

**SCHOOL OF PUBLIC HEALTH
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**ANTENATAL CLINIC, A MISSED OPPORTUNITY FOR
HYPERTENSION EDUCATION?**

BY

AKABA, HELEN NAA OYO

(10506528)

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DECLARATION

I, Helen Naa Oyoo Akaba hereby declare that apart from specific references which have been duly acknowledged, this work is the result of my own original research work done under supervision. It has neither in part nor in whole been presented elsewhere for another degree.

.....
HELEN NAA OYOO AKABA
(STUDENT)

.....
DATE

.....
DR. ERNEST TEI MAYA
(SUPERVISOR)

.....
DATE



DEDICATION

Divine; I can fly higher than an eagle, because indeed you are the wind beneath my wings, perpetually fighting for my honour.

My parents who prepared me for the future and my **new sweet family, Nutefe, Nunyuie, and Nukunu.**



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Thanks to all of you, you were all content to have me shine!!!

Immeasurable Gratitude to God

Walk about Zion, and go all around her.

Count her towers; mark well her bulwarks;

Consider her palaces; that you may tell it to the generation following.

FOR THIS IS GOD, OUR GOD FOREVER AND EVER;

HE WILL BE OUR GUIDE

EVEN UNTO DEATH. PS 48:12-14

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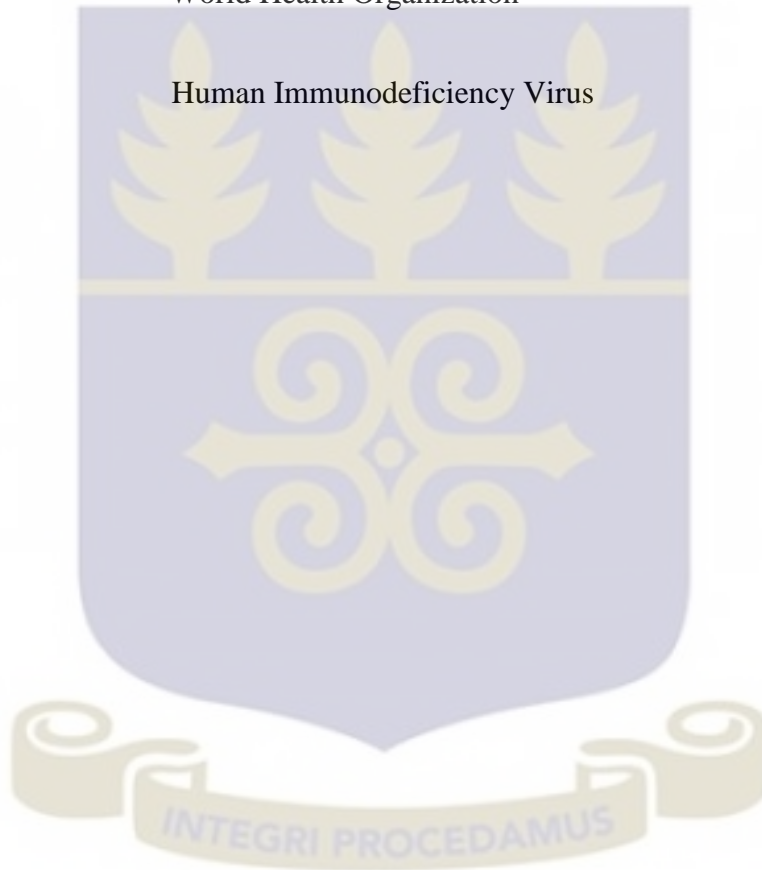
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LIST OF ABBREVIATIONS

ANC	Antenatal Clinic
HELLP Syndrome	Haemolysis, Elevated liver enzymes, Low platelets
KBTH	Korle-Bu Teaching Hospital
UNFPA	United Nations Population Fund
WHO	World Health Organization
HIV	Human Immunodeficiency Virus



DEFINITION OF TERMS

Index pregnancy: Current or present pregnancy

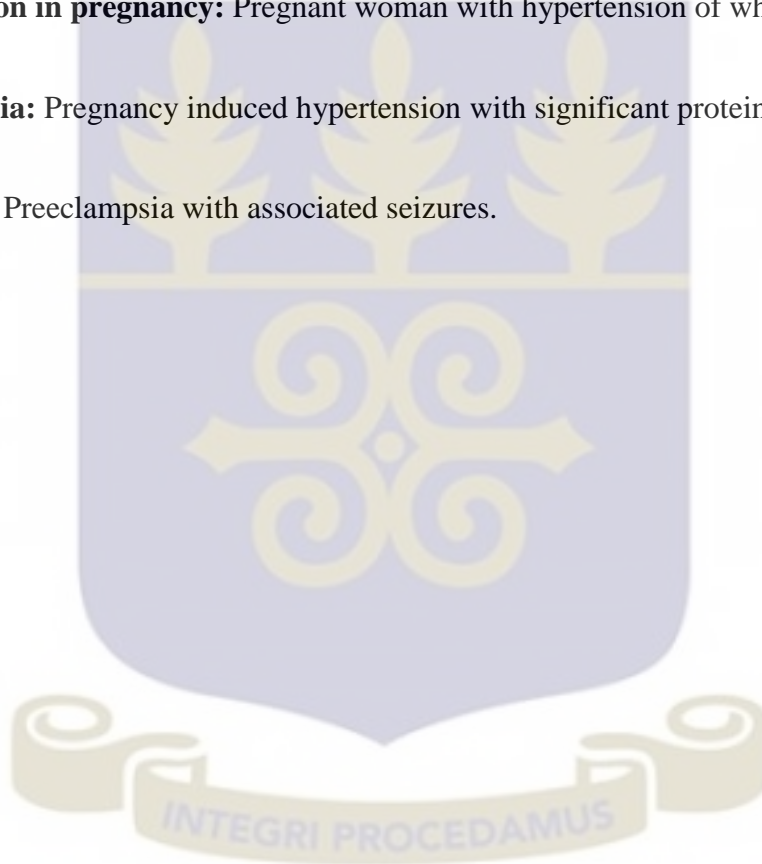
Booking clients: Pregnant women who were reporting for the first time in the index pregnancy at KBTH.

Continuing clients: Pregnant women who have made at least four antenatal visits at the KBTH in the index pregnancy and were at least 34 weeks pregnant.

Hypertension in pregnancy: Pregnant woman with hypertension of whatever cause.

Preeclampsia: Pregnancy induced hypertension with significant protein in the urine.

Eclampsia: Preeclampsia with associated seizures.



ABSTRACT

Introduction

Hypertension in pregnancy is a leading cause of maternal morbidity and mortality. Mortality usually results from eclampsia, a condition which is heralded by specific prodromal signs. Eclampsia can easily be prevented if a patient recognizes these signs, and seeks prompt care. Antenatal care provides a good opportunity to educate clients on the prodromal signs.

Objectives

To determine if greater proportion of expectant mothers who have received antenatal care in Korle bu Teaching Hospital, KBTH (because of the ANC education) compared to those who have not received any antenatal care in the same hospital know the danger signs.

Methods

This was a cross-sectional study on pregnant women attending the antenatal clinic of the KBTH. An interviewer-administered questionnaire was used for data collection on the patients' knowledge of danger signs of hypertension in pregnancy. The cleaned data were analysed using STATA 13. Continuous data were analyzed by means and standard deviation, and categorical data with frequencies. Tests of associations were done using Chi-square test with statistical significance at 5%, (p-value <0.05).

Results

There were 260 respondents. One hundred and thirty women were first time attendants at the antenatal clinic of KBTH in the index pregnancy and had not received any antenatal education there, referred to as the "booking clients". The remaining 130 had made at least 4 antenatal visits to the KBTH in the index pregnancy and were at least 34 weeks

pregnant; referred to as “continuing clients”. Six respondents from each group were excluded from the analysis on account of incompleteness.

Majority 104 (83.9 %) of the booking and 98 (79.0%) of the continuing patients could not mention any correct danger sign. Out of the Booking group only 20 (16.1%) of respondents knew the signs, compared to 26 (21.0 %) of the continuing patients. The difference in knowledge between the two groups is only 6 (4.9%) which was not significant p value=0.3270. Respondents who had attained tertiary level of education and respondents who were not referred from other facilities knew more danger signs of hypertension in pregnancy. Most patients with history of hypertension in pregnancy who could be considered as high risk did not know the danger signs.

Conclusion and recommendations

The study has demonstrated that an opportunity to educate clients on the danger signs of a leading cause of maternal mortality is being missed. There is need for restructuring of the antenatal education.



CHAPTER ONE

1.0 INTRODUCTION:

1.1 Background

Hypertension in pregnancy affects 10-16% of pregnancies throughout the world (Allen, Joseph, Murphy, Magee, & Ohlsson, 2004). It has been shown to be among the top two causes of maternal mortality (Say et al., 2014).

A client is diagnosed to be having hypertension in pregnancy when her blood pressure is found to be at least 140/90 mmHg on two different occasions measured at least 4 hours apart. If the hypertension antedates the pregnancy or occurs in the first 20 weeks of pregnancy it is referred to as chronic hypertension. Hypertension after 20 weeks up to the 6 weeks after delivery is considered pregnancy-induced (PIH). This implies the hypertension is purely as a result of the pregnancy. PIH can be considered as a spectrum starting with an elevated blood pressure alone, which is symptomless and the diagnosis only made when the blood pressure is measured. It may progress to involve the kidneys, manifesting as proteins in the urine referred to as proteinuria. When the PIH is associated with proteinuria it is called preeclampsia, and if the client has a seizure in addition, it is referred to as eclampsia. With unpredictable speeds, the disease can affect all other organs of the body, particularly the brain. Brain involvement is a very lethal sign and this is manifested as seizures. The picture may not necessarily be that gloomy, because before the seizures, there are some prodromal symptoms that the clients experience. These symptoms include headaches, nausea, and vomiting, blurred vision, flashes of light and epigastric pain. The disease progression will be halted only if the client recognizes these life threatening symptoms and seeks care promptly. Effective interventions in the form of magnesium sulphate, antihypertensives and delivery are available to ensure that death stays a threat and never becomes a reality (Duley,

Gülmezoglu, & Henderson-smart, 2009). Women with poor knowledge of these have the least possibility of seeking care early (Renkert & Nutbeam, 2006).

