mimo
30.1	Sise isc ile			
30.2	Maarin daadaa			
30.3	Do strenuous exercises Maa se ere idaraya ti o le			
30.4	Maa se ohunkohun			

31. Titi de ipele wo ni ki o ma kopa ise wahala?

S/N	Oro	Rara	Nigba die	Lekunkan	Ngbogbo igba
31.1	Ere opolo				
31.2	Ere ara				
31.3	Mase kopa ninu ise lile				
31.4	Eyitoku salaye				

32. Ewo ninu awon wonyi ni ere opolo?

✓ Fala si gbogbo eyi to jemo

32.1. Iwe kika ☐

32.2. Alo pipa ☐

32.3. Sisun ☐

32.4. Wiwo ere ☐

32.5 .Eyi tio ku jowo salaye.....

33. Ipele wo ki o lo awon ogun ti awon onimo isegun ko si?

1. lojoojumo ☐ 2. Rara ☐ 3. Mio mo ☐

34. Ipele wo ni ki o din iwon re ku de?

1 lojoojumo ☐ 2 Rara ☐ 3 Mio mo ☐

QUESTION 35-45

Ibeere ketadinlogoji si iketadinladoota

(Fun awon ti oti ni ifungigo ninu ojun ti won ti ni sotin)

35. Nje eti ni ifunpa giga ninu ojun ti eti ni seyin? Tio a ko je kosi dahun ibeere kerindinlogoji si ikerindinladoota

1. Beeni 2. Beeko

36. Bawo ni e se mo ifunpa giga ninu ojun?

1. Ninu ito ☐ 2 Ninu ifunpa ☐ 3 Mio mo ☐

37. Ipele wo ninu oyun won ti ri ifun giga?

1 Ki oto to ose ogun☐ 2 laarin ose ogun ☐ 3 Nigba ti o ju ose ugun lo ☐

38.Osu kelo ni e bimo?

1 ose ogun ☐ 2 Ose kejidinlogbon ☐ 3 Ose keindinlogoji ☐

39. Ona wo ni e gba bimo?

1 ise abe ☐ 2 Gbigba ebi ☐

40. Kini iwon omo yin?

1. 1-1.5 Kg ☐ 2. 2kg ☐ 3. 2.5-3.5kg ☐ 4. 4kg ☐

41. Se ko si wahala Kankan nigba ti o ni ifunpa giga nibu oyun?

1. Beeni 2. Beeko

42. Iru wahala wo ni eni? .....

43. Bawo ni ese ri itoju ti egba lati owo awon onimo isegun oyinbo nigba ti eni ifunpa giga ninu oyun ti eni keyin?

1. Odara gan ☐ 2. odara ☐ 3. odara die ☐ 4. kodara ☐

Appendix III

Greetings to you. My is Okhae Kelly Relobhegbe a post-graduate student of the Department of Health promotion and Education, college of medicine university of Ibadan. I am conducting a research study on knowledge of pre-eclampsia and its preventive strategies among pregnant women attending antenatal care Adeoyo Maternity Hospital Yemetu, Ibadan.

Title of the research:

Knowledge of pre-eclampsia and its preventive strategies among pregnant women attending Adeoyo Maternity Hospital, Yemetu, Ibadan

Names and Affiliations of researcher:

This study is been conducted by Okhae Kelly Relobhegbe of the department of health promotion and Education College of Medicine, Faculty of Public Health, University of Ibadan Oyo State, Nigeria

Purpose of Research:

The purpose of this study is to investigate knowledge of pre-eclampsia and its preventive strategies among pregnant women attending Adeoyo maternity hospital yemetu, Ibadan.

Procedure of the research:

I will be recruiting 400 participants into the study and I invite you to take part in this research project. If you accept, you will be asked to participate in the filling of the questionnaire which will be given to you. No one else other than the researcher or research assistant will be present. The information that will be given is considered confidential and only Mr Okhae Kelly Relobhegbe and her colleagues will have access to the information during the research.

Expected duration of research and participant involvement:

The duration of the data collection for this research which you are being requested to participate in is two weeks and each respondent will spend about 15 minutes to 20 minutes in filling the questionnaire.

Risk and Discomforts:

There are no physical risks associated with participation in this study. However, if you feel uncomfortable with some of the questions being asked, you may decide not to answer such questions.

Cost to the participation:

Your participation in the research will not cost you anything.

