TREATMENT COMPLIANCE AMONG WOMEN WITH PREGNANCY INDUCED HYPERTENSION ATTENDING SELECTED HEALTH FACILITIES IN RACHUONYO NORTH SUB-COUNTY, HOMABAY COUNTY, KENYA.

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Q139/CTY/PT/21167/2012

THIS THESIS IS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR AWARD OF DEGREE OF MASTER OF PUBLIC HEALTH (REPRODUCTIVE HEALTH) IN THE SCHOOL OF PUBLIC HEALTH OF KENYATTA UNIVERSITY

NOVEMBER, 2016
DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award

Signature..................................................Date............................................

Eucabeth Agola Jabuya

(Q139/CTY/PT/21167/2012)

Supervisors’ approval

We confirm that the work reported in this thesis was carried out by the student under our supervision

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Signature..................................................Date............................................

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DEDICATION

I dedicate this work to my husband, Walter Jabuya, my children, Lilian, Dave, Richard, Timon and friends and colleagues at KEMRI-FACES program in Nairobi and Kenyatta University.
ACKNOWLEDGEMENT

First and foremost, I must acknowledge that without the grace of the Almighty God, I wouldn’t have accomplished this task. Secondly, I sincerely thank my supervisors Dr. Justus O. S. Osero and Dr. Anthony Wanyoro for guiding me step by step throughout the accomplishment of this thesis.

Thirdly I am grateful to the head of Environmental and Population Health department, Prof. Margret Keraka, Dr. Daniel N. Akunga, Dr. Jackim Nyamari and Dr. Warutere for guidance and direction insightful ideas on this study.

Fourthly, I must thank Homa-Bay County Government officials for granting me the permission to conduct the study within the county health facilities. I also acknowledge authorities and health providers at Kendu-Bay, Kandiege and Wagwe Hospitals for smooth facilitation of data collection. Lastly I am grateful for the pregnant mothers who participated in this study.

May God bless you All.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ACOG</td>
<td>American College of Obstetricians and Gynecologists</td>
</tr>
<tr>
<td>ANC</td>
<td>Ante-Natal Care</td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>CDC</td>
<td>Centre of Disease Control</td>
</tr>
<tr>
<td>HELLP</td>
<td>Haemolysis Elevated Liver Enzymes, Low Platelet count syndrome</td>
</tr>
<tr>
<td>KDHS</td>
<td>Kenya Demographic and Health Survey</td>
</tr>
<tr>
<td>MaSo</td>
<td>Magnesium Sulphate</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NHBPEP</td>
<td>National High Blood Pressure Education Program</td>
</tr>
<tr>
<td>PIH</td>
<td>Pregnancy Induced Hypertension</td>
</tr>
<tr>
<td>PHH</td>
<td>Post-Partum Hemorrhage</td>
</tr>
<tr>
<td>SDG</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
# DEFINITIONS OF TERMS

<table>
<thead>
<tr>
<th><strong>Health System Factors</strong></th>
<th>Patients’ perceived affordability of services and drugs, experience of availability of medication in health facilities when patients required, health personnel follow up after medication and clarity of medical explanation given by health personnel on the PIH condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIH Knowledge</strong></td>
<td>Patient’s understanding of PIH seriousness and consequences, the need for seek PIH treatment as well as the need for consistent drug intake</td>
</tr>
<tr>
<td><strong>PIH Treatment Compliance</strong></td>
<td>The extent to which an hypertensive mother’s medication-taking behaviour coincides with the healthcare providers’ medical advice in both dosing regularity and timing of intake. In this study patients were considered to be compliant if they had not missed taking any of the required pills since they started taking PIH pills</td>
</tr>
<tr>
<td><strong>Pregnancy Induced Hypertension</strong></td>
<td>A condition in pregnant women with elevated systolic (&gt;140 mm Hg) and diastolic (&gt;90 mm Hg) blood pressure on at least two occasions 6 h apart.</td>
</tr>
<tr>
<td><strong>Socio-Economic Characteristics</strong></td>
<td>These are patients characteristics including age, education level and occupation</td>
</tr>
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ABSTRACT

Treatment compliance among pregnant women with pregnancy induced hypertension (PIH) continues to be a major global health challenge. Maternal and infant mortality and morbidity remain high and PIH is one of the leading causes. However very little has been achieved to bring this condition under control and many mothers and newborns continue to die or suffer many complications. The main objective of this study was to assess treatment compliance among women with PIH in Health Facilities within Rachuonyo North Sub-County Homa-Bay County. The specific objectives were to establish the socio-demographic factors that influence treatment compliance among women with PIH, to determine the knowledge level of women with PIH and to establish the health system factors influencing treatment compliance among women with PIH in Rachuonyo North Sub-county. A cross sectional descriptive study was undertaken targeting pregnant women already diagnosed with PIH in selected Health Facilities within Rachuonyo North Sub-County. Data collection tools used was researcher-administered questionnaires, FGD guides and KII's. The questionnaires were filled by 175 women who were proportionately allocated the 3 Level 4 health facilities in the Sub-county. Within each health facility, pregnant women with PIH were conveniently sampled. Two doctors, two clinical health officers and two Nurses were used as key informants to provide additional information. The association between the variables was assessed using Chi Square and logistic regression. The level of treatment compliance among women with PIH stood at 18.3%. Among the women with PIH, 68.1% had high knowledge on treatment compliance. Socio-demographic factors that were significantly associated with treatment compliance were age (p-value = .007) and highest level of education attained respondents (p-value = .038). On the health system factors; explanation of PIH during diagnosis (p-value = .001), advice on the importance of taking PIH medications (p-value = .025), explanation on schedule and timing of taking medications (p-value = .024) and frequency of follow up (p-value = .001) were significantly associated with treatment compliance. However education level was the only significant factor that could predict treatment compliance with respondents who had completed primary schools were 4.968 (Adjusted Odds Ratio = 4.968, p-value = .05) times more likely to comply with PIH treatment as compared to respondents who had not completed primary. The study findings are useful for planning and designing appropriate intervention by the Ministry of Health, Non-governmental organization and stakeholders in order to create awareness about treatment compliance among pregnant mothers with PIH so as to avert the trend and prevalence of Pregnancy Induced Hypertension.
CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Pregnancy Induced Hypertension (PIH) is a condition of high blood pressure during pregnancy which occurs after 20 weeks of gestation (Barra, Cachulo, Providência, & Leitão-Marques, 2012). Pregnancy induced hypertension also called preeclampsia; toxemia or toxemia in pregnancy is marked with hypertension, proteinuria and oedema (Navbir, Alka, & Antima, 2012). It develops as a consequence of pregnancy and regresses after delivery, however it may be differentiated from chronic hypertension which appears before 20th week gestation or usually continue for more than six weeks after delivery (ACOG, 2002). Worldwide, 10% of all pregnancies are complicated by hypertension, with PIH estimated to affect about 5 – 8% of all pregnant women worldwide (Muti, et al., 2015). It is responsible for 10% of maternal deaths and 25% of fetal deaths which occur as a result of persistent high blood pressure attack that hinders the adequate blood flow through the blood vessels leading to chronic cardiovascular conditions in the pregnant women (Pswarayi, 2010). PIH treatment compliance is a key factor impending good control.

According to Sajith, et al., (2014) PIH is categorized into three common stages, the chronic hypertension which develops high blood pressure of more than 140/90mHg before 20th week pregnancy, early pregnancy or continue after developing. Second is gestational hypertension that develops after 20th week of pregnancy and goes away after delivery. The third is preeclampsia that contains both chronic and gestational hypertension and can lead to severe condition after 20th week of pregnancy like eclampsia which is characterized by epileptic form of convulsions (seizures).
PIH has no cure but treatment can modify its course therefore the primary goal of PIH treatment is to bring blood pressure under control quickly and prevent the condition from progressing to severe hypertension (Jambedu, 2006; Mustafa, Ahmed, Gupta, & Venuto, 2012). PIH treatment also prevents maternal complications (such as heart failure and cerebrovascular events) while improving fetal maturity by permitting prolongation of pregnancy (Kattah & Garovic, 2013). PIH management can be Non-Pharmacological and Pharmacological. Non-Pharmacological includes measures such as weight reduction, dietary changes, cessation of smoking and reduction or avoidance of alcohol. Pharmacologic therapy involves use of antihypertensive drugs when lifestyle modifications do not normalize blood pressure. The common antihypertensive drugs used in PIH treatment include Atenolol, Nifidapine and Hydrochlorazine.

PIH treatment compliance enhances likelihood of positive maternal and neonate outcomes which results in reduced costs of care and disease overload hence all efforts should be put in place to promote compliance among those already diagnosed with PIH. Adequate control of hypertension is associated with taking at least 80% of a prescribed regimen (Jambedu, 2006). However, studies show that worldwide, there is non-compliance especially in those diagnosed with PIH which is a long term therapy (WHO, 2003).

Globally, prevalence of PIH treatment compliance vary between countries and regions depending on cost of medical care and drugs, better care services and patient awareness about medication adherence among other factors. For instance a study in Sunderland among women attending a national hospital showed an adherence rate of 76.5% (Khan, Shah, & Hameed, 2014). PIH treatment compliance in Egypt was estimated to be 25.9% (Youssef & Moubarak, 2002) while in Ethiopia it was estimated to be 64.6 % (Ambaw, Alemie, Yohannes, & Mengesha, 2012).
Reasons for treatment non-compliance have been widely documented (Jin, et al., 2008; Ross, et al., 2004). These include perceived state of patient’s relationship with the physician, fear of the complications of hypertension and desire to control BP. Nonadherence has been associated with misunderstanding of the condition, perceived improvement in health, worsening in health, general disapproval of medications and concern over side effects. Many of the instances of patients not taking medicines to minimise side effects are pragmatic since some patients might have no symptoms with hypertension, and the mere fact that they do not feel unwell may encourage noncompliance (Mahrous, 2015). This implies that they would not be willing to tolerate the side effects for a condition that is asymptomatic. The number of medicines prescribed may also influence compliance, with a reduction in compliance as the regime becomes more complex. Inaccessibility to healthcare, long waiting time for clinic visits and difficulty in refilling prescriptions contribute to poor compliance.

1.2 Problem Statement

Worldwide it is estimated that about 303 000 maternal deaths occurred in 2015 of which more than half of these deaths occurred in sub-Saharan Africa (WHO, 2015). Of these deaths, hypertensive disorders was the second cause at 14.0% (Say, et al., 2014) and it complicates to eclampsia 14 times more as compared to developed countries (Dolea at el 2008). Kenya is considered to have made insufficient progress in reducing maternal mortality which as of 2015 it stood at 510/100,000 live births while infant mortality rates stands at 39/1000 live births (WHO, 2015; World Bank, 2015; KNBS, 2015; WHO, 2014). Homa-Bay is among the leading counties with high maternal mortality (583/100,000 live births) and infant mortality rates (51/1000 live births) (KNBS, 2011; UNFPA, 2014). Rachuonyo North is within Homabay County. The problem of PIH is compounded by several other challenges like poverty which is at 44% (Commission on Revenue Allocation, 2011); infrastructural
challenges and only 12 of the 147 public health facilities in Homabay have equipment to diagnose high blood pressure in pregnant women (MOH, 2010; MOH, 2016).

PIH treatment is a long-term therapy requiring not less than 80% compliance to bring the BP under control treatment and yet noncompliance is a growing concern world over, both in developed and developing countries (Meads, et al., 2008). Non-compliance to PIH treatment can lead to further hypertensive complication and even maternal or foetal death. Despite being the second most common cause of maternal death, there was no local study assessing PIH treatment compliance. Therefore this study sought to fill this gap in assess PIH treatment compliance among pregnant women in Rachuonyo North Sub County Homa-Bay

1.3 Justification and Significance of the study

PIH claims many lives globally and despite the negative outcomes especially maternal and infant mortality resulting from it, it is the least funded and the least researched cause of maternal mortality worldwide (WHO, 2011). Kenya has an infant mortality of 39/1000 and maternal mortality of 510/100,000 and PIH is a major contributor to the high rates (World Bank, 2015; KNBS, 2015). It is estimated that 9.1 % of maternal deaths in Africa are due to hypertensive disorders of pregnancy (Muti, Tshimanga, Notion, Bangure, & Chonzi, 2015). In Kenya, the prevalence rate of PIH ranges from 1.5% to 9% (Lubano & Qureshi, 2007). In western Kenya PIH accounts for 16% of the maternal mortality causes after haemorrhage which is the greatest cause at 27% (Desai, et al., 2013).

Local literature on PIH and treatment compliance are scarce in Rachuonyo North sub-county and the information obtained in this study will be useful to the NGOs, policy makers, medical personnel and health institutions in the sub-County and at National level to reduce occurrence
of PIH and subsequently improve pregnancy and health outcomes. With proper treatment compliance, Kenya will achieve SDG 4 and 5 on reducing maternal and infant deaths.

1.4 Research Questions

1. What socio-demographic factors influence treatment compliance among pregnant women with PIH in Rachuonyo North sub-county?
2. What is the level of knowledge on treatment compliance among pregnant women with PIH in Rachuonyo North sub-county?
3. What health system factors influence treatment compliance among pregnant women with PIH in Rachuonyo North sub-county?

1.5 Research Objectives

1.5.1 Broad Objective

The broad objective of this study was to assess the treatment compliance among pregnant women with PIH in Rachuonyo North Sub County Homa-Bay

1.5.2 Specific Objective

1. To establish the socio-demographic factors that influence treatment compliance among pregnant women with PIH in Rachuonyo North Sub-county
2. To determine the level of knowledge on treatment compliance among pregnant women with PIH in Rachuonyo North Sub-County
3. To determine the health system factors that influence treatment compliance among pregnant women with PIH in Rachuonyo North Sub-County
1.6 Conceptual Framework

Conceptual framework determine the association between study variables. The dependent variable was PIH treatment compliance and independent variables included knowledge level, socio-demographic factors and health system factors. PIH treatment is a long-term medication which needs a clear understanding among the patients on not only the PIH condition but also the risks of non-adhering to the PIH treatment. It was therefore postulated that women with better understanding of PIH and the need for consistent compliance to PIH treatment were more likely to comply with the PIH treatment.

PIH treatment being a long-term medication is a costly affair such that even where health care is subsidised, PIH patients will incur other costs such as travelling costs and the diet modifications. This underscores the need for PIH patients to have stable and sufficient income to enhance likelihood of PIH treatment compliance. Monogamous marriages was thought to offer psycho-social support with spouses anticipated to act as remainders for PIH patients to take their medication hence boosting the chances of treatment compliance. On the other hand young women at times find themselves pregnant outside marriage hence lack the necessary social support systems present in stable marriages. Intuitively, it was expected that patients with higher educational level would have better knowledge about the disease and therapy and therefore be more compliant.

In the health system related factors the women who could afford PIH drugs and ensure uninterrupted access to PIH drugs were anticipated to be more adherent to PIH treatment. In addition patient engagement through follow-up and clear medical explanation including the need to adhere to treatment was considered to motivate patients to comply with the PIH treatment.
1.7 Theoretical Framework

This study was based on the Health Belief Model (HBM). HBM proposes that patients weigh up a health-related behaviour (eg compliance) by considering their perceived susceptibility to an illness complications and the seriousness of the illness, as well as the benefits of the action (Ross, et al., 2004). Subjective assessments of disease seriousness provides individuals with the motivating force to take action. Once an individual feels substantially threatened by the disease and its sequelae, she must decide among alternate actions. According to the HBM, it is at this point that individuals perform a type of cost/benefit analysis such that alternatives
are subjectively evaluated in terms of their benefits and costs (or barriers) (Girma, et al., 2014). This cost/benefit analysis then results in a preferred course of action or, in this research, complying with PIH treatment.

![Diagram](image_url)

**Figure 1.2: Theoretical Framework**: Adopted and modified from Ross, et al (2004)
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Pregnancy Induced Hypertension (PIH) is a condition specific to pregnant women when there is hypertension at or after 20 weeks gestation. It is diagnosed when the woman’s blood pressure is increased above 140/90mmHg on at least two times in one week apart (Anderson, Undeberg, & Bastianelli, 2013). In this study the review literature will be on the treatment compliance among pregnant women with pregnancy induced hypertension in Health facilities in Rachuonyo North Sub-County, Homa-Bay.

2.2 Magnitude of PIH

Pregnancy induced hypertension is approximately estimated to affect 7% to 10% of all pregnancies (Mustafa, et al, 2012). Despite it is the leading cause of maternal death and perinatal morbidity the mechanism responsible for the pathogenesis not yet been fully known (Say, et al., 2014). The prevalence rate of PIH is increased by 20% to 40% in women with chronic conditions like renal disease, essential hypertension and diabetes mellitus (Pswarayi, 2010) for all women with PIH needs to be treated and blood pressure monitored and controlled Homa-Bay maternal mortality rate stands at 583/100,000 (UNFPA, 2014) and PIH greatly complicates this alarming figure. This put emphasis that PIH levels to be promptly recognized for correct diagnosis and treatment compliance.

Global statistics indicates that the incidence of PIH has been estimated at 5%-14% of all pregnancies (Muti, et al., 2015). In developing countries PIH is the second most obstetric cause of still birth and early neonatal deaths, while worldwide it is the third leading pregnancy related cause of death after haemorrhage and sepsis (WHO, 2014; Muti, et al., 2015). Hypertensive disorders are estimated to have caused 14% (343 000) of all maternal
deaths globally (Say, et al., 2014). Further it also estimated that only about 30-50% of patients with hypertension adhere precisely to their hypertension medication regimens (Jambedu, 2006; Brown & Bussell, 2011). On maternal sides if not controlled with repeated attacks, it affects renal functions and care renal failure, cardiac failure and cerebral bleeding and most life threatening PIH cause HELLP syndrome (Haemolytic anaemia, elevated liver enzymes and low platelets count and disseminated intravascular coagulopathy(DIC) (Pswarayi, 2010).

2.3 Socio-demographic Factors

Socio-demographic factors entail knowledge, occupation, income, age marital status which when adequate on personal life may lead to good/adequate treatment compliance among pregnant women diagnosed with PIH. In Kenya especially rural women with low and no education are more likely to be married early, be in polygamous marriage and have high parity (Mumah, et al., 2014) therefore this puts the women at high risk of getting pregnant early and prone to PIH and not going for the ANC and high possibility of delivering at home by unskilled personnel. Poor education is associated with low screening attendance in Kenya. About 30% of Kenyan women are illiterate (Feldkamp, 2013) a factor that contributes to high maternal mortality rates in the country. This could be attributed to the fact that they lack knowledge on methods of preventing PIH.

Misconception that ANC screening test also include cervical cancer with fear of screening in cervical cancer embarrassment are associated with pelvic examination have been cited as reason why most Kenyan women avoided health facilities antenatal care (Mason, et al., 2015). As a long term treatment women require social support from family members especially their spouses since it has been recognized to play a critical role in enhancing treatment compliance (Jin, et al., 2008). In many Africa cultures, women tend to be
...subservient to men and lack authority to make decisions concerning their health (Ngubane, 2010).

In Sub-Saharan Africa, where antenatal coverage rates have improved slightly during the last two decades, with a small increase from 47 to 49 per cent of pregnant women receiving the recommended care (UN, 2015). Poverty is a major contributor to the wide disparities in maternal health outcomes since it hinders women from seeking antenatal care due to inaccessibility thus complicating treatment compliance among diagnosed with PIH (Finlayson & Downe, 2013). Furthermore the opportunistic cost of forfeiting work and income even delays and prevent them from going to Health Facilities (Ochodo, 2010). Rachuonyo Sub-County is one of the places with poor infrastructure, dispersed health facilities and poverty level is at 44% (Commission on Revenue Allocation, 2011) thus majority of women prefer home deliveries by unskilled attendants as only 42% delivering under skilled delivery with the few who manage skill attendance delivery normally come in late stages while having maternal complication thus indicating a challenge in treatment compliance (Population Action International, 2014).

2.4 Knowledge Level Factors

Pregnancy induced hypertension has evoked tremendous negative and fearful attitudes since its global emergence, and further, there are limited effective methods for prevention of PIH (Oyira, et al, 2009). Despite knowledge on the grave complication on PIH appears to be limited, the level of blood pressure marked in PIH is well known for causing poor maternal and neonatal outcomes (Maputle, et al, 2015). According to presumed lack of knowledge regarding the severity of a symptom or condition caused 39% maternal deaths in California (Main, et al., 2015). Health education during antenatal clinic attendance can play a very important role since early detection and timely intervention is essential in preventing...
maternal and perinatal complications but the possibility that women do not seek timely care may be increased if women have a poor understanding of signs and symptoms of PIH (Oyira, et al., 2009; Maputle, et al., 2015).

Knowledge on PIH is important and literatures indicates that there is lack of awareness even in Sub-Saharan Africa and in local areas and minimum appropriate action is taken to reduce PIH but others perception on cultural beliefs are marked. Patient’s knowledge about their disease and treatment is not always adequate thus patient education is very important to enhance compliance (Jin, et al., 2008). In a study by Al-Hewiti (2014) results indicated that low adherers view that the information they have received regarding their medications is less adequate when compared to patients with high adherence.

A woman with knowledge is able to recognize the PIH characteristics and seek early treatment and protect herself and her baby. In a study among pregnant women attending ANC in Nigeria results indicate that most of the pregnant women were aware but 80% of them only visited the hospital on noticing swollen legs while 60% believed the swelling was as result of being bewitched (Oyira, et al., 2009). In a study in India among pregnant women with PIH results indicated that before pharmacist education, 86.1% were unaware about PIH but 97.2% were aware of PIH which was significant increase in the knowledge of PIH among these women terms of disease, signs and symptoms, and thereby improved the patient compliance and adherence to the drug therapy (Lavanya, et al., 2015). In a study among pregnant women in South Africa, the results revealed knowledge deficit about PIH symptoms, prevention of complications and its impact on the unborn baby (Maputle, et al., 2015).

Singh and Srivastava (2015), observed that apart from educating pregnant women on the symptoms of PIH, it was also necessary to motivate them to take preventive measures. Pswarayi (2010) noted that PIH self-care knowledge has some influence on hypertension
control and therefore advocated for continuous reinforcement of PIH self-care knowledge skills during antenatal teaching of clients. Intuitively, it may be expected that patients with higher educational level should have better knowledge about the disease and therapy and therefore be more compliant but patients with lower educational level might have more trust in physicians’ advice thus educational level may not be a good predictor of therapeutic compliance (Jin, et al., 2008).

In a study by Al-Hewiti (2014) low adherence was reported more among patients with higher level of education. Rachuonyo North is marked with illiteracy of 20% (no formal education) and this may affect the health seeking awareness (KNBS & Society for International Development (SID), 2013). Majority of women may be aware about hospital deliveries but lack knowledge to recognize level of PIH and even admitted may not adhere to treatment when they feel better (Jin, et al., 2008).

2.5 Health System Factors

The health sector is plagued with inequalities, for example, 70% urban dwellers have access to health Facilities within 4km, only 30% of the rural population has a similar access (WHO, 2006). About 44% of patient in Kenya do not seek health care services due to insufficient fund while 18% don’t seek care because of long distance to the nearest health facility (Mwangi & Lejonqvist, 2013). In a study at Homabay County it was reported that 58% of patients had to travel more than 5km to access health services (Odiwuor & David, 2014). In addition women hospitalization cost more than twice yet women are less likely to be insured that men (Patchias & Waxman, 2008). Only 12 of the 147 public health facilities in Homabay have equipment to diagnosis high blood pressure in pregnant women and only a few (20% in Nyanza) can treat high blood pressure and fatal complication in pregnancy (MOH, 2010;
MOH, 2016). The few facilities are also at a distant and this prompts majority to shun from admission due to financial problem.

According to Maningat, et al. (2013) physician and patient must form an alliance to more effectively communicate the importance of starting treatment, and establish goals for therapy. Not only do physicians often fail to recognize medication non-adherence in their patients, they may also contribute to it by prescribing complex drug regimens, failing to explain the benefits and adverse effects of a medication effectively, and inadequately considering the financial burden to the patient (Brown & Bussell, 2011). Further in a meta-analysis once-daily administration vs. two or more daily administrations was found to be associated with a reduction of about 50% in risk of non-adherence to treatment thus less frequent dosing is associated with a significant reduction in non-adherence to treatment (Caldeira, Vaz-Carneiro, & Costa, 2014). Rachuonyo North is also faced with challenges of funding, lack of equipment supplies and shortage of staff, further regulatory standard to ensure high quality are poorly developed.

2.6 Summary of the Literature

PIH is responsible for 10% of maternal deaths and 25% of fetal deaths which occur as a result of persistent high blood pressure attack that hinders the adequate blood flow through the blood vessels leading to chronic cardiovascular conditions in the pregnant women. The primary goal of PIH treatment is to bring blood pressure under control quickly and prevent the condition from progressing to severe hypertension. However estimated that only about 30-50% of patients with hypertension adhere precisely to their hypertension medication regimens. In Kenya especially rural women with low and no education are more likely to be married early, be in polygamous marriage and have no or little income which complicates the likelihood of complying with a long-term PIH treatment. Low education levels superimposes
the likelihood of poor understanding of signs and symptoms of PIH hence reduced chances of PIH treatment compliance. Due to increased workload brought about by shortage of health workers, physicians often fail to effectively communicate with PIH patients and fail to explain the benefits PIH treatment compliance hence reduces chances of PIH medication compliance.
CHAPTER THREE: METHODS AND MATERIALS

3.1 Study Area

The study was carried out in Rachuonyo North Sub-County in Homa-Bay County, Kenya. It has 4 division and 15 sub-locations. It is largely dominated by the Luo Community and has a population of 230,000 with sex distribution of 52% female and male 48%. Its geographical coordinates are 0.5000°S and 34.7167°E. The Sub-County has only 3 Level 4 health facilities that is Kendu-Bay, Kandiege and Wagwe Hospitals with quarterly PIH patient catchment of 1138. Other Non-Governmental hospitals offering PIH treatment include Gendia Hospital and Thurrabuor Mission Hospital.

3.2 Research Design

The study employed a descriptive retrospective study design. The study was performed post hoc among pregnant women already diagnosed with PIH who had been on treatment for a minimum of one month were followed back in time to establish the compliance to PIH treatment for that period. The study examined possible contributing factors (independent variables) in relation to PIH treatment compliance among pregnant women who had already been confirmed to have PIH at the start of the study. The study looked retrospectively for a period of one month using medical records and interviews with women who were already known to be having PIH.

3.3 Measurement of Variables

3.3.1 Dependent Variable

PIH treatment compliance was the study dependent variable. In this study patients were considered to be compliant if they had not missed taking any of the required drugs since they
started taking PIH drugs. If a patient reported to have missed taking any of the required drugs since they started taking PIH drugs she was considered non-compliant.

3.3.2 Independent Variables

The independent variables were socioeconomic factors, knowledge level on PIH and Health System factors. These variables were assessed as follows;

i) Socioeconomic factors included patient’s highest educational level attained, age as of last birthday, marital status, her source of income and average monthly income received from these sources.

ii) PIH knowledge was a cumulative score from true/false questions involving perceived understanding of PIH seriousness and consequences, the need for seek PIH treatment as well as the need for consistent drug intake.

iii) Health system factors included patients’ perceived affordability of services and drugs, experience of availability of medication in health facilities when patients required, health personnel follow up after medication and clarity of medical explanation given by health personnel on the PIH condition as well as PIH compliance counselling.

3.4 Study Population

3.4.1 Target Population

This study targeted pregnant women with PIH in Rachuonyo North sub county, Homa-Bay County.
3.4.2 Sample population

Since large portion of pregnant attend ANC clinics within the Rachuonyo North sub county, this study sample population included pregnant women diagnosed with PIH attending all the Level 4 health facilities in the Sub-County. The total population of these pregnant women who are visiting the three level four health facilities every quarter is 1138.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

This comprised women who were pregnant and had been diagnosed with PIH and had been on treatment for at least one month within the study area and were willing to participate in the study.

3.5.2 Exclusion Criteria

Pregnant women who were excluded from this study included those women with PIH but were critically ill with other pregnancy related conditions and women who had mental condition as well as those with hypertensive disorders prior to the pregnancy.

3.6 Sample Size Calculation

The population of women with PIH in Rachuonyo North Sub-County was less than 10,000 thus the Cochran (1963) formula was used to determine the sample size as shown below;

\[ n = \frac{Z^2pq}{d^2} \]

Where:
z = standard normal deviate set at 1.96 z-score corresponding to 95% confidence level

p = was set at 0.061 because the prevalence of PIH in Kenya is 16%

q = 1 - p = 1 - 0.61 = 0.84

d = Level of significance. This value at 95% confidence level given as 0.05.

Therefore

\[
n = \frac{1.96^2 \times 0.16 \times 0.84}{0.05^2} = 206.5 \approx 207
\]

Correctional formula for a population of less than 10,000 was then be used

\[
n_f = \frac{n}{1 + \frac{n}{N}} = \frac{207}{1 + \frac{207}{1138}} = 175 \text{ pregnant women with PIH}
\]

Therefore 195 pregnant women with PIH were targeted inclusive of 10% attrition rate.

### 3.7 Sampling Techniques

There are three level four hospitals in Rachuonyo North sub-county. All the three facilities were included in the study. The pregnant women diagnosed with PIH in these three facilities every quarter were estimated to be 1138. Proportionate sampling was used to arrive at the number of women with PIH to participate from every facility to get a total of 195 women which is the targeted sample size as shown in Table 3.1. Convenience sampling was used to recruit the study participants. Once in the facility, every woman who met the inclusion criteria was enrolled for the study until the sample size for that facility was met. The FGD and KII participants were selected purposively sampled from the facilities under study.

**Table 3.1: Sampling Frame**
3.8 Research Instruments

3.8.1 Researcher Administered Questionnaires

The questionnaires were filled by the pregnant women who were diagnosed with PIH in health facilities to gather the information. The questionnaire was used to collect quantitative data from the pregnant women who were diagnosed with PIH. As shown in Appendix 2, the questionnaire was divided into 4 major parts. The first section collected socio demographic information of the respondents including their education level, occupation, average monthly income, age in years and marital status. The first section also collected information on PIH diagnosis including stage of diagnosis, previous experience of PIH and length of being on PIH drugs. The second section contained series of True/False question assess patient’s PIH knowledge. The third section of the questionnaire collected data on health system factors including affordability and availability of PIH drugs in health facilities as well as doctor-patient communication during PIH diagnosis, health personnel follow-up and counselling on PIH treatment compliance. The fourth section collected information on PIH treatment compliance and explored reasons for non-compliance if a patient was non-compliant to PIH treatment.

3.8.2 Focus Group Discussions (FGD)

Three FGDs were conducted, one in every facility under study using an FGD guide (Appendix 3). These consisted of six to eight women with PIH. The information from FGDs...
was used to enrich the data from the questionnaires. The FGD guide collected data on reasons that has made it difficult to be consistent in taking the drugs as well data on healthcare personnel follow-up after PIH diagnosis. The FGD guide was also used to elicit any other challenges experienced by the mothers during PIH medication.

3.8.3 Key Informants Interview (KII)

KII were done among two clinical officers, two registered nurses and one doctor in each of the facilities using a KII schedule (see Appendix 4). The information from KII was used to enrich the data from the questionnaires. The KII schedules was used to collect information on human resource capacity, consistency in availability of PIH supplies as well as availability of funding for PIH screening, prevention and treatment in the health facility.

3.9 Pre-testing of Instrument

The questionnaire and Focus Groups Discussions were pre-tested in Rachuonyo South in the Health facilities with same characteristics of population and the Key Informant Interview schedules were also pre-tested in the same location. Pre-testing of the questionnaire involved 18 women (10% of the sample size). The data collected from pre-testing was used in modification of the instruments for the final study to increase clarity and get rid of ambiguities in the data collection instruments

3.10 Validity and Reliability

3.10.1 Validity

This is to test measures what it is supposed to measure and the validity was assessed through expert review of the three instruments: key informants and focus groups discussion before it was used in the actual study area to ensure it is validity. The researcher made sure the
questions were clear and instruction on the instrument were in order and easy to follow. The research assistants were trained first to ensure they understood the study and the operational definitions. The research findings were also validated by review of other similar studies.

3.10.2 Reliability

Reliability is the assessment of the accuracy of the tool used to in the procedure if it is consistent with the result. The study pre-tested the tools before the real or actual data collection in Rachuonyo North Sub County. The results from the pre-test was used to enhance structuring of the questionnaire to enhance clarity for the data collection team to ensure consistency in data collected. To reduce interview bias, the data collection team were trained on the data collection instruments before conducting the data collection.

3.11 Data Collection Procedure

The data was collected among pregnant women through antenatal clinic, outpatient department and inpatient wards. The researcher also recruited 2 research assistants who were trained nurses attached to the respective health facilities to help in the data collection. The consent form was given to women meeting the inclusion criteria and once they signed the contest, the researcher administered the questionnaire. The women filled the questionnaire at the exit points. The focus group discussions with 6-8 women were done and the key informant interview schedules were administered by the researcher at convenience and depending on the availability of the key informants.

3.12 Data Analysis and Presentation

Both quantitative and qualitative was collected. The quantitative data was coded, entered and cleaned with SPSS version 20.0 for data analysis. Qualitative data was transcribed verbatim
and typed into MS Word thereafter it was grouped in to themes and presented as verbatim. Level of PIH treatment compliance was described using frequencies and percentages. Then the Chi square was used to test association of patients’ socioeconomic characteristics, PIH knowledge and health system with PIH treatment compliance. For inferential statistics, multiple logistic regression analysis was performed on the variables that were significant from the Chi square test. The multiple logistic regression presented Adjusted Odds Ratios describing the determinants of PIH treatment compliance. The results were presented in text, graphs and tables. Findings from the qualitative data analysis were used to triangulate findings from the quantitative data analysis.

3.13 Ethical Considerations

Ethical clearance was sought from Kenyatta University Ethical Review Committee (Appendix 6) and the permit to carry out the study was sought from National Council of Science, Technology and innovation (NACOSTI) (Appendix 5).

Permission to carry out the study was sought from the relevant within the Facility and institutions including the District Management Team of Rachuonyo North District (Appendix 7). Written informed consent was sought from the study participants (Appendix 1). Participants were informed of the nature of the study before commencing the interviews. Only those women who voluntarily consented took part in the study. Questionnaires filled in hard copy were stored under key and lock while electronic data was stored in password protected hard-disk drive to prevent unauthorized access. Names or any other form of identification were not collected in during the data collection to ensure anonymity.
CHAPTER FOUR: RESULTS

4.1 Introduction

This study sought to assess the treatment compliance among pregnant women with PIH in Rachuonyo North Sub County Homa-Bay. The study targeted 195 PIH patients from 3 Level 4 hospitals within the Sub-County, however, 175 (89.7% response rate) responded to the study questionnaire during the study period. Wagwe Level 4 Hospital had the highest response rate as shown in Table 4.1.

Table 4.1: Response Rate

<table>
<thead>
<tr>
<th>Name of health facility</th>
<th>Sample target</th>
<th>Respondents</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendu-Bay Level 4</td>
<td>55</td>
<td>49</td>
<td>89.1%</td>
</tr>
<tr>
<td>Kandiege Level 4</td>
<td>65</td>
<td>58</td>
<td>89.2%</td>
</tr>
<tr>
<td>Wagwe Level 4</td>
<td>75</td>
<td>68</td>
<td>90.7%</td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>175</td>
<td>89.7%</td>
</tr>
</tbody>
</table>

4.2 Background Characteristics

4.2.1 Socio-Demographic Characteristics

Majority of the respondents were aged between twenty and thirty years 143(81.7%) and married 141(80.6%) while 174(99.6%) were Christians. Of the 141 women who were married, 110 were in a monogamous marriage while the others were in a polygamous marriage. Over a third 68(38.9%) had completed primary level of education and 56(32.0%) were engaged in business activities while 57(47.1%) were earning less than Sh. 5000 per month as shown in Table 4.2.
Table 4. 2: Socio demographic characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent (n=175)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age category (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>17</td>
<td>9.7</td>
</tr>
<tr>
<td>20-30</td>
<td>143</td>
<td>81.7</td>
</tr>
<tr>
<td>30-40</td>
<td>15</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary incomplete</td>
<td>29</td>
<td>16.6</td>
</tr>
<tr>
<td>Primary complete</td>
<td>68</td>
<td>38.9</td>
</tr>
<tr>
<td>Secondary</td>
<td>64</td>
<td>36.6</td>
</tr>
<tr>
<td>Tertiary</td>
<td>14</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>30</td>
<td>17.1</td>
</tr>
<tr>
<td>Married</td>
<td>141</td>
<td>80.6</td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>4</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>174</td>
<td>99.4</td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Work</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>54</td>
<td>30.9</td>
</tr>
<tr>
<td>Farming</td>
<td>21</td>
<td>12.0</td>
</tr>
<tr>
<td>Businesswoman</td>
<td>56</td>
<td>32.0</td>
</tr>
<tr>
<td>Office work</td>
<td>32</td>
<td>18.3</td>
</tr>
<tr>
<td>House help</td>
<td>10</td>
<td>5.7</td>
</tr>
<tr>
<td>Other*</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Monthly earnings (n = 121)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5000</td>
<td>57</td>
<td>47.1</td>
</tr>
<tr>
<td>5000-10000</td>
<td>33</td>
<td>27.3</td>
</tr>
<tr>
<td>10000-20000</td>
<td>16</td>
<td>13.2</td>
</tr>
<tr>
<td>&gt;20000</td>
<td>15</td>
<td>12.4</td>
</tr>
</tbody>
</table>