Eclampsia, acute renal failure, intracerebral haemorrhage, pulmonary oedema and HELLP syndrome have been shown from a recent study, to be the common complications of hypertension that clients die of (Adu-Bonsaffoh, Oppong, Binlinla, & Obed, 2013). Economically speaking, a better way to prevent these complications in a low-income country like Ghana may be client education, to recognize the danger symptoms for prompt reporting and timely interventions. It has been shown that women with knowledge on the danger signs are more likely to seek care promptly (MacGillivray et al ,2006). A study showed that almost all clients who had experienced postpartum eclampsia had at least one of these warning symptoms; fifty percent had more than one symptom; however only 33% sought care, emphasizing the great need for client education (Chames, Livingston, Ivester, Barton, & Sibai, 2002). Unfortunately no published data on the frequency of the symptoms before delivery were found.

To the best of knowledge no studies have been conducted in Ghana to assess if clients, who have received antenatal care, know the danger symptoms of hypertension, compared to clients who have not received antenatal care. This study sought to determine this.

1.2 Problem Statement

Maternal Mortality is a serious public health issue with a huge devastating impact. It has been estimated that worldwide the maternal mortality ratio is 260 women per 100 000 live births, with a great percentage of these occurring in Sub-Saharan Africa (Trends in Maternal Mortality: 1990-2013, Estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division).

Ghana has a maternal mortality ratio of 380 deaths per 100,000 live births (Trends in Maternal Mortality: 1990-2013, Estimates by WHO, UNICEF UNFPA, The World Bank and the United Nations Population Division). Recent Ghanaian studies have identified hypertensive disorders in pregnancy as the leading cause of institutional maternal deaths (Lee, Odoi, Opare-Addo, & Dassah, 2012; Adu-Bonsaffoh et al., 2013).

Apart from the maternal mortality, the associated morbidity to the mother, fetus and the neonate is also enormous. It causes prematurity, perinatal morbidity and mortality, and serves as a predictor of future cardiovascular, chronic renal disease and diabetes mellitus (Männistö et al., 2013).

One major problem is the late reporting of hypertension clients, making treatment in general, not effective. A recent study found that over 80% of maternal deaths in Southern Ghana happened in the community or within a day of admission (Moyer et al., 2013). A study at KBTH found that all the 3 maternal deaths from hypertension in that study occurred within 24 hours of admission (Adu-Bonsaffoh, Obed, & Seffah, 2014). Culturally the African woman may perceive pregnancy as a completely normal physiological process and may not be aware that it can be complicated with hypertension. Undoubtedly when women are well informed, there is a greater likelihood that danger symptoms will be reported promptly (MacGillivray et al, 2006). Eclampsia prevention is paramount, because once it occurs, the morbidity and the mortality

associated is excessive (Adu-Bonsaffoh et al, 2006). To increase the rather slim chances of survival once a client has eclampsia, she has to be managed in intensive care. This in itself is a big challenge in the country.

One study noted that the dramatic reduction in the cases of eclampsia during the antenatal period in Tennessee was as a result of continuous education of clients and health care providers to seek attention in response to the cardinal warning signs (Chames et al., 2002). It demonstrated that this information transfer which is lacking for post-delivery clients has resulted in relatively higher incidence of eclampsia during the post-partum period.

Client education may be paramount in the fight against this menace. Antenatal coverage in Ghana is 96.4 % (World Bank Report 2011); hence there exists a fine platform for raising awareness in this captive audience. Antenatal education has a great potential to equip pregnant women with knowledge that will enable them make informed decisions on issues that arise in the course of the pregnancy (Anya, Hydera, & Jaiteh, 2008). Worldwide, it has been observed that people have a difficulty in understanding health related issues; especially preeclampsia is particularly a poorly understood subject (You, Wolf, Bailey, & Grobman, 2012). For a client to be well informed on the danger signals through antenatal attendance, the health educator must recognize its importance and thus select it for client education. The education must be delivered through effective communication methods. Antenatal client education in Ghana is saddled with a plethora of challenges. Typically, antenatal client education is left entirely in the hands of the nurses with very little or no input from the doctors. Better selection of topics of public health importance may be achieved if it is given a multidisciplinary approach. Ghana generally has a low literacy level and thus communication methods used must be simple and suitable to inform client properly. There are several local dialects but most education

is done in a particular local dialect, Twi. As a consequence non-Twi speaking clients may not benefit much.

1.3 Conceptual Framework

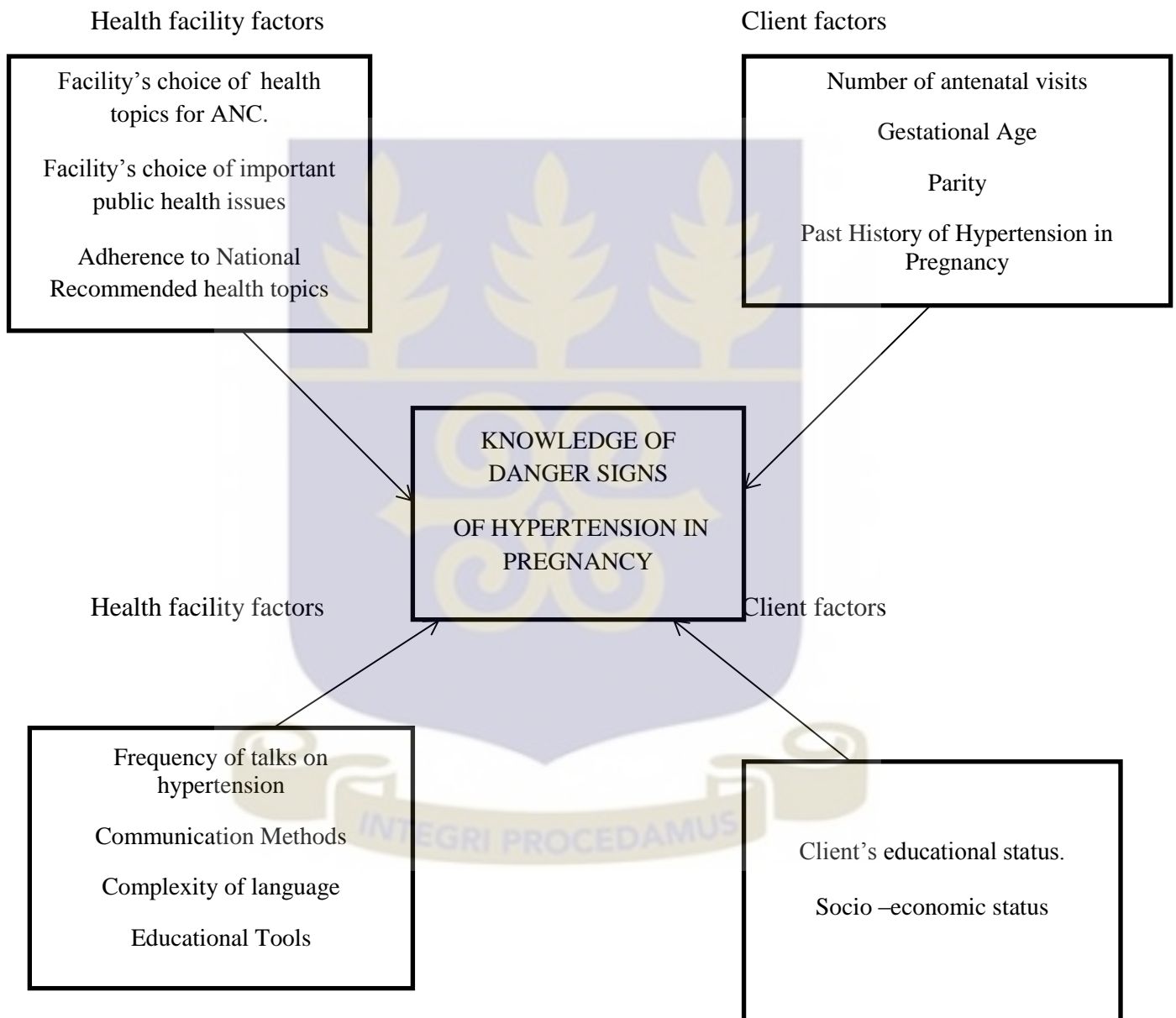


Figure 1: Conceptual framework

A client's knowledge of the danger signs of hypertension depends to a great extent on what information she has been exposed to. Sources of information include family

members, media, electronic sources and health facilities. A client's socioeconomic status for instance may determine how much electronic information she has at her disposal. The educational status of the client is of utmost importance. Some of these sources may be misleading, hence a very important authentic source should be the health facility. This role can only be played if the facility provides health education on crucial, relevant public health issues packaged and delivered in a way that is well understood by the client. The frequency of exposure informs the extent of awareness; thus the number of antenatal visits presumably should increase clients' knowledge. It can therefore be expected that clients, who have made more antenatal visits, should be likely to have more knowledge on hypertension relative to those who have made fewer visits.

1.4 Justification

Anecdotal information indicates that clients do not seem to attach significance to either the hypertensive diseases of pregnancy or the symptoms that herald the complications. One district hospital in the Greater Accra Region for instance, reported a case of a 34 week pregnant woman, a regular antenatal attendant who was being managed as an out-client, on an antihypertensive, for pregnancy induced hypertension. One evening she complained of headaches for which she took an analgesic and went to bed. In the morning her relatives found her fitting in bed, and she was then taken to the district hospital but died shortly after arrival. Other health facilities all over the country have not only one, but several similar stories to recount, unfortunately.

The primary recipient of the warning signs, the client, has to attach great importance to the warning and seek timely medical attention. It will be thus cheaper to place more emphasis on client education as an intervention.

From the Ghana National Reproductive Health Services Protocols, antenatal care has three main objectives, one of which is the provision of education to pregnant women. It has been shown that educating clients to report when the danger signs and symptoms occur, and the health care givers also responding appropriately, is a very promising preventive tool (Chames et al., 2002). Health care givers must recognize the public health importance of hypertension in pregnancy and must thus educate clients on the danger symptoms that herald impending doom. This must be done in very basic language for the clients to understand and remember without causing undue anxiety (MacGillivray, McCaw-Binns, Ashley, Fedrick, & Golding, 2004).

One of the aims of antenatal is to educate clients on the danger signs of pregnancy.

This study was extremely critical because anecdotal evidence showed that clients were not identifying the danger signs of hypertension despite the high antenatal attendance. Before this study, there was no scientific evidence proving this. There are no published data on the assessment of this knowledge of pregnant clients in Ghana, who have received antenatal care, and there is therefore a need to generate data as a country.