Confidentiality

Privacy of participants was ensured by using a serial number on the information collected rather than a name. Only the researcher knew the identification, and this information was kept secret. The data was not disclosed to anyone

Translation:

The informed consent form, questionnaire and focus group discussion guide was translated to Yoruba language, this was achieved by colleague who specialise in speaking and writing Yoruba language.

Beneficence:

The results of the research would be made available to the study participants and useful for programs like counselling, health talk that will help to improve the knowledge of pregnant women on pre-eclampsia and its preventive strategies.

Non-Maleficence:

This research was relatively risk free.

Voluntariness

Participation in the study was completely voluntary, and based on informed consent obtained from the respondent. Participants were made to understand that they can withdraw from this study at any time.

Permission

Permission was obtained from Adeoyo Maternity Hospital Management Board, before the research was conducted. The findings of this will be made available to the Oyo state Ministry of Health and other policy makers for planning purpose.

Ethical consideration

Approval for the study was obtained from Oyo state Ethics Review Committee at the state Ministry of Health. Should you have any question about your participation in this research, you may contact the principal investigator;

Mr Okhae Kelly Relobhegbe

Address:

Department of health promotion and Education, Faculty of Public health, University college Hospital, Ibadan

Telephone: 08062343986

E-mail: okhae@yahoo.com Or the supervisor of this Research;

Dr Oyedunni S. Arulogun

Address: Department of Health promotion and Education, Faculty of public Health, University College hospital, Ibadan.

Mobile: 08035794630, E-mail:omoyisola2002@yahoo.com

Statement of person obtaining informed consent:

I have fully explained this research to _____ and have given sufficient information, including about risks and benefits, to make an informed decision.

DATE:

_____ SIGNATURE: _____

NAME:

_____

Statement of person given consent:

Now that the study has been well explained to me and fully understand the consent of the study process, I hereby agree to be part of the study.

DATE: _____ SIGNATURE: _____

NAME: _____

Faculty of Public Health,

College of Medcine,

University of Ibadan,

22/05/2014.

Through the Secretary.

To

The Chief Consultant;

Adeoyo Maternity Hospital,

Yemetu, Ibadan.

Oyo State.

Noted for The EC/approval
Akinleye 22/5/14

approved
Dr 22/5/14

Dear Sir,

REQUEST FOR PERMISSION TO COLLECT DATA

I am writing for permission to collect data in your health facility. the research is descriptive study and will use both the quantitative and qualitative method of data collection to get information from pregnant women as regards their knowledge and preventive strategies against preeclampsia.

The research does not require any invasive procedures, or the collection of blood sample. Data will be collected from pregnant women by the use of a semi structured interviewer administerd questionnaire and focus group discussion guide.

The objective of the Study is to investigate knowledge of and preventive strategies against Preeclampsia among pregnant women receiving antenatal care in adeoyo hospital, yemetu Ibadan

Attached here is a letter of ethical approval from the Oyo State Ministry of Health, Ibadan Oyo State for the study.

CHO/c AHC PU
assist.
Akinjide CHO
22/05/14

The CRW I/c please treat.
@Akinleye
22/5/14

Yours faithfully,

Chinae Kelly Kelobhegbe

Department of Health Promotion and Education,

Faculty of Public Health,

College of Medicine,

University of Ibadan,

22/05/2014.

Through the Secretary,

To

The Chief Consultant,

Adeoyo Maternity Hospital,

Yemetu, Ibadan.

Oyo State.

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Akinleye 22/5/14

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Thank CRW/c please.
Akinleye
22/5/14

CHO/c AHC please assist.
Akinyide CHO
22/05/14

Yours faithfully,

Okhae Kelly Relobhegbe

TELEGRAMS.....

TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

For Ref. No. .....

~~Communications~~ should be addressed to

~~the Honorable Commissioner~~ quoting

Our Ref. No. AD 13/ 479/594

31st March 2014

The Principal Investigator,
Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan.

Attention: Okhue Kelly

Ethical Approval for the Implementation of your Research Proposal in Oyo State

This acknowledges the receipt of the corrected version of your Research Proposal titled "Knowledge of and Preventive Strategies against Pre-Eclampsia among pregnant women attending Adeoyo Hospital Ibadan, Oyo State."

2. The committee has noted your compliance with all the ethical concerns raised in the initial review of the proposal. In the light of this, I am pleased to convey to you the approval of committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of the findings as this will help in policy making in the health sector.

4. Wishing you all the best.

OYO STATE RESEARCH ETHICAL REVIEW COMMITTEE
Signature & Date

Solabomi Akinola
Director, Planning, Research & Statistics
Secretary, Oyo State Research Ethical Review Committee