*Washes clothes (1), environmental work (1)*

4.2.2 Clinical and Obstetric Characteristics

Nearly half 83(47.4%) of the respondents were pregnant for the second time and 95(54.3%) were diagnosed with PIH between 4 and 6 months into their pregnancy. Majority 121(69.1%) of the respondents had been on treatment for PIH for a period of two months as shown in Table 4.3.
Table 4.3: Clinical and Obstetric characteristics of the respondents

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Frequency</th>
<th>Percent (n=175)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current pregnancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>32</td>
<td>18.3</td>
</tr>
<tr>
<td>Second</td>
<td>83</td>
<td>47.4</td>
</tr>
<tr>
<td>Third +</td>
<td>60</td>
<td>34.3</td>
</tr>
<tr>
<td><strong>Stage of pregnancy when PIH was diagnosed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤3 months</td>
<td>80</td>
<td>45.7</td>
</tr>
<tr>
<td>4-6 months</td>
<td>95</td>
<td>54.3</td>
</tr>
<tr>
<td><strong>Period on PIH medication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 months</td>
<td>121</td>
<td>69.1</td>
</tr>
<tr>
<td>3 or more months</td>
<td>54</td>
<td>30.9</td>
</tr>
</tbody>
</table>

Of the 143 respondents who were multigravidas, 95 (66.4%) had had a previous birth or miscarriage within a period of more than two years before the time of the interview and majority 126 (88.1%) had PIH in the previous pregnancy (see Table 4.4)

Table 4.4: Characterization of the previous pregnancy

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent (n=143)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous birth/miscarriage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>4</td>
<td>2.8</td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>44</td>
<td>30.8</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>95</td>
<td>66.4</td>
</tr>
<tr>
<td><strong>PIH in the previous pregnancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>126</td>
<td>88.1</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>11.9</td>
</tr>
</tbody>
</table>

4.3 Treatment Compliance

4.3.1 Skipping Treatment

Compliance on PIH medications among the respondents was assessed through self-report of whether they had ever skipped medication since started taking PIH treatment. Results indicated that majority 143 (82%) had skipped taking PIH medication since having started
taking them as shown in Figure 4.1. This implied that 32(18%) of the respondents were compliant with PIH treatment while 143(82%) were non-compliant.

Figure 4.1: PIH treatment compliance

According an interview with a clinical officer cultural beliefs were partly to blame for non-compliance as they noted that some patients think that the condition is blamed on being bewitched thus they sought traditional herbal medication.

Of the 143 respondents who reported to have skipped PIH medication, 52(36.4%) skipped because they had experienced adverse effects as shown in Table 4.4. According to an interview with a nurse Key Informant some of the side effects regularly reported by PIH patients vomiting, fatigue, feeling weak, palpitations, dizziness, abdominal discomfort and heart burns. This according to the nurse made the PIH patients who were taking other medications including ARVs at times stop complying with the PIH medication but chose to comply with ARV medication instead since they feared for transmission of HIV to their unborn babies.

Table 4.5: Reasons for skipping a dose

<table>
<thead>
<tr>
<th>Reasons for skipping a dose</th>
<th>Frequency</th>
<th>Percent (n = 143)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>82%</td>
<td>82%</td>
</tr>
<tr>
<td>No</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>
### 4.3.2 Timing of Dosages

Most 164 (93.7%) of the respondents had failed to take the medications at the required time of the day of whom 51 (29.3%) cited adverse side effects as the reason for this failure as shown in Figure 4.2.

![Figure 4.2: Reason for failure to take at the required time of the day](image)

### 4.3.3 Higher or Lower Dosage

Over a third of the respondents 71 (40.6%) reported to have taken a higher dose than prescribed to compensate for dosages missed earlier while 16 (9.1%) had taken a lower dose than prescribed because 13 felt unwell while 3 were taking other drugs as shown in Figure 4.3. According an interview with a nurse, it was noted the majority of PIH patients also take ARV drugs hence increasing pill burden among patients. A pharmacist also indicated that

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse effects</td>
<td>52</td>
<td>36.4</td>
</tr>
<tr>
<td>Was on other drugs</td>
<td>39</td>
<td>27.3</td>
</tr>
<tr>
<td>Drugs shortage</td>
<td>27</td>
<td>18.9</td>
</tr>
<tr>
<td>Forgot</td>
<td>13</td>
<td>9.1</td>
</tr>
<tr>
<td>Travelled</td>
<td>9</td>
<td>6.3</td>
</tr>
<tr>
<td>Lack of money for fare/drugs purchase</td>
<td>3</td>
<td>2.1</td>
</tr>
</tbody>
</table>
there were notable cases of PIH complications resulting from consistent taking of lower dosage among patients.

**Figure 4.3: Lower or higher dosage**

**4.3.4 Failure to Refill**

A total of 153(87.4%) respondents reported that they had, at one time or another, exhausted medications and failed to refill thus missing some doses. Slightly over half 78(51.0%) of these cases happened because clinic day was not yet due as shown in Table 4.7.

**Table 4.6: Reason for failure to refill**

<table>
<thead>
<tr>
<th>Reason for failure to refill</th>
<th>Frequency</th>
<th>Percent (n = 153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic day not due</td>
<td>78</td>
<td>51.0</td>
</tr>
<tr>
<td>Clinic was far</td>
<td>25</td>
<td>16.3</td>
</tr>
<tr>
<td>Lack of fare</td>
<td>19</td>
<td>12.4</td>
</tr>
<tr>
<td>Travel</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>Forgot</td>
<td>10</td>
<td>6.5</td>
</tr>
<tr>
<td>Side effects</td>
<td>9</td>
<td>5.9</td>
</tr>
</tbody>
</table>
4.3.5 Stopping and Resumption

159(90.9%) of the respondents had at time stopped taking drugs for a period of time (days or weeks) majorly 93(53.1%) did so because they felt better but then resumed later to take the drugs as shown in Table 4.7.

<table>
<thead>
<tr>
<th>Reason for stopping and resumption</th>
<th>Frequency</th>
<th>Percent (n = 159)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felt better</td>
<td>93</td>
<td>53.1</td>
</tr>
<tr>
<td>Side effects</td>
<td>23</td>
<td>13.1</td>
</tr>
<tr>
<td>Taking other medications</td>
<td>19</td>
<td>10.9</td>
</tr>
<tr>
<td>Changed of medication</td>
<td>11</td>
<td>6.3</td>
</tr>
<tr>
<td>Condition deterioration</td>
<td>8</td>
<td>4.6</td>
</tr>
<tr>
<td>Lack of funds for transport/drug purchases</td>
<td>5</td>
<td>2.9</td>
</tr>
</tbody>
</table>

4.3.6 Felt better/worse or Feared for Unborn Child

Majority of the respondents had ever stopped taking the drugs because they thought that they were already better/recovered (92.6%) or they thought that the drugs were making them feel worse/feared the drugs would hurt the unborn child (93.1%) as shown in Figure 4.4. The nurses observed that PIH patients normally felt better after taking PIH drugs consistently for 3 days, this according to the nurses made some of the patients to stop taking the medication.
4.4 Level of Knowledge on PIH and Treatment Compliance

To assess respondent’s level of knowledge respondents were asked a series of true or false questions as presented in Table 4.8. Of concern is the notion expressed by 51(29.1%) of the respondents that hypertension cannot cause death or serious illness of a pregnant mother if not managed. According to an interview with a nurse, she observed that since PIH was mostly asymptotic, some of the PIH patients might not perceive it as a serious disease with deleterious consequences.

Table 4.8: Knowledge Constructs

<table>
<thead>
<tr>
<th>Knowledge Constructs</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension in pregnancy can cause the death or serious illness of a pregnant mother if it is not managed</td>
<td>124(70.9)</td>
<td>51(29.1)</td>
</tr>
<tr>
<td>HIP can cause the death or serious illness of an unborn child if it is not managed</td>
<td>164(93.7)</td>
<td>11(6.3)</td>
</tr>
<tr>
<td>HIP occurs to all expectant mothers</td>
<td>163(93.1)</td>
<td>12(6.9)</td>
</tr>
<tr>
<td>Drugs for managing HIP should be taken throughout the term of pregnancy</td>
<td>165(94.3)</td>
<td>10(5.7)</td>
</tr>
<tr>
<td>For a woman to experience HIP, they must have been hypertensive before the pregnancy</td>
<td>164(93.7)</td>
<td>11(6.3)</td>
</tr>
<tr>
<td>HIP conditions heal after delivery or a few weeks after delivery</td>
<td>164(93.7)</td>
<td>11(6.3)</td>
</tr>
<tr>
<td>With proper drug compliance a woman can effectively manage PIH and have a normal pregnancy and delivery</td>
<td>163(93.1)</td>
<td>12(6.9)</td>
</tr>
</tbody>
</table>
Respondents were considered to be knowledgeable if answered correctly statements and were awarded a score of 1 for every statement correctly answered and 0 otherwise. These scores were then summed up and converted to percentage as an indication of the level of knowledge. The percentages was based on denominator of 7 since there were 7 questions. Majority 120(68.6%) of the respondents scored between 70% and 80% while the average level of knowledge on PIH was high (mean = 65.5%) although there was high levels of variations (standard deviation = 11.3%) as shown in Figure 4.5.