The potential benefits of this study are numerous. It has assessed primarily this teaching hospital where a sizeable number of the country's doctors and midwives are trained. It has helped to establish if a fine cost-effective intervention like antenatal client education is achieving its ultimate aim of transforming pregnant women into well informed clients. This evidence will help inform policy on topic selection, communication methods, team involvement and use of proper education aids.

The negative impact, of not establishing if clients have knowledge of this condition of our mothers, is that Ghana may sadly continue to ignore threats of death allowing many preventable deaths to occur.

The results will help inform all stake holders of the situation on the ground, that clients who have received antenatal care still lack knowledge on the danger signs.

1.5 Research Questions

In order to reduce the unacceptably high maternal mortality from the hypertensive diseases of pregnancy, clients have to recognize the prodromal or warning signs for prompt intervention. The opportunity presented by the high antenatal attendance for education needs to be put to maximal use. It is critical to assess if this is being achieved by answering the following questions.

- Are the health facilities giving hypertension in pregnancy the prominence it deserves?
- Are pregnant clients getting educated on the danger prodromal signs of the disease when they attend the antenatal clinic?

1.6 Objectives

1.6.1 General Objective:

To determine adequacy of communicating hypertension- related danger signs through the antenatal clinic at KBTH.

1.6.2 Specific Objectives:

1. To determine antenatal clients of KBTH's knowledge of the danger signs of hypertension in Pregnancy.

2. To compare knowledge of clients who have received antenatal care in KBTH and those who have not received any antenatal care in the same hospital, with respect to the danger signs of hypertension in pregnancy.

1.6.3 Hypothesis

It was hypothesised that women who have received antenatal care, at least four times at KBTH, will have a significantly higher knowledge about the prodromal danger signs than those coming there for the first time.



CHAPTER TWO

2.0 LITERATURE REVIEW

Huge resources have been put into research to help discover prophylactic measures for preeclampsia, (Sibai, 2003). Issues like pathogenesis, and susceptible clients still remain unclear. First pregnancy, previous history and multiple gestation and others have been identified as risk factors, yet hypertensive diseases of pregnancy are still very unpredictable, and can affect any pregnant woman (Park et al., 2013).

2.1 Impact of Hypertension

2.1.1 Global

Systematic review by WHO to establish the distribution of causes of maternal mortality globally found that hypertension is still of great concern. Hypertension has been established as the second leading cause of maternal mortality in Asia and Africa (Khan, Wojdyla, Say, Gülmezoglu, & Van Look, 2006). In Latin America and the Caribbean, hypertension is the leading cause of maternal deaths (Khan et al., 2006). Globally, about 76,000 expectant mothers and about 500,000 babies die annually from hypertensive diseases of pregnancy (Kuklina, Ayala, & Callaghan, 2009).

2.1.2 Developed countries:

In the United States about 5-8% of all deliveries are complicated by hypertension in pregnancy (Ronsmans, Graham, 2006). United States, Canada and Western Europe have incidence rates from 2% to 5% (Ronsmans, Graham, 2006). Studies done in England and Wales have shown a steady decrease in the incidence and mortality from eclampsia, whereas no such reducing trends have been seen in developing countries (Dolea &

Abouzahr, 2003). The associated morbidity has been measured to be equally huge. A large community based study in Nova Scotia, Canada found that women with hypertension in pregnancy were more at a greater risk of having small for gestational age and still births (Allen et al., 2004). It was also found in Finland that women who suffered hypertension in pregnancy were at a higher risk of future cardiovascular diseases (Männistö et al., 2013).

2.1.3 Middle East & Asia

A prospective multi-Centre study including Pakistan confirmed WHO's finding of hypertension being the second leading cause of maternal deaths (Saleem et al., 2014). These same authors found hypertension to be second in the causes of maternal mortality in India.

2.1.4 Africa

A pregnant woman in a developing country has seven times higher risk of developing preeclampsia, with mortality occurring in 10 to 25% of these women (Maternal Mortality in 2005: estimates developed by WHO, UNICEF, UNFPA and the World Bank, Geneva, World Health Organization, 2007). Despite hypertension being the second cause of deaths in Africa, generally, in several individual countries especially in institutions it takes first place (Adu-Bonsaffoh et al., 2013). This latter study was a retrospective cohort, and there was a challenge with completeness of documented data. Some of the records did not have documentation of post-mortem results; hence cause of death was established in those cases from the audit report introducing non uniformity.

Hypertension was found to be the leading cause of maternal mortality in a hospital based study in Sagamu Teaching Hospital, Nigeria (Oladapo et al., 2006). This latter retrospective study, even though appropriate for the objective, used consensus diagnosis of the auditing team to establish the cause of death, because available patient records lacked post-mortem findings.

2.1.5 Ghana

A review of maternal deaths at the Tamale Teaching Hospital, Northern Ghana, found hypertensive disorders to be the second commonest cause accounting for 18.6% of deaths (Gumanga, Kolbila, Gandau, Munkaila, & Malechi, 2015). Studies done in the two other Teaching hospitals in Ghana, found hypertension as the leading cause of maternal deaths (Lee et al., 2012; Adu-Bonsaffoh et al., 2013).

2.2 Antenatal care as a potential opportunity:

The strategy being used to achieve the millennium development goal of reducing maternal mortality (MDG 5) is increased skilled birth attendance. This will work hand in hand with the client recognizing and classifying a symptom as abnormal and consequently utilizing the skilled care. Within the African setting the influence of the significant others such as husband and in-laws for instance cannot be underestimated. Countless studies in Africa have shown how health seeking behavior is affected strongly by culture (Simkhada, Teijlingen, Porter, 2008). One important role that antenatal care can play, is to empower the woman through sound education, so that she can identify a dangerous symptom as such and overcome pressure from the community when necessary, to seek appropriate care.

Cham et al. (2005) found that delay in seeking help resulting in maternal mortality was as a result of underestimation of the potential complications posed by the problems (Cham, Sundby, & Vangen, 2005). This study demonstrated the fact that clients and their relatives used prior pregnancies' experiences to determine whether to seek care or not. A woman who has received antenatal care must be educated to know that each pregnancy is unique to avoid such mistakes in decision making.

It has been shown that lack of antenatal care is a consistent risk factor for post eclampsia complications (MacKay, 2001). Another study noted that irrespective of where delivery occurred, inadequate or lack of antenatal attendance is associated with increased poor outcomes of pregnancy (Raatikainen, Heiskanen, & Heinonen, 2007).

MacGillivray et al. (2004) noted that even in places where women have high literacy levels, people generally did not like to read (MacGillivray et al., 2004), implying that an alternative method of passing on information is necessary. The antenatal clinic has a great potential to be utilized for this purpose.

The antenatal clinic is an important intervention from which maximum potential visits should be derived. In Pakistan, a study done to assess the sequelae and deaths associated with hypertension in pregnancy, found that inadequate antenatal care accounted for the high morbidity and mortality (Riaz, Habib, & Jabeen, 2011).

2.3 Antenatal care as a missed opportunity

Health literacy is defined by WHO as follows:

The cognitive and social skills which determine the motivation and ability of individuals to gain access to, and understand, and use the information in ways which promote and maintain good health. Health literacy means more than being able to read pamphlets and successfully make appointments. By improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment (WHO 1998).

Knowledge and health seeking behavior, in most cases in the past, have been acquired from the immediate community of the pregnant woman, and this can be misleading. However in recent times, changes in family structure and formal education have increased a woman's chance of getting information from more reliable sources such as antenatal clinics.

Studies have shown that there are no applied benchmarks or standards for antenatal education, each health facility organize the education sessions as they deem appropriate (Renkert & Nutbeam, 2006).

Antenatal clients are adult clients, and thus effective communication needs to be done with the skills needed for adult education, a field which most antenatal health educators are not trained in.

Eleni and Tsigas (2006) noted that health care providers are overly cautious not to alarm their clients, which rather results in a communication gap (Eleni & Tsigas, 2006). They noted that uninformed clients were a major problem in the morbidity and mortality associated with the hypertensive diseases of pregnancy.

Data from Uganda showed that women received substandard care at the antenatal clinics with only 19% of attendants being informed of the symptoms of imminent complication (Ssengooba, Neema, Mbonye, Sentubwe & Onama, 2003).

Health care givers also seem to have so many issues they consider relatively more important, and may not give hypertension the attention it deserves, even in the most developed of places. In Canada, one study found that when women are diagnosed with hypertension in pregnancy, only 36% of maternity care providers pass on the information to the women's primary care providers for effective follow up (MacDonald, Walker, Ramshaw, Godwin, Chen, & Chen, 2007).

In Africa generally there is no easy access to data, hence data in each respective institution may not even be readily available to inform providers of relevant topics for education (Prata, Passano, Sreenivas, & Gerds, 2010).

2.4 Clients Late Reporting

Women with preeclampsia who are diagnosed early and have prompt treatment and surveillance have better pregnancy outcomes compared to those whose diagnosis is delayed (Menzies, Magee, Li, & Macnab, 2007). Research has established that several mothers who died in Ghana reported late (Adu-Bonsaffoh et al., 2014). Adu-Bonsaffoh's

study was a cross sectional study, appropriate for the objectives with a sufficiently large sample size.

Autopsy studies in Southern also Ghana confirmed this late reporting of clients (Moyer et al., 2013).

2.5 Level of Knowledge

Assessment of clients' knowledge on the danger symptoms has given varying results. The high income countries have relatively lower adverse outcomes from hypertension related causes, because of the greater availability and access to resources, and probably higher literacy. Irrespective of the low literacy levels in developing countries, this knowledge deficit should be modifiable.

2.5.1 High Resource Countries

Studies done in developed countries did not follow any consistent trend. A preeclampsia awareness electronic survey done in Melbourne, Florida, found that only about 40% of respondents who had received antenatal care recalled specific education on preeclampsia, with about 50% of this number actually understanding the subject. Only 75% out of this 50% reported promptly for medical intervention when they had symptoms. Only 6% of those who did not understand the subject said they would seek medical help when necessary (Wallis, Tsigas, Saftlas, 2013). This survey was an electronic one, and was appropriate for the high resource settings. However such a study has a propensity of excluding clients with low literacy or limited access to internet. Campaigns were intensified to promote client education, and the survey repeated after 6 years, found that

70% knew that headaches, blurred vision and light flashes were danger signs. Three out of five respondents were not sure of other symptoms. About 95% said they would seek medical care promptly if they experienced symptoms (Tsigas, 2014). About 50% of high school graduates had knowledge and only 37% of respondents from low socio-economic background knew about preeclampsia.

You et al. (2012), from their cross-sectional study of pregnant women in Chicago, using a 25-item questionnaire concluded that there was generally a poor understanding of preeclampsia. Only 14% of clients had knowledge of preeclampsia; and higher literacy, multiparity, past history of preeclampsia and health education from health care givers and other sources increased awareness (You, Wolf, Bailey, Pandit, Waite, Sobel, & Grobman, 2012).

In Tennessee about 90% of eclamptic clients had at least one prodromal symptom, approximately 50% experienced more than one, about 80% had headaches, 45% had visual symptoms, 20% nausea and vomiting, and 2% had epigastric pain. It was only about 30% who realized that they were serious and sought medical attention (Chames et al., 2002).

A randomized control trial was conducted in Chicago in which three groups of clients were compared. One group had been educated using a graphic based educational tool on preeclampsia, another group educated using standard materials and the third group no education at all. Assessment of the knowledge on preeclampsia showed that those who were exposed to the graphics-based educational tool demonstrated better knowledge on preeclampsia (You et al., 2012).

2.5.2 Latin America and the Caribbean

In Jamaica a study also found that only 67% of post-natal mothers were sufficiently informed on “hypertension in pregnancy”. After establishing this baseline, expectant mothers were educated on the danger symptoms and some pictorial cards showing the danger signs were both given to clients and also displayed at the health centres. After this intervention when another group of postnatal women were reassessed after 6 months during their post-partum period, 86% of them showed sufficient knowledge (MacGillivray et al., 2004). This latter study could have more informative if the same patients exposed to the education materials had been followed up and reassessed after the 6 months. The conclusion of the study was also not related to the findings and the title.

2.5.3 Africa

Studies done in other less developed countries have generally shown low knowledge levels. In Malawi, six focus group discussions, in which women were asked to prioritize problems in pregnancy they considered most important, found anaemia, malpresentation, retained placenta, obstructed labour and postpartum haemorrhage as the top most five. Even though preeclampsia in the discussions, was considered by 56% of respondents as a health issue, the respondents did not consider it a priority (Rosato et al., 2006).

In the largest health division of Gambia, a cross-sectional survey was conducted on respondents 90% of whom have made at least one antenatal visit. Despite these visits, only 24.6% recognized danger signs of hypertension. Ironically women in the rural areas were 1.6 times more likely to see symptoms as life-threatening than those in urban settings (Anya et al., 2008).

2.5.4 Ghana

The World Health Organization as well as the Government of Ghana recommends a minimum of four antenatal visits; 76.7% of pregnant women in Ghana have made at least four visits (Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2009).

In Ghana the published literature was outside the context of pregnancy. However there are generally low levels of awareness of hypertension in the general population. Studies show that in the general Ghanaian population only a little above 20% of people were aware of hypertension (Lloyd-Sherlock, Beard, Minicuci, Ebrahim, & Chatterji, 2014).

Bosu (2010), after systematically reviewing population based studies on hypertension in Ghana also found out that less than a third of the respondents were aware of the disease (Bosu, 2010).

2.6 Barriers to effective education

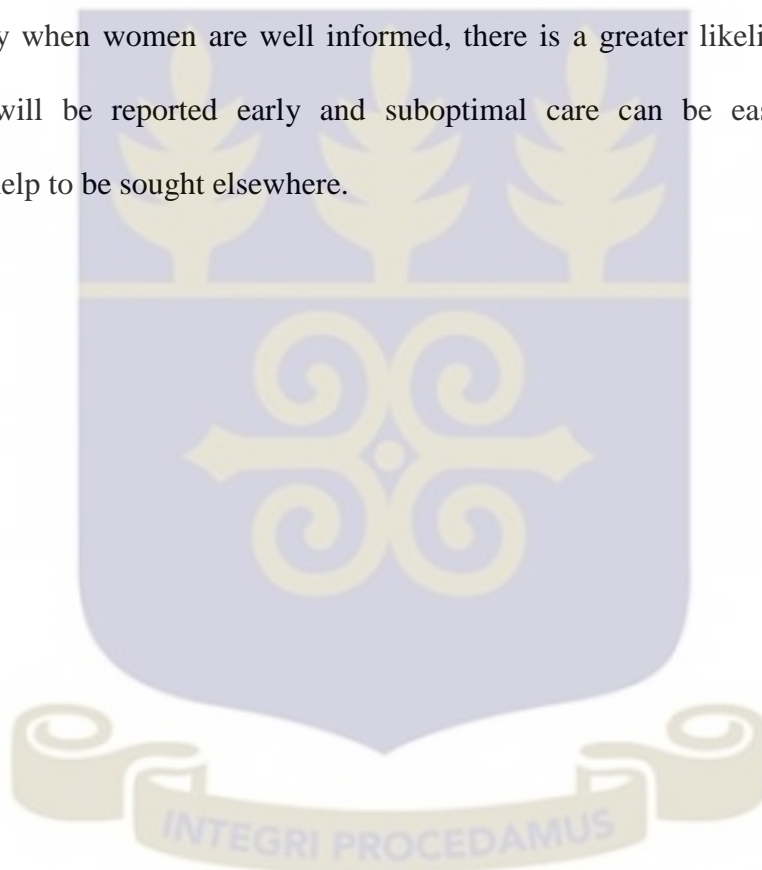
Clients spend very little time with the health care provider during the antenatal period (Anya et al., 2008), indicating that for antenatal care to achieve its goal of educating clients some structured teaching must be in place. In that study, about 70% of respondents spent at most 3 minutes with the antenatal provider, whilst only 2.5% spent at least 10 minutes. They concluded that despite the large attendance, minimal benefits were being derived from effective communication and education.

Health care providers have an obligation to feed clients with information in simple and plain language, and clients as well have a right to understand health information (Anya et al., 2008). This education must be easy to understand, and aids must be taken home for visual reminders (MacGillivray et al., 2004). It has been suggested that the language

should be such that a class 5 pupil can understand; in addition it should also be culturally acceptable (Wilson et al., 2012).

Barriers to client education include the erroneous belief that awareness results in anxiety, however current studies have suggested that ignorance rather increases anxiety (Eleni & Tsigas, 2006).

Undoubtedly when women are well informed, there is a greater likelihood that danger symptoms will be reported early and suboptimal care can be easily detected for alternative help to be sought elsewhere.



CHAPTER THREE

3.0 METHODOLOGY:

3.1 Study Design

This was a cross-sectional analytical study, carried out on pregnant women (antenatal clients) attending the antenatal clinic in KBTH from May to June 2015.

3.2 Study Area

Korle bu Teaching Hospital is the largest tertiary referral centre in Ghana and serves most parts of Southern Ghana. It is a government hospital and treats clients from a range of socioeconomic strata. The Obstetrics department serves mainly as a referral centre receiving cases from all over the Greater Accra Region; however it also sees clients who were managed at the gynaecology department in the first 20 weeks of pregnancy. It also serves as the foremost training facility for medical students and professions allied to medicine. It was the site because its clients are cases from the entire Accra and its environs, which is cosmopolitan.

Each of the five obstetric units has a fixed antenatal clinic day which is also the duty day for the unit. On each clinic day, new clients are registered and existing clients are followed up. Antenatal clinics open on week days from 8.00 a.m. to 4.00 p.m. and are run by the midwives and doctors. Pregnant women are usually given monthly appointments until 28 weeks gestation, two-weekly appointments until 36 weeks and then weekly appointments until delivery. The hospital, because it is a tertiary centre and sees mostly referred cases, does not practise focused antenatal care. Clients coming to the out clients' department first report at the registration desk, where they are first

registered electronically. Those reporting for the first time are issued an antenatal booklet, unless they already have one from their originating referral centres. Clients have access to the national policy of free maternal care. The programme of activities for each clinic session includes documentation of health history taking, clinical examination (notable among which is weight and blood pressure measurement) and laboratory tests. These tests include bedside urine testing for proteins and sugar. Some interventions include provision of tetanus toxoid immunizations and intermittent preventive treatment for malaria. They are then seated to await individual consultation with the doctors.

There is a doctor assigned to the clients coming to the clinic for the first time, irrespective of the gestational age. This first visit at Korle bu is referred to as the booking clinic. Health education is given to the entire waiting audience as they await their turns for consultation. Health education messages cover topics of public health importance, including diet adequacy, malaria, STIs/HIV/AIDS, danger signs of pregnancy and delivery, family planning, breastfeeding and care of the new-born. The health talk is the sole responsibility of the outpatient nurses, and topics are selected from the above list, the antenatal booklet, and any other topic of public health interest. The education is usually verbal; a nurse stands in front of the audience and delivers her message in a local dialect, typically, Twi. Aside the general health education, clients are given one-on-one counselling during consultation when necessary.

3.3 Variables

3.3.1 Outcome variable

The outcome variable for the study is:

Client's knowledge about danger signs related to hypertension in pregnancy.

3.3.2 Exposure variables

The independent variables for my study are: antenatal attendance, parity, highest educational level attained and previous history of hypertension.

3.4 Study population

The study population comprised clients attending the antenatal clinic of KBTH during the defined study period, May/June 2015, and who qualified from the eligibility criteria.

3.4.1 Inclusion criteria

Antenatal clients of all ages, who were attending the antenatal clinic of the KBTH for the first time in that index pregnancy. This first visit is called the booking clinic. They were referred to in this study as the booking group.

Antenatal clients of all ages, who were at least 34 weeks pregnant, and had made at least four antenatal visits in KBTH, in the index pregnancy. They were referred to as the continuing group. The four visits is the number recommended by WHO, and 34 weeks signifies advanced pregnancy.

3.4.2 Exclusion criteria:

Antenatal clients of all ages who did not satisfy the above criteria,

All emergencies such as bleeding cases,

Clients who after being introduced to the study, refused to participate.

3.5 Sampling

A random selection of a sufficiently large sample was done and the findings extrapolated to cover the entire population.

3.6 Sample size

The sample size calculation helps in the determination of the minimum number of subjects necessary for recruitment into the study.

The outcome variable is the knowledge of clients, which is a categorical variable. Proportions of clients in two different subgroups were compared.