**Figure 4.5: PIH knowledge level**

### 4.5 Factors Influencing PIH Treatment Compliance

Chi-square test of association was carried out to determine the association between the independent variables and dependent variables.
4.5.1 Socio-Demographic factors and PIH Treatment Compliance

4.5.1.1 Demographic factors and PIH Treatment Compliance

Results in Table 4.9 indicated that compliance with PIH was significantly associated with age of the respondent (p-value = .007) and respondents highest level of education attained (p-value = .038) as shown in.

Table 4. 9: Demographic Characteristics

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>PIH Treatment Compliance</th>
<th>Chi-Square</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Compliant</td>
<td>Non-compliant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td><strong>Age category</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>6</td>
<td>35.3</td>
<td>11</td>
</tr>
<tr>
<td>20-30</td>
<td>20</td>
<td>14.0</td>
<td>123</td>
</tr>
<tr>
<td>30-40</td>
<td>6</td>
<td>40.0</td>
<td>9</td>
</tr>
<tr>
<td><strong>Age of husband</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>3</td>
<td>23.1</td>
<td>10</td>
</tr>
<tr>
<td>30-40</td>
<td>9</td>
<td>13.0</td>
<td>60</td>
</tr>
<tr>
<td>&gt;40</td>
<td>9</td>
<td>15.3</td>
<td>50</td>
</tr>
<tr>
<td><strong>Highest education level attained</strong></td>
<td>( \chi^2 = 8.396 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary incomplete</td>
<td>9</td>
<td>31.0</td>
<td>20</td>
</tr>
<tr>
<td>Primary Complete</td>
<td>6</td>
<td>8.8</td>
<td>62</td>
</tr>
<tr>
<td>Secondary</td>
<td>13</td>
<td>20.3</td>
<td>51</td>
</tr>
<tr>
<td>Tertiary</td>
<td>4</td>
<td>28.6</td>
<td>10</td>
</tr>
<tr>
<td><strong>Husband education level</strong></td>
<td>( \chi^2 = 5.461 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary incomplete</td>
<td>2</td>
<td>33.3</td>
<td>4</td>
</tr>
<tr>
<td>Primary Complete</td>
<td>1</td>
<td>9.1</td>
<td>10</td>
</tr>
<tr>
<td>Secondary</td>
<td>11</td>
<td>11.3</td>
<td>86</td>
</tr>
<tr>
<td>Tertiary</td>
<td>7</td>
<td>25.9</td>
<td>20</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>32</td>
<td>18.4</td>
<td>142</td>
</tr>
<tr>
<td>Muslim</td>
<td>0</td>
<td>.0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td>( \chi^2 = 5.753 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>10</td>
<td>33.3</td>
<td>20</td>
</tr>
<tr>
<td>Married</td>
<td>21</td>
<td>14.9</td>
<td>120</td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>1</td>
<td>25.0</td>
<td>3</td>
</tr>
</tbody>
</table>

* Fisher’s Exact
4.5.1.2 Economic Factors and PIH Treatment Compliance

Results in Table 4.10 showed neither nature occupation nor income level associated with PIH treatment compliance.

### Table 4. 10: Economic Factors and PIH Treatment Compliance

| Economic Factor      | PIH Treatment Compliance | Chi-Square |   |
|----------------------|--------------------------|------------|
|                      | Compliant                | Non-compliant |   |
|                      | Count | Row N % | Count | Row N % |   |
| Occupation           |       |         |       |         |
| Housewife/No working | 7     | 13.0    | 47    | 87.0    | $\chi^2 = 6.597$ df = 5 p = .252* |
| Farming              | 4     | 19.0    | 17    | 81.0    |
| Businesswoman        | 8     | 14.3    | 48    | 85.7    |
| Office work          | 10    | 31.3    | 22    | 68.8    |
| Other                | 0     | 0.0     | 2     | 100.0   |
| Househelp            | 3     | 30.0    | 7     | 70.0    |
| Husband Occupation   |       |         |       |         |
| Not employed         | 6     | 11.5    | 46    | 88.5    | $\chi^2 = 1.522$ df = 4 p = .823* |
| Farming              | 10    | 16.9    | 49    | 83.1    |
| Businessman          | 2     | 13.3    | 13    | 86.7    |
| Office work          | 2     | 16.7    | 10    | 83.3    |
| Other                | 1     | 33.3    | 2     | 66.7    |
| Monthly Earning      |       |         |       |         |
| <5000                | 8     | 14.0    | 49    | 86.0    | $\chi^2 = 4.097$ df = 3 p = .251 |
| 5000-10000           | 7     | 21.2    | 26    | 78.8    |
| 10000-20000          | 5     | 31.3    | 11    | 68.8    |
| >20000               | 5     | 33.3    | 10    | 66.7    |
| Husband Monthly Earning |   |         |       |         |
| <5000                | 4     | 6.2     | 61    | 93.8    | $\chi^2 = 7.641$ df = 3 P = .054* |
| 5000-10000           | 9     | 25.0    | 27    | 75.0    |
| 10000-20000          | 4     | 20.0    | 16    | 80.0    |
| >20000               | 4     | 20.0    | 16    | 80.0    |

* Fisher’s Exact

#### 4.5.2 Knowledge on PIH and PIH Treatment Compliance

As shown in the box plot (Figure 4.6) there was no significant (Mann Whitney U test: U = 2002.5, p-value = .176) difference among respondents who were compliant with PIH treatment and those not compliant as shown in Figure 4.6.
4.5.3 Health System Factors

4.5.3.1 Medical Personnel Factors

Most of the respondents had somewhat clear explanation on the condition during diagnosis by medical personnel (57.1%), had been somewhat clearly advice on the importance of PIH medication (55.4%) and had been somewhat clearly instructed on the schedule and timing of taking dosage (49.1%). Results in Table 4.11 indicated that medical explanation of PIH during diagnosis by health personnel (p-value = .001), advice on the importance of taking PIH medications (p-value = .025) and explanation on schedule and timing of taking medications were significantly associated with PIH treatment compliance (p-value = .024).
### Table 4.11: Medical Explanations and Treatment Diagnosis

<table>
<thead>
<tr>
<th>Medical personnel explanation of the PIH condition on diagnosis</th>
<th>PIH Treatment Compliance</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Compliant</td>
<td>Non-compliant</td>
</tr>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Very clearly</td>
<td>6</td>
<td>75.0</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>10</td>
<td>14.9</td>
</tr>
<tr>
<td>Advice on the importance of taking PIH medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very clearly</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>Somewhat clearly</td>
<td>16</td>
<td>16.5</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>12</td>
<td>16.9</td>
</tr>
<tr>
<td>Instructions on the schedule and timing of taking those drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very clearly</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>Somewhat clearly</td>
<td>15</td>
<td>17.4</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>13</td>
<td>15.9</td>
</tr>
</tbody>
</table>

* Fisher’s Exact

### 4.5.3.2 Follow up and PIH Treatment Compliance

Of the 3(1.7%) respondents who on return visits were always followed up to ask if they were taking PIH drugs consistently, all of them were compliant with PIH treatment and of the 144(82.3%) who were followed up sometimes if they were taking PIH drugs consistently, only 18.1% of them were compliant with PIH treatment while of the 28(16.0%) who were never followed up to ask if they were taking PIH drugs consistently only 10.7% were compliant with PIH treatment as shown in Figure 4.7. Further it was found that frequency of follow up was significantly associated with PIH treatment compliance (Fisher’s Exact: \( \chi^2 = 4.486, \text{df} = 2, p = .001 \)). The lack of consistent follow-up was blamed on shortage of health
workers within the facilities since the few health workers were overloaded hence lacked time for follow up as illustrated by the following expressed by a nurse:

*I am required to see not more than 20 patients in a day but during ANC clinic days where all the PIH patients are booked I end up seeing more than 40 patients including checking reports, physical examinations, urine tests, vital signs check among others.*

Figure 4.7: Follow up and PIH treatment compliance

### 4.5.3.3 Affordability and PIH Treatment Compliance

Majority 168(96.0%) of the respondents had failed to take PIH medication because the drugs cost were not affordable while 7(4.0%) had not failed to take PIH medication because of cost related issues. Of the 32 respondents who were treatment compliant, 31(96.9%) failed to take PIH medication because the drugs cost were not affordable as shown in Figure 4.8. There was no significant association between PIH drugs affordability and PIH treatment compliance (Fisher’s Exact: $\chi^2 = .078$, df = 1, p = .780). This is attributed to the fact that the unaffordability of drugs occurred similarly among those compliant and those not compliant. According to an interview with a pharmacist, he noted that there were times they referred
patients to get drugs from private chemists but patients ended up not buying due to lack of money to purchase the drugs as at times they did not consider the drugs to be important in comparison with other household needs.