From a study done in some people of African origin, Jamaica, the proportion of clients who knew the danger symptoms before an intervention (education), was estimated to be 71% and the proportion of clients who had knowledge after an intervention was 86% (MacGillivray et al., 2004). The Jamaica study was chosen because there were no other published data in which two different groups of clients in the same health facility were compared. These two groups differed with respect to exposure to education at the antenatal clinic, similar to the two comparing groups in this study.

Using the sample size calculation for comparing difference in proportions:

$$N = \frac{2 \times [Z_{\alpha/2} \sqrt{2\bar{P}(1-\bar{P})} + Z_{\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)}]^2}{D^2}$$

Where $D = |P_1 - P_2|$ is the effect size.

$P_1 = 71%$; The proportion of respondents, who had knowledge before an intervention in a study,

$P_2 = 86\%$; The proportion with knowledge after an intervention (MacGillivray et al., 2004).

$$Z_{\alpha/2} = 1.96$$

Assuming a power of 80%, $Z_{\beta} = 0.842$

$$\bar{p} = \frac{p_1 + p_2}{2}, p_1 = 0.71 \text{ and } p_2 = .86 \text{ (MacGillivray et al., 2004)}$$

At 95% Confidence level a sample size of 234 was obtained from the above equation. Considering a non-response rate of 10%, the sample size was adjusted to 260, hence 130 for the booking clients and 130 for the continuing clients.

3.7 Sampling procedure

The research team was stationed at a desk, next to where the clients were being manually registered as their weights and blood pressures were being checked. Registration involved clients first submitting their antenatal booklets for vital information to be taken by the nurses. The clients were assigned numbers in chronological order as they were being registered. Three pieces of paper, each with a number 1, 2 or 3 was folded for balloting. The number picked was used as a starting point for the study, by selecting the client with the corresponding number in the register. The research team looked through the antenatal books to assess the client's eligibility for the study. The average number of patients seen weekly was 300. It was estimated that a total of about 900 clients will be seen during the entire study period; and the desired sample size was 260. Every 3rd booking client (900/260), and every 3rd continuing client who was eligible, was introduced to the study and recruited after a written consent was obtained. Assurance of confidentiality was given, as well as reassurance that opting out will not compromise care. Any randomly selected person who refused to participate was

dropped and the next number in succession was considered till sample size was achieved. The interview took place during the waiting time, and clients were only willing to participate on condition that they were not unduly delayed. A good response rate (about 9 in 10) was achieved because that condition was met in most cases.

3.8 Data collecting technique and tools

An interviewer-administered structured questionnaire, with close ended questions, was used as the tool for data collection. Clients who spoke English were communicated to in English. Most interviews were done in one of the two local dialects, Ga and Twi. A few clients who could not communicate in these dialects were interviewed through an interpreter. The interviews were conducted by the researcher and well trained assistants.

3.9 Quality Control

Pretesting was done at La General Hospital, which is also a tertiary Government facility. The questionnaire had to be restructured based on the lessons learnt from the pretest. The researcher was present every day of the study and did most of the interviews herself, with two research assistants who did mostly the counseling. The research assistants were trained on the research objectives and ethical issues. All the symptoms in the questionnaire were straight forward local translations, and hypertension is understood in the local parlance as “BP”. The questionnaire was translated verbally into Twi and Ga. The interviews took place in the morning and on working days, because outpatients are only seen on those days. Only emergencies are seen over the weekend. The data was collected from 18th May to 5th June. During the survey, each completed questionnaire was checked at the point of data collection by the interviewers to avoid missing information.

3.10 Ethical considerations

3.10.1 Before the study

Ethical approval was obtained from the Ethical Review Committee of the Ghana Health Service. Permission was obtained from the Head of department of the Obstetrics and Gynaecology Unit.

3.10.2 Consent from study participants

Written informed consent was obtained from the respondents, after telling them the title of the study, and the fact that it is to help amass wealth of knowledge in our bid to reduce maternal mortality. They were informed that it was not an experimental study, and were assured that it would not interrupt or unduly delay their consultation at the facility. They were informed about the objectives, the safety and the nature of the study, and the fact that it was purely voluntary, with no expected financial gain but great potential benefits for health promotion. They were informed that their refusal to participate will not compromise their care, and confidentiality was assured. Those who could read and write in English were given written consent in English to read and sign. Respondents, who could not, had the consent forms translated by the interviewers into the common local dialects (Twi, Ga Ewe) and their thumbprints obtained.

3.10.3 Intra Interviews

The initials and the number of the participants were used on the questionnaires to ensure confidentiality and the environment for the interviews was kept as private as possible.

3.10.4 Safety of data collected

The filled questionnaires are being securely kept by the principal investigator (self).

3.11 Limitations

There were no free rooms to conduct the interviews, hence the privacy was not as one would have preferred. However the questions were not found to be sensitive by the respondents.

3.12 Data analysis

3.12.1 Data processing and analysis

The responses were audited; any necessary corrections were made, and then coded. These coded questionnaires were manually entered into a personal computer using Excel statistical software. Cleaning of the data was done by running frequencies for each response. Any inconsistencies were crosschecked from the questionnaire. The cleaned data were imported into Stata Statistical Software.

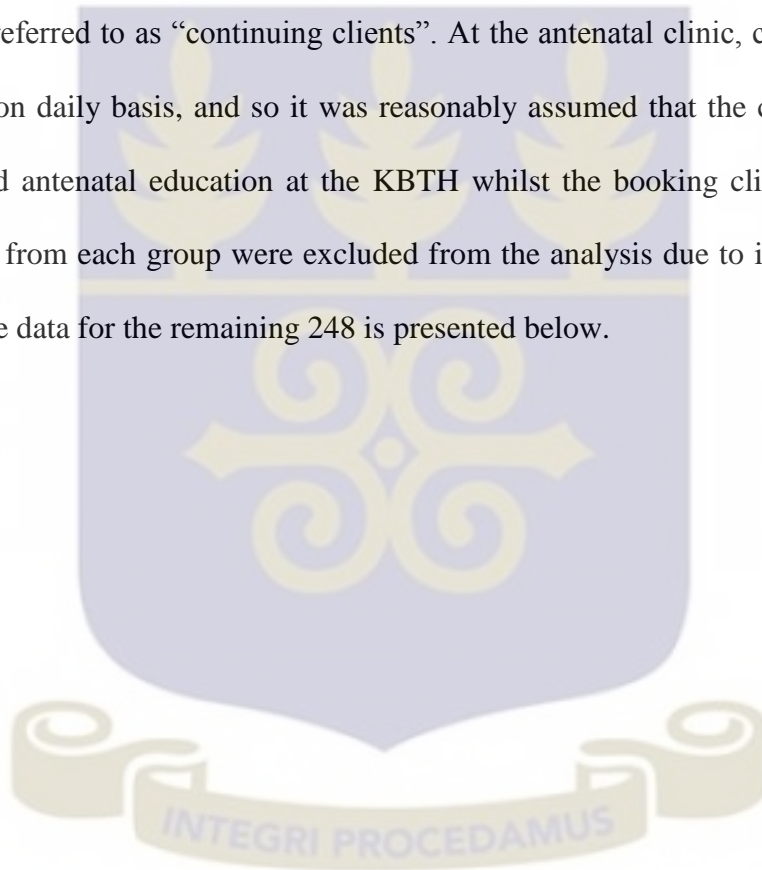
Any respondent who mentioned at least one correct sign was counted as having the knowledge of the signs. This is because the presence of at least one sign is sufficient for disease progression to eclampsia.

Continuous data were analyzed by means and standard deviation, and categorical data were analyzed with frequencies, and the results presented in tables. Comparing proportions were shown by bar charts. Tests of associations were done using Chi-square test with statistical significance at 5%, (p-value <0.05).

CHAPTER FOUR

4.0 RESULTS

A total of 260 pregnant women were interviewed. One hundred and thirty women were first time attendants at the antenatal clinic of KBTH in the index pregnancy, and they were referred to as the “booking clients”. The remaining 130 had made at least 4 antenatal visits to the KBTH in the index pregnancy and were at least 34 weeks pregnant. They were referred to as “continuing clients”. At the antenatal clinic, client education is carried out on daily basis, and so it was reasonably assumed that the continuing clients had received antenatal education at the KBTH whilst the booking clients had not. Six respondents from each group were excluded from the analysis due to incompleteness of the data. The data for the remaining 248 is presented below.



4.1 Background characteristics

The background characteristics of the clients are as shown in Table 1.

Table 1: Background characteristics of respondents according to status

Characteristic	Booking N=124 [%]	Continuing N=124 n [%]	P value
Maternal Age(years)			0.26
<20	6[4.8]	1[0.8]	
20-24	18[14.5]	12[9.7]	
25-29	32[25.8]	37[29.8]	
30-34	40[32.3]	44[35.5]	
35-39	19[15.3]	24[19.4]	
40+	9[7.3]	6[4.8]	
Referral Status			0.149
Not referred	14[11.3]	22[17.8]	
Referred	110[88.7]	102[82.3]	
Gestational age (weeks)			<0.001
<34	43.6[54]	0.0[0]	
34+	56.4[70]	100.0[124]	
Parity			0.240
0	42[33.9]	46[37.1]	
1	31[25.0]	30[24.2]	
2	24[19.4]	33[26.6]	
3	14[11.3]	5[4.0]	
4	6[4.8]	5[4.0]	
5	5[4.0]	5[4.0]	
6	2[1.6]	0[0.0]	
Highest Education			0.375
Nil	17[13.7]	12[9.7]	
Primary	11[8.9]	9[7.3]	
Middle/JSS	45[36.3]	40[32.3]	
SSS/Vocational	32[25.8]	32[25.8]	
Tertiary	19[15.3]	31[25.0]	
Occupation			0.236
Unemployed/housewife	12[9.7]	14[11.3]	
Artisan/trader	82[66.1]	67[54.0]	
Business owner/Formal	17[13.7]	27[21.8]	
Professional	13[10.5]	16[12.9]	
Residence			0.410
Urban slum	25[20.2]	20[16.1]	
History of hyp in preg	25[20.2]	18[14.5]	0.293

From table 1 above, there was no significant difference between the background characteristics of the booking and the continuing respondents, except for the gestational ages.

The mean age of the booking respondents was 29.8 years \pm 6.1 SD with a range of 14 to 43, while that for the continuing respondent was 30.8 years \pm 5.3 SD with a range of 19 to 44. The modal age group was 30-34 years for both groups.

The parity ranged from 0-6 in the booking group and 0-5 in the continuing group. Most respondents 42 (33.9%) and 46 (37.1%) in the booking and continuing groups respectively, were nulliparous.

The gestational ages for the booking respondents were 19 to 42 weeks. Seventy (56.4%) of the booking respondents were at least 34 weeks. Per the eligibility criteria all the respondents in the continuing group were at least 34 weeks with the highest gestational age being 41 weeks. There was a significant difference between the two comparing groups (p value $<$ 0.001).

The majority of respondents were married, 105 (84.7%) of the booking and 101(81.5%) of the continuing group. Ten (8.1%) and 13 (10.5%) of the booking and continuing cases respectively, were single. The rest were cohabiting, 9 (7.3%) of booking and 10 (8.1%) of the continuing groups (p value of 0.770).

Majority of the respondents in both groups were referred cases from elsewhere to KBTH. In both groups, the highest educational status attained by most respondents was middle or Junior Secondary School.

Ninety-nine (79.8%) of the booking, compared to 104 (83.9%) of the continuing group lived in urban places. The urban slum referred to overcrowded places within the city.

4.2 Awareness of Hypertension

There was a significant difference between the proportion of booking and continuing respondents, who knew of the existence of hypertension (outside pregnancy), and hypertension in pregnancy. All the continuing respondents knew about hypertension compared to 118 (95.2%) of the booking group, p value of 0.013. Eight out of every ten booking client; 98 (79.0%) whilst nine out of every ten continuing client 115 (92.7%) was aware of hypertension in pregnancy, p value of 0.002.

4.3.1 Knowledge of danger signs

The key signs are headaches, flashes of light, blurred vision, nausea and vomiting and epigastric pain. Respondents who were aware of hypertension in pregnancy were asked to mention the danger signs of the condition they knew.

A total of 202 (81.5%) of all the respondents could not identify any sign. Part of this number comprised 26 (21%) of the booking and 9 (7.3%) of the continuing respondents who were not aware of hypertension in pregnancy, and hence were not asked about the danger signs.

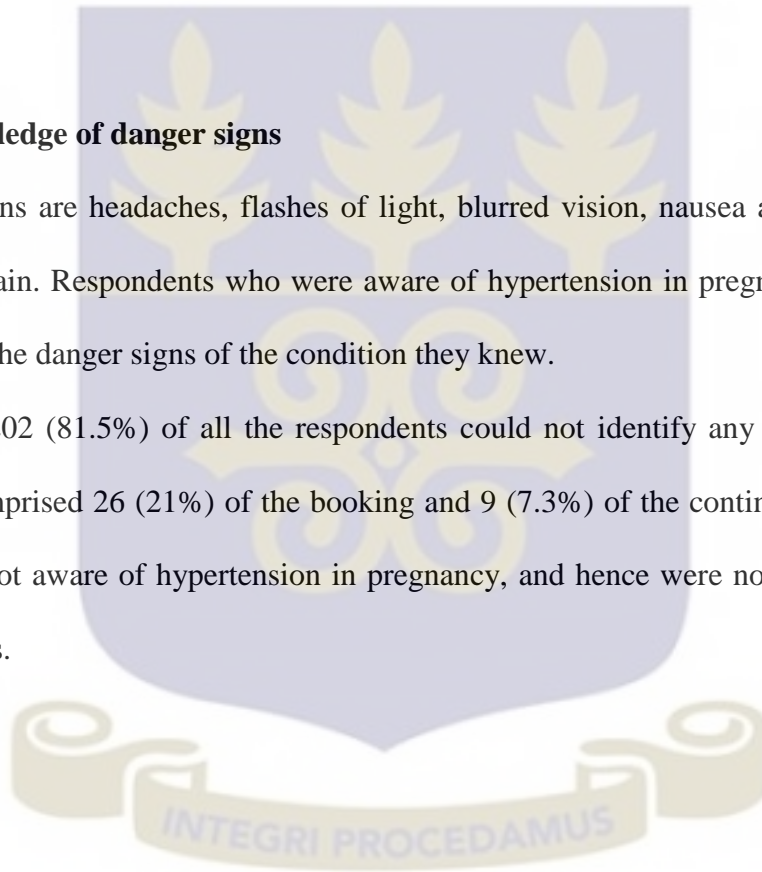


Table 2: Percentage of booking and continuing patients who mentioned the danger signs

	No sign known	Sign known	<i>P value</i>
	n (%)		0.327
Booking	104 (83.9)	20 (16.1)	
Continuing	98 (79.0)	26 (21.0)	

For the patients who were aware of the existence of hypertension in pregnancy, majority 104 (83.9 %) of the booking and 98 (79.0%) of the continuing patients could not mention any correct danger sign. Out of the Booking group, only 20 (16.1%) of respondents knew the signs, compared to 26 (21.0 %) of the continuing patients. This difference in knowledge was not significant (p value=0.3270).

Figure 1 shows the percentage distribution of the various signs. Headache was the most frequently mentioned sign, 19 (15.3%) of the booking and 23 (18.6%) of the continuing respondents.

Blurred vision was mentioned by 2 (1.6 %) of the booking and 9 (7.3%) of the continuing respondents.

Light flashes was mentioned by only 1 (0.8%) respondent from each respective group.

Nausea was mentioned by only 1 (0.8%) booking respondent but none from the other group.

Vomiting was not mentioned at all by either group.

Epigastric or upper abdominal pain was mentioned by 2 (1.62%) of the continuing respondents but no booking respondent.

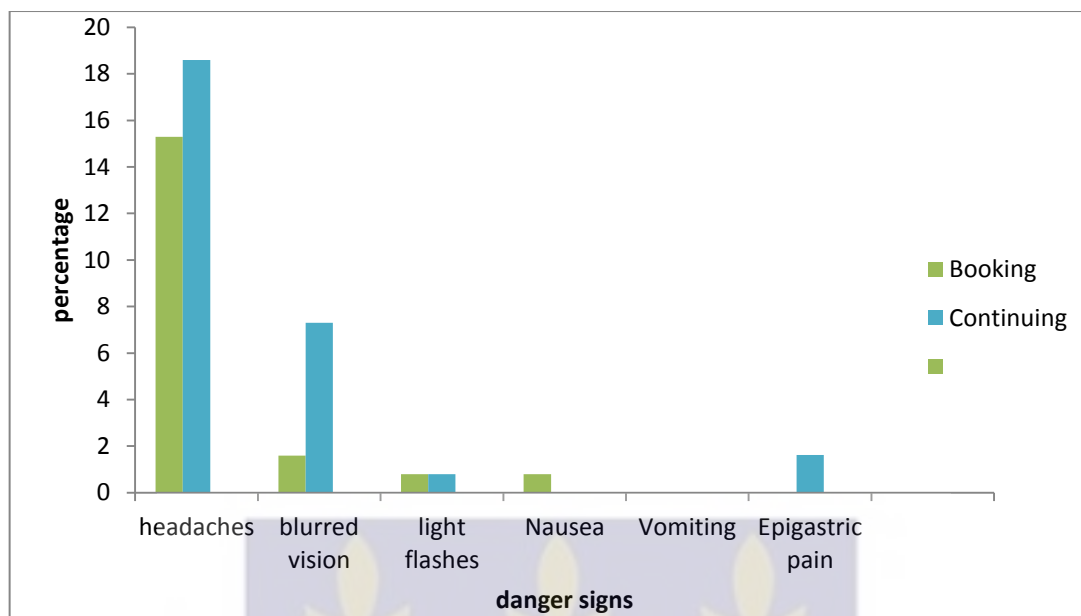


Figure 2: Knowledge of danger signs of hypertension in pregnancy of booking compared with continuing pregnant clients, KBTH, 2015

4.3.2 Number of signs

As shown in Figure 2, Seventeen (13.7%) of the booking and 19 (15.3%) of the continuing respondents mentioned one sign only.

Two signs were mentioned by 3 (2.4%) and 6 (4.8%) of the booking and continuing patients respectively.

No respondent mentioned 3, 5 or all 6 signs.

Only 1 (0.81%) continuing respondent mentioned a total of 4 signs.

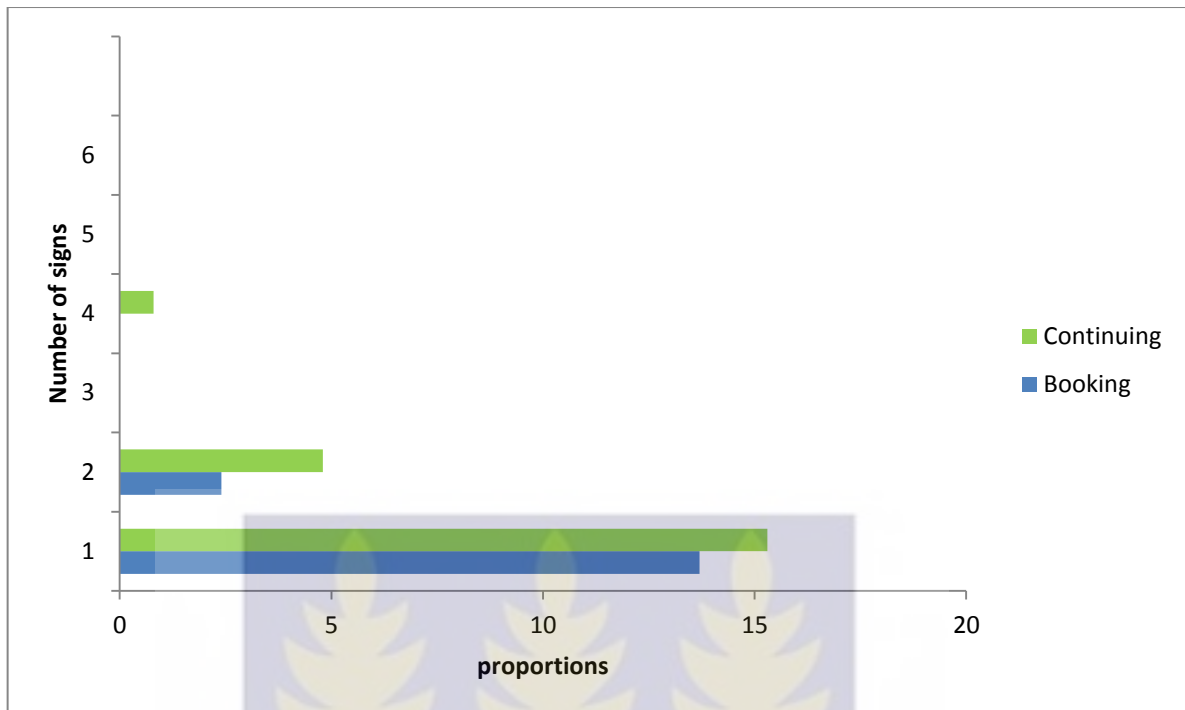


Figure 3: Percentage of Booking and continuing respondents against the number of danger signs mentioned by each respondent, KBTH, 2015

4.3.3 Incorrect signs mentioned

Twenty three (18.6 %) and 45 (36.3%) of the booking and continuing respondents respectively mentioned palpitations, swelling of the feet, restlessness and insomnia as danger signs.