Figure 4.8: Drugs Affordability and Treatment Compliance

4.5.3.4 Availability of Treatment at Health Facility

A paltry 14(8.0%) respondents had failed to take up medication because they were not available at the health facility. Of the 143 respondents who were not treatment compliant, only 13(9.9%) failed to take PIH medication because the drugs were not available at health facilities as shown in Figure 4.9. There was no significant association between PIH drugs affordability and PIH treatment compliance (Fisher’s Exact: \( \chi^2 = 1.265, \text{df} = 1, p = .261 \)). This is attributed to the fact that the unavailability of drugs occurred similarly among those compliant and those not compliant. According to an interview with one pharmacist, he mentioned that Ateonolol and Hydrochlorazine were at times not available hence forcing them to refer patients to private chemists but due to general poverty in the Sub-county, they ended up not buying the required drugs.
4.6 Predictors of PIH Treatment Compliance

To determine predictors of PIH treatment compliance, multiple binary regression was carried out among variables identified as significantly associated with PIH treatment compliance. These included age and highest education of respondent, explanation of PIH during diagnosis, advice on the importance of taking PIH medications, explanation on schedule and timing of taking medications frequency of follow up.

Results indicated that respondents who had completed primary schools were 4.968 (Adjusted Odds Ratio (AOR) = 4.968, p-value = .05) times more likely to comply with PIH treatment as compared to respondents who had not completed primary school. However, explanation of PIH during diagnosis, advice on the importance of taking PIH medications, explanation on schedule and timing of taking medications frequency of follow up did not significantly predict compliance with PIH treatment as shown in Table 4.11.

Table 4. 12: Predictors of PIH Treatment Compliance

<table>
<thead>
<tr>
<th>Age in years (Ref = &lt; 20)</th>
<th>AOR</th>
<th>P-value</th>
<th>95% C.I. for AOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>1.983</td>
<td>.433</td>
<td>.359</td>
</tr>
<tr>
<td></td>
<td>30-40</td>
<td>2.566</td>
<td>.480</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Education (Ref = Primary incomplete)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary complete</td>
<td>4.968</td>
<td>.050</td>
<td>1.001</td>
</tr>
<tr>
<td>Secondary</td>
<td>2.010</td>
<td>.365</td>
<td>.444</td>
</tr>
<tr>
<td>Tertiary</td>
<td>2.125</td>
<td>.512</td>
<td>.223</td>
</tr>
<tr>
<td><strong>Medical personnel explanation of the PIH condition on diagnosis (Ref = Very clearly)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat clearly</td>
<td>∞</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>∞</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Advice on the importance of taking PIH medications (Ref = Very clearly)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat clearly</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Instructions on the schedule and timing of taking those drugs (Ref = Very clearly)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat clearly</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td>Not clear at all</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Frequency of follow up (Ref = Always)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
<tr>
<td>Never</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Level of PIH Treatment compliance

Treatment compliance among women with PIH is an important tool that can increase treatment effectiveness and ensure better pregnancy outcomes. However, literature has shown that the rate of compliance is very low and thus it is an important problem in the management of the condition which requires long-term treatment. In this study, the level of compliance to treatment among women with PIH was low 18.3%. This level was lower compared to studies done in Sunderland (76.5%) (Khan, Shah, & Hameed, 2014), Egypt (25.9%) (Youssef & Moubarak, 2002) and Ethiopia (64.6%) (Ambaw, Alemie, Yohannes, & Mengesha, 2012). The difference in compliance rate could be due to cost of medical care and drugs, better care services and patient awareness about medication adherence which is different in Kenya as compared to those countries. The difference in compliance level could also be explained by the fact that most studies from other countries differentiated between intentional and non-intentional non-compliance and measured one and not both while this current study did not differentiate these two types of non-compliance. The difference could also be attributed to method of assessing the PIH treatment compliance since this study relied on recall on whether the patients had missed taking medication since starting on PIH treatment.

In this current study, women aged 30 and above had the highest levels of compliance and similarly in a Sunderland study, the age group of 30 years and above had the highest compliance of 82% (Khan, Shah, & Hameed, 2014). The two studies concurred that women
below 30 years had the lowest levels of compliance to the treatment. This could be due to the poor understanding of hypertension by this young age group and the reluctance of accepting hypertension as a major life threatening disease considering they are young and energetic.

This current study indicated that reasons for non-compliance included having experienced adverse effects, having run out of drugs, having other drugs to take, such as antiretroviral drugs, iron/folic acid tablets etc., and forgetting to take the medications at times. Similar in a study in Sunderland, reasons for non-compliance were side-effects, fear of taking too many drugs at the same time and forgetfulness (Khan, Shah, & Hameed, 2014). Also in another study done in Zimbabwe, most cited reasons for missing medication included perceptions that one had been cured due to asymptomatic nature of high blood pressure, forgetting to take medication, fear of side effects, use of other medications (holy water and traditional herbs) and having had a change of daily routine (Wariva, January, & Maradzika, 2014). In a study in Brazil it was found out that hypertensive patients forgot to take the medicines, took the medication at different hours, stopped taking the medication on their own account, did not follow instructions, and did not exercise regularly (Jesus, et al., 2008). In a study in South India whose results indicated that not experiencing any side-effects due to medication was found to be associated with good adherence (Kumar, et al., 2014).

Forgetfulness was reported as a key factor for noncompliance of PIH drugs. This could sometimes prove to be very dangerous for women with PIH as they often try to double the dose to compensate for the missed dose. This could amplify the danger of potential adverse effects of an individual drug (Ambaw, Alemie, Yohannes, & Mengesha, 2012). Necessary interventions must be made to overcome this issue. The possible interventions could be a regular follow-up with effective counseling by the health workers and support by family members especially spouses.
5.1.1 Socio-demographic Factors affecting Treatment Compliance among Women with PIH

In this study, level of education and age were found to be significantly associated with treatment compliance. Type of marital status, income level and occupation were found to be important factors in treatment compliance though they did not meet the statistical threshold for significance. Poor compliance in younger patients may be due to ignorance of the true nature of hypertension, denial of the existence of the disease or becoming busy with activities outside the home that makes them forget taking medications. Better educated women tend to be motivated to know more about their illness hence more susceptible to health education thus become more compliant with antihypertension medications as compared to women with lower education levels.

This concurred with another study done in Zimbabwe which showed significant associations existed between treatment compliance and age, and also compliance and marital status with those who were married adhering more (Wariva, January, & Maradzika, 2014). The study in Zimbabwe revealed statistically significant associations existed between compliance and level of education and between compliance and monthly income. This also concurred with findings of this current study.

Those in monogamous marriages were also more compliant. According to Ambaw, et al., (2012), this can be explained by the fact that in monogamous marriages, the husbands were able to give more undivided attention and time to their pregnant wives including follow-up in the PIH drug use. It was also found out that presence of family support was significant determinant of good treatment adherence in Ethiopia (Ambaw, Alemie, Yohannes, & Mengesha, 2012; Ali, Bekele, & Teklay, 2014). Park, et al., (2010) also associated monogamous marriages with less psychological stress and more phycho-social support.
compared to unmarried women or those in polygamous marriages and hence pregnant women in monogamous marriages were able to comply more with PIH treatment.

In a study done in Saudi Arabia, age was shown to have significant association with treatment compliance (Al-Hewiti, 2014). This concurred with the findings of this current study. The association between age and treatment compliance is complex. In this study, older women were more compliant. In many studies, younger age is associated with noncompliance. This can be explained by the fact that many young women have trouble accepting the hypertensive status since it’s believed to be a condition for the elderly (Ambaw, Alemie, Yohannes, & Mengesha, 2012). Most young women who find themselves pregnant lack the necessary social support systems especially stable marriages that are associated with better treatment compliance. They also lack economic empowerment which is necessary in accessing the health care or drugs. Even where health care is highly subsidised or even free, PIH patients will incur other costs such as travelling costs and the diet modifications which many younger women are not able to afford (Twagirumukiza & Van Bortel, 2011).

There is need to focus on the predisposing, enabling and reinforcing factors of PIH treatment compliance since demographic and socio-demographic factors like age may be more difficult or impossible to change.

5.1.2 Level of Knowledge on PIH and Treatment Compliance

In this study, the level of knowledge on treatment compliance was generally high. With 68.6% of the respondents scoring more than 70% in a set of true/false PIH questions. For instance in Zimbabwe, results of a study among PIH patients showed a deficiency of knowledge on treatment compliance (Wariva, January, & Maradzika, 2014). In a study among pregnant women attending ANC in Nigeria results indicate that most of the pregnant
women were aware but 80% of them only visited the hospital on noticing swollen legs while 60% believed the swelling was as result of being bewitched (Oyira, Mgbekem, & Okon, 2009). In a study among pregnant women in South Africa, the results revealed knowledge deficit about PIH symptoms, prevention of complications and its impact on the unborn baby (Maputle, Khoza, & Lebese, 2015). The particular context of Sub Saharan Africa containing poverty and illiteracy contributes to the low awareness, control and treatment rate of hypertension (Twagirumukiza & Van Bortel, 2011). In this current study, there is a worrying trend since majority of women were found to have average or high knowledge on treatment compliance and PIH but this did not seem to translate to high levels of compliance as would be expected. This calls for increased health education and promotion to develop personal skills for PIH patients in Rachuonyo North Sub-County.

5.1.3 **Health System Factors Affecting Compliance among Women with PIH**

In this study, the five health system factors that were studied included: affordability of care and drugs, availability of drugs, PIH medical explanation during diagnosis, advice on the importance of taking PIH medications, explanation on schedule and timing of taking medications and follow-up by the health workers. Although not significant predictors of PIH treatment compliance, it was found out that explanation of PIH during diagnosis, advice on the importance of taking PIH medications, explanation on schedule and timing of taking medications frequency of follow up were significantly associated with PIH treatment compliance.

This was similar to a study by Rahmathulla, et al., (2014) which showed that the patients who had received extensive counselling from a pharmacist regarding the disease management showed a greater improvement in medication adherence. Also in a study in India it was shown that there was great improvement in treatment adherence after extensive explanation
by a pharmacist (Lavanya, et al., 2015). A study done in Sunderland concurred that affordability of drugs was not a significant factor in compliance of PIH drugs (Khan, Shah, & Hameed, 2014).

In the study area as in the whole country, maternal health has been greatly subsidized and therefore women cannot miss their PIH drugs on the account of cost. This is therefore a positive impact in the maternal health sector ensuring even the women of low social economic status have access to these lifesaving drugs. This has also been reported in other Sub-Saharan African countries where maternal health is either free or highly subsidised. According to Twagirumukiza, et al., (2010) PIH patients in Zimbabwe do not pay to get their anti-hypertensive medication at government hospitals thus there are no hindrances in terms of finances in order to acquire medication and therefore there is no significant association between treatment compliance and affordability of drugs and care. According to Wariva, January, & Maradzika (2014), providing information to patients with high blood pressure and having a good patient-provider relationship improves medication adherence.

Although not a significant predictor of PIH treatment compliance, the frequency follow up was found to be associated with treatment compliance. This finding was similar with another study done in India among 120 patients which showed regular check-ups were found to be significantly associated good adherence (Kumar, et al., 2014). Engaging and supporting patients on ways of improving their compliance are critical to improving health outcomes as patient motivation and support are crucial in raising the levels of treatment compliance (Park, et al., 2010)
5.2 Conclusions

- There was low level of compliance to treatment (18.3%) among women with PIH was low. Experience of adverse effects was mostly blamed for taking drugs at wrong time or even stopping taking it altogether. There was also notable cases in which patients took higher dosages than recommended to compensate for missed doses.

- In Rachuonyo North Sub-county, there is high level of knowledge on PIH treatment compliance. However, nearly a third of the patients thought PIH was not a serious illness or death if not managed.

- Level of education and age are significantly associated with treatment compliance. Income levels, occupation, religion and marital status are not significantly associated with PIH treatment compliance.

- Explanation of PIH during diagnosis, advice on the importance of taking PIH medications, explanation on schedule and timing of taking medications and frequency of follow up are significantly associated with PIH treatment compliance. However, drugs availability at health facilities and affordability of health care and drugs are not significantly associated with PIH treatment compliance.

5.3 Recommendations

5.3.1 Recommendations from the Study

- Since education has been shown to be a predictor of PIH treatment compliance, there is need to ensure basic education for all girls as non-completion of primary schools increased non-compliance. Also boy child should be educated since social support structure at family level is key to ensuring optimal compliance to treatment.
Since there was low understanding of the seriousness of PIH, there is need for health personnel and other stakeholders to create awareness on effects and seriousness of PIH. Since adverse effects was mostly blamed for non-compliance, there is need for health providers to adequately counsel PIH patients on the pharmacotherapy and PIH drugs side effects to psychologically prepare the patients on the anticipated adverse effects hence boosting the likelihood treatment compliance.

Although medical explanation of PIH on diagnosis, instruction on timing of medication as well as importance of treatment compliance and frequency of follow up were not significant predictors of PIH treatment compliance, there is need for medical personnel to enhance their practice on these matters especially with regards to PIH.

5.3.2 Recommendations for Future Research

Further research can be done on the influence of husband or significant other support on PIH treatment compliance as well as replication of this study in a wider geographical scope. There is also need to further explore the influence of cultural beliefs in health seeking behaviour among PIH patients.
REFERENCES


Pswarayi, I. (2010). *The Relationship Between Pregnancy Induced Hypertension (PIH) Self Care Knowledge And Hypertension Control Among Pregnant Mothers Aged 18 To 49 Years In Bindura District*. Master’s Thesis, University of Zimbabwe, College of Health Sciences.


APPENDICES

Appendix 1: Informed Consent

Introduction

My name is Eucabeth Jabuya. I am a student doing a Master’s Degree in Public Health, Kenyatta University. As a requirement by the university, for the completion and award of my degree, I am conducting a study titled: Treatment compliance among pregnant women with pregnancy induced hypertension in selected health facilities in Rachuonyo North sub-county, Homabay County, Kenya.

Procedures to be followed

I am going to explain about this research and invite you to voluntarily participate in this research. A questionnaire will be filled only once. You are free to consult before making any decision. You are free to ask any question or clarification about the research during or after data collection using the contact address provided at the end of this document.

Benefits

There are no direct benefits for you as an individual, monetary or otherwise, but your involvement will help in finding the extent of the problem of PIH and influence of treatment compliance. This information is key in developing future programmes and policies to improve maternal health.

Risks

There are no risks associated with participating in this study.

Voluntary Participation

Your involvement in this research is completely voluntary. It is your choice whether to participate or not. Whether you choose to take part or not will not affect you in any way. You may discontinue taking part in this study at any point.

Duration

The data collection will only take period of 45 minutes. During this time, you will only be expected to answer questions as asked by the researcher from the provided questionnaire.

Confidentiality

The identity of those taking part in the research will not be disclosed or shared with anyone. To ensure confidentiality the data collection forms will not bear your name or other details
that can identify you. All the data and the information obtained during the study will be used for the sole purpose of meeting the objectives of the study.

**Contact Information**
If you have any questions, you may contact Dr. Justus Osero-0724869330 or Dr. Anthony Wanyoro-0722 or the Kenyatta University Ethical Review Committee Secretariat on kuerc.secretary@ku.ac.ke/ 020-8710901

**Consent Giver statement**
The above information regarding my participation in the study is clear to me. The participation will be voluntary and I can withdraw from the study at any time. I have clearly understood the risks and benefits involved in the study.

Name of Consent giver____________________________________

Signature __________________ Date________________________
Appendix 2: Questionnaire for women with PIH

I kindly request for a few minutes of your time to ask you some few questions in relation to the study. The information you provide us will be kept strictly anonymous and confidential and will be used solely for the academic purposes. You are at liberty to skip any question(s) or withdraw from the survey at any time without any type of penalty. I however assure you that your opinion is very important to this study and therefore utmost confidentiality pertaining to any information that you may provide in this survey will be observed.

PART 1a: SOCIO-DEMOGRAPHIC INFORMATION

1. How old are you?
   Below 20__________
   Between 20 and 30_________
   Between 30 and 40___________
   Above 40___________

2. What is the highest education level you have attained?
   Primary incomplete____________
   Completed primary_________
   Completed secondary_______
   Completed tertiary________

3. What is your marital status?
   Single________
   Married_______
   Divorced/separated_______
   Widowed________

4. What kind of work do you do?
   House wife_________
   Farming_________
   Business woman_______
   Office work__________
   Any other________ Specify________

5. If married, how old is your husband?
   Below 20__________
   Between 20 and 30_________
   Between 30 and 40___________
   Above 40___________

6. If married, what is the highest education level your husband has attained?
   Primary incomplete___________
Completed primary________
Completed secondary________
Completed tertiary________
7. If married, what is the nature of the marriage?
   Monogamous________
   Polygamous_______
8. If married, what kind of work does your husband do?
   Not employed________
   Farming________
   Business man_______
   Office work________
   Any other________ Specify________
9. On average, how much do you earn monthly?
   Below 5000________
   Between 5000-10000________
   Between 10000-20000________
   Above 20000________
10. If married, how much does your husband earn monthly?
    Below 5000________
    Between 5000-10000________
    Between 10000-20000________
    Above 20000________
11. What religion do you belong to?
    Christian____
    Muslim_____
    Traditionalist____
    None_______
    Others________ Specify_____

   PART 1b: GENERAL HEALTH INFORMATION

12. The current pregnancy is the:
    First________
    Second________
    Third or above________
13. At what stage of your pregnancy were you diagnosed with PIH?
    0-3 months________
4-6 months_______
6-9 months_______

14. **How long have you been on PIH drugs?**
   1 month_______
   2 months_____
   3 or above months______

15. **If this is not the first pregnancy, how long ago was your previous birth/miscarriage?**
   Less than 1 year________
   Between 1 and 2 Years_______
   Above 2 years________

16. **If this is not the first pregnancy, did you experience PIH in the previous pregnancy?**
   Yes___________ No________

---

**PART 2: LEVEL OF KNOWLEDGE ON PIH**

17. **How do you agree with the following statements regarding PIH.**

<table>
<thead>
<tr>
<th>Knowledge Constructs</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension in pregnancy can cause the death or serious illness of a pregnant mother if it is not managed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIP can cause the death or serious illness of an unborn child if it is not managed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIP occurs to all expectant mothers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs for managing HIP should be taken throughout the term of pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For a woman to experience HIP, they must have been hypertensive before the pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIP conditions heal after delivery or a few weeks after delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With proper drug compliance a woman can effectively manage PIH and have a normal pregnancy and delivery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART 3: HEALTH SYSTEM FACTORS

18. When you were first diagnosed with PIH, did the medical personnel attending you explain to you clearly what the condition was?
   Very clearly___________
   Somewhat