4.4 Determinants of knowledge

Table 3 shows the relationship between the various variables and the percentage distribution of respondents with knowledge of danger signs. Respondents who had attained tertiary education were relatively more aware of the danger signs compared to the other educational States, and this difference was significant. Respondents with no education had the lowest level of knowledge.

There was a significant difference in the knowledge of danger signs between respondents from KBTH ie non-referred, and those referred from other facilities, with the former having a greater proportion of clients with knowledge. Referred cases are clients who started antenatal in some other facilities, and subsequently sent to KBTH because of the need for tertiary care; as a result of some conditions that have arisen in the course of the pregnancy.

Marital status, residence, parity, gestational age and occupation did not show any significant difference. There was no significant difference in knowledge between respondents who had a history of hypertension in pregnancy and those with no history.

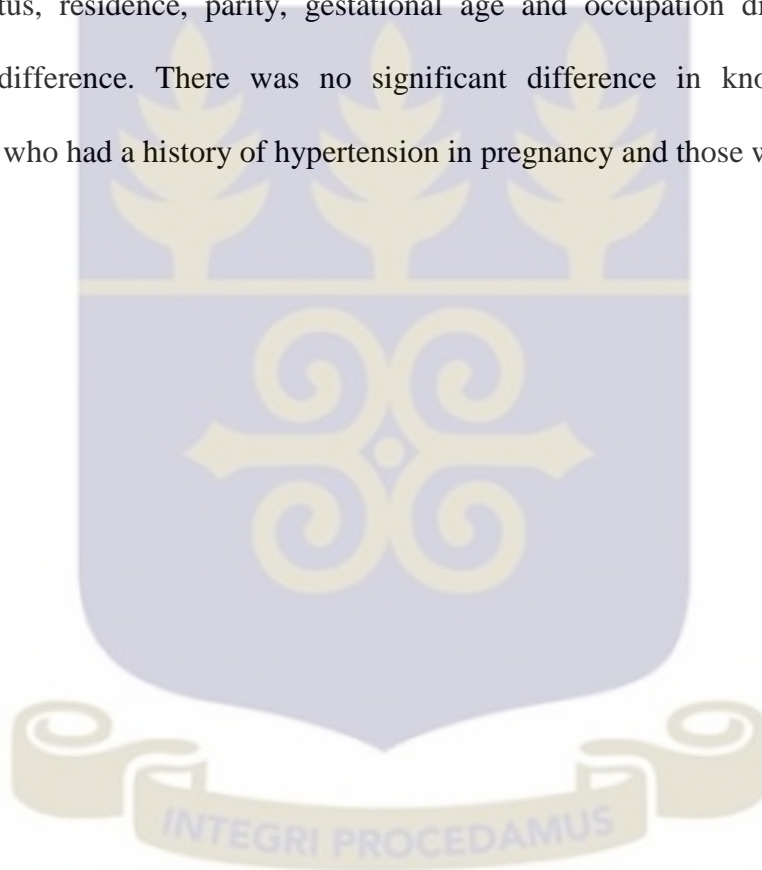


Table 3: Relationship between the various variables and the percentage distribution of respondents with knowledge of danger signs.

Variable	No sign known	Sign known	<i>P value</i>
Education	N=248	n[%]	0.037
Nil	26[89.7]	3[10.3]	
Primary	16[80.0]	4[20.0]	
Middle/JSS	76[89.4]	9[10.6]	
Voc/SSS/commercial	49[76.6]	15[23.4]	
Tertiary	35[70.0]	15[30.0]	
Occupation			0.122
Unemployed/housewife	22[84.6]	4[15.4]	
Artisan/trader	127[85.2]	22[14.8]	
Formal/clerical/business owner	33[75.0]	11[25.0]	
Professional	20[69.0]	9[31.0]	
Residence			0.883
Urban slum/overcrowded areas	37[82.2]	8[17.8]	
Urban	165[81.3]	38[18.7]	
Referral status			0.045
Not referred	25[69.4]	11[30.6]	
Referred	177[83.5]	35[16.5]	
Past history of hypertension in preg			0.140
No	169[82.8]	35[17.2]	
Yes	33[73.3]	12[26.7]	
Marital status			0.627
Single	19[82.6]	4[17.4]	
Married	166[80.6]	40[19.4]	
Co-habiting	17[89.5]	2[10.5]	
Parity			0.907
0	71[80.7]	17[19.3]	
1	50[82.0]	11[18.0]	
2	47[82.5]	10[17.5]	
3	15[79.0]	4[21.0]	
4	10[90.9]	1[9.1]	
5	8[80.0]	2[20.0]	
6+	1[50.0]	1[50.0]	
Gestational age (weeks)			0.754
<34	44[80.0]	11[20.0]	
34+	158[81.9]	35[18.1]	

CHAPTER FIVE

5.0 DISCUSSION

5.1 Summary

The study set out to compare the knowledge of the danger signs of hypertension in pregnancy. Two groups of pregnant women were compared; the booking patients who were attending the antenatal clinic of the KBTH for the first time in that index pregnancy; and the continuing patients who were at least 34 weeks pregnant, and had made at least four visits to the antenatal clinic of the KBTH in that index pregnancy. Four antenatal visits are the total number of visits recommended by WHO (Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2009), and by 34 weeks it is also expected that patients have received all necessary counseling. The groups were the same in terms of demographic characteristics. There is general lack of knowledge of the prodromal or danger signs associated with hypertension in pregnancy. There was no statistically significant difference between the groups, with regards to knowledge about the prodromal danger signs associated with hypertension in pregnancy. Having attained tertiary level of education, and antenatal commencement (that is non-referred clients) at the KBTH, were associated with a higher knowledge of the prodromal danger signs of hypertension in pregnancy. Most patients with history of hypertension in pregnancy who could be considered as high risk did not know the danger signs. The danger signs are six cardinal symptoms that precede eclampsia, which is the end or the fatal point of the spectrum of the disease. Prompt intervention in response to these signs prevents eclampsia, and thus the associated morbidity and mortality.

5.2.1 Demographic characteristics

The results showed that the two groups were similar in demographic characteristics. There was a significant difference in the gestational ages, which was because the eligibility criteria for the continuing group included a gestational age of at least 34 weeks.

5.2.2 Knowledge of danger signs in the two comparing groups

The only real difference between the two groups was that the continuing group had been exposed to repeated antenatal care from KBTH, and presumably has received education, whereas the booking group had not been exposed to any. Among the topics for individual client education is the “danger signs in pregnancy” (Maternal Health Records, Ministry Of Health/Ghana Health Service). The study findings suggest that these antenatal visits did not confer any benefits to the continuing group, with regards to knowledge of the danger signs of hypertension in pregnancy. The study measured respondents who knew at least one danger sign of hypertension in pregnancy. Only about 5% more women who have had care knew the signs. We can infer from this finding that patients are not likely to recognize these danger signs and report to health facilities early for treatment. This may contribute to the first delay in maternal morbidity and mortality, and also explain a finding in Ghana, where Moyer et al. (2013) found that as high as 81% of all maternal deaths in Southern Ghana happened at home or within a day of reporting to hospital (Moyer et al., 2013).

A significantly higher proportion of continuing compared to the booking respondents had heard of hypertension (100%), and were aware that hypertension could also occur in pregnancy (93%).

The proportion of pregnant women who have received care and who knew the signs was slightly lower than the 25% found in Gambia (Anya et al., 2008). In the Gambia study all the patients had received antenatal care but only half had made at least four visits.

The findings of this study however, were not consistent with a Jamaica study in which the proportion of pregnant women who have received antenatal care and knew the danger signs was found to be 67% (MacGillivray et al., 2004). In the Jamaica study, about 70% of respondents had received at least secondary education.

You et al. (2012) found an increased knowledge in their study. The scores of preeclampsia knowledge were 49.1 among those who had received no education (You et al., 2012).

The results of the study were poorer than that of Tsigas et al. (2010). They demonstrated that 41.9% of respondents who had received antenatal care had knowledge of the danger signs of hypertension. Their respondents were however well educated (Tsigas, Wallis, Saftlas, & Sibai, 2010).

It is of concern that light flashes, nausea and vomiting were not known by any of the patients who had received antenatal care. In one study, 22.7% and 25.8% of pregnant patients experienced visual symptoms and nausea and vomiting respectively, as prodromal symptoms, which were not recognized early for prompt care, resulting in eclampsia (Chames et al., 2002). If these symptoms herald a life threatening condition and patients lack the knowledge to recognize them for prompt action, this potentially preventable condition will rather become inevitable. One of the core objectives of antenatal care is to provide effective information, education and communication. The

entire antenatal care should aim at primary and secondary prevention of maternal morbidity and mortality.

The study has highlighted the fact that over 7 out of 10 patients with a history of hypertension did not know the danger signs. A study done in Tanzania found that only 0.2% of patients who were detected to have hypertension in pregnancy, received any counseling (Urassa et al., 2014). Chames et al. (2002) found that 66.7% who had post-partum eclampsia had a history of hypertension in the previous pregnancy (Chames et al., 2002). This makes the current study finding indeed of great concern, because pregnant women with a history of hypertension in pregnancy are at a high risk for developing hypertension in a subsequent pregnancy as well as the complications.

5.2.3 Determinants

Among the respondents who knew the danger signs, there was a direct positive relationship with the level of education. You et al. (2012) did not find any improved knowledge in pregnant women with different literacy levels (You et al., 2012). This could be explained by the fact that the educational tool they used as an intervention was basic enough for comprehension. Female education should be considered as one of the long term measures to improve knowledge on the danger signs of hypertension in pregnancy.

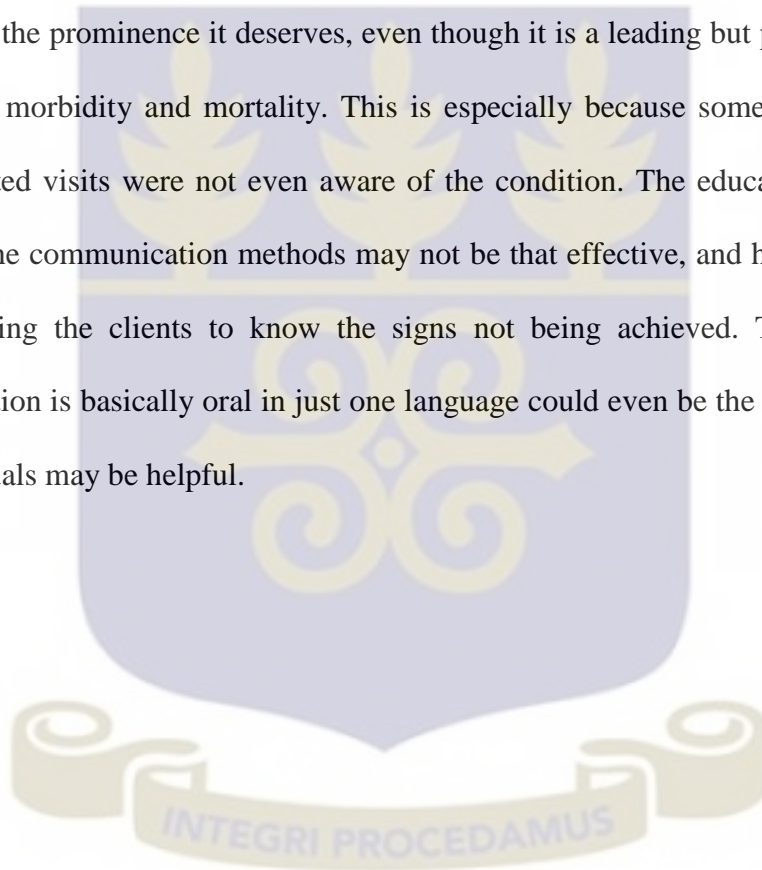
About 85% of the respondents were referred from other facilities where they had received some antenatal care. Typically patients start antenatal clinic in other facilities which are considered primary or secondary levels. They are referred to KBTH when any complication arises to warrant tertiary care. These referred cases have also received

antenatal care and presumably should have received antenatal education in these facilities. The fact that the clients who were referred to KBTH significantly lacked knowledge about danger signs, suggests that, this missed opportunity of acquiring knowledge about hypertension in pregnancy is not unique to KBTH. Some facilities in Accra may also be having challenges with respect to getting pregnant women to know the danger signs during the antenatal clinics. This may explain the findings of a previous study done in KBTH, where the majority of maternal deaths during the study period were as a result of hypertensive disorders; and the highest proportion of these hypertensive deaths happened within 24 hours of admission; with 79.4% of these hypertensive deaths being cases referred from other facilities (Adu-Bonsaffoh et al., 2013). The non-referred clients were patients who started at the gynaecology clinic of KBTH at the onset of pregnancy and were transferred to the antenatal clinic of the same hospital when they got to 20 weeks of gestation.

The study finding of no difference between urban and urban slum dwellers was not consistent with the Gambia study that found higher proportion of rural women knowing the signs (Anya et al., 2008). This can be explained by the fact that in the latter study the rural respondents were not attending antenatal clinic in the same facility as the urban dwellers, they benefitted from outreach or “trekking” clinics that went into the communities. These clinics presumably, were slower paced and took more time to educate clients. Urban slum dwellers are relatively more likely to be disadvantaged than rural dwellers because they are easily overlooked.

Parity, gestational age and occupation were not shown by the study to influence the knowledge of the danger signs. This study therefore demonstrates that with the exception of educational status, these above factors which were considered in the conceptual

framework are not significant. It is however not too surprising since other published data have not identified them as such. This paucity of knowledge may be explained by the content and the mode of communication at these clinics. The selection of the relevant topics of public health importance is critical. From the antenatal handbook, clients have to be educated on the danger signs of pregnancy; hence could there be a possibility that some of the signs are mentioned to clients without telling them specifically that they are associated with hypertension? There is a possibility that hypertension in pregnancy is not being given the prominence it deserves, even though it is a leading but preventable cause of maternal morbidity and mortality. This is especially because some clients who had made repeated visits were not even aware of the condition. The education may still be given, but the communication methods may not be that effective, and hence the ultimate aim of getting the clients to know the signs not being achieved. The fact that the communication is basically oral in just one language could even be the problem. The use of audiovisuals may be helpful.



5.3 Limitations

A better study would have been to first assess knowledge of the booking group on their first visit, before the exposure of antenatal care in the KBTH, and then reassess their knowledge after 4 antenatal visits at KBTH. However time available for the study makes this impossible. This limitation however does not affect the generalization of the results because the two groups were similar in characteristics.



CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study has identified that women who have received antenatal care still lack the knowledge on the danger signs of hypertension in pregnancy, a topic of such immense public health importance. The study has demonstrated that an opportunity for the antenatal clinic to make an impact on the clients' knowledge of the danger signs of a leading cause of maternal mortality is being missed.

6.2 Recommendations

In the light of the findings the following recommendations are being suggested:

1. The study demonstrates an urgent need to give hypertension in pregnancy the attention and the priority it deserves. The entire education package must be reviewed. Every woman who attends antenatal clinic in KBTH must know about the danger signs of hypertension before she leaves the clinic. Various communication methods like audiovisuals can be used, to ensure that the ultimate goal of getting the clients to acquire the knowledge is being achieved. Selection of topics must be done by an all-inclusive team, and the pattern must be such that within 4 visits all critical areas must be covered. In the short term, audience segmentation can be employed so that those with low literacy are not disadvantaged.

2. Aside this group education, high risk patients such as those with the history of the disease must be given a one-on-one counseling on the danger signs, and partners must be invited to be counselled.

3. Female higher education must be on the agenda of policy makers at the national level, as one of the long term measures to reduce maternal mortality, because of the finding of the relationship between knowledge and level of education.
4. Future studies to assess health workers knowledge of the danger signs will be helpful.



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APPENDICES

Appendix A: Questionnaire

Date of interview:

Respondent's ID:

Background Information:

1. Age at last birthday: Date of birth:

2. Parity:

3. Gestational age [weeks]

4. Referral Status: Referred []

Not Referred []

5. Marital status:

a. Married []

b. Single []

c. Separated []

d. Divorced []

e. Cohabiting []

6. Highest education attained:

a. No education []

b. Primary []

c. Middle and JSS []

d. SSS/Vocational/Commercial: []

e. Polytechnic []

f. University []

7.Occupation:

a. Housewife []

b .Unemployed []

c. Artisan (hairdresser, dressmaker) []

d. Trader []

e. Clerical []

f. Owner of a business []

g. Professional []

h .Formal employment but not professional []

i. Others [Specify]

8.Previous history of hypertension in pregnancy :YES[] NO[]

9.Place of stay: rural [] Urban []

KNOWLEDGE ON DANGER SYMPTOMS

Have you heard of hypertension? YES [] NO []

Have you heard that you can get hypertension in pregnancy? YES [] NO []

Sometimes in pregnancy some women develop hypertension or BP as it is called. There are some signs that when you start having whilst pregnant will alert you that you may be having serious hypertension.Please mention the danger signals of hypertension that you are aware of/know.

Research assistant to tick the ones mentioned, all others should be written in the column provided.

	DANGER SIGNS					
	Headache	Nausea	Vomitting	Upper abdominal pain	Light flashes	Blurred vision
YES						

OTHERS.....

Appendix B: Participant Information Leaflet

Title of the Study:

ANTENATAL CARE, A MISSED OPPORTUNITY FOR HYPERTENSION EDUCATION?

Name(s) and affiliation(s) of researcher(s): This study is being conducted by Helen Naa Oyoo Akaba, of the School of Public Health, University of Ghana.

Sponsor(s):

This study is self-sponsored.

Purpose of the study:

We are conducting a survey in this hospital about awareness of the danger signals of hypertension in pregnant women. This involves a one-time answering of some questions.

We would want to ask some questions about yourself and what you know about hypertension in pregnancy. It should take about 15 to 20 minutes to answer the questions. You will be interviewed alone and whatever information you give will be kept strictly confidential and will not be disclosed to any other person.

The survey is part of the requirements for Helen Naa Oyoo Akaba's postgraduate programme in public health. However the information will help in planning health education at the antenatal clinics, and thus benefit society as a whole.

Risk(s):

There are no known risks associated with your participation in this study.

You will not be judged by the answers you provide by anyone related to the study, neither will the answers you give result in a negative effect on your current or future management.

Benefit(s):

Direct benefit will not be obtained from the questionnaire; however the information provided by you and other clients will help in the care of pregnant women. Feel free to ask questions at any time concerning the topic during the interview.

Confidentiality:

The information collected in this study will be recorded without your name or any other form of identification. As a result your answers and the results of the study cannot be linked to you.

Voluntariness:

Your participation in this study is entirely voluntary and you are free to decline participation.

Consequences of declining to participate in the study:

Your decision not to participate in the study will not prevent you from patronizing the services of the antenatal clinic or other services now or in the future.

Cost/compensation(s):

You will not be required to pay any extra fees for taking part in the study; neither will the researcher pay you any fees for your participation.

Contacts:

If you have concerns about the study, you may contact Helen Akaba on 0206301452, and Hannah Frimpong 0243235225 [Ethical Review Committee Administrator].

CONSENT FORM

Do you have any questions? [If yes, note the questions] YES [] NO []

.....

Are you willing to participate in the study? YES [] NO []

Statement of person obtaining informed consent:

I have fully explained this research to Mrs./Ms/Mad
_____ and have given sufficient information,
including that on risks and benefits, to enable her make an informed decision to
participate in or opt out of this study.

Date: _____

Signature: _____

Name: _____

Statement of person giving consent:

I have read the description of the research or have had it translated into one language I understand. I have also discussed it with the interviewer to my satisfaction. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research/study. I understand that I can withdraw from the study at any time. I have received a copy of this consent form and additional information sheet for keeps.

DATE: _____ SIGNATURE/THUMBPRINT: _____

NAME OF PARTICIPANT: _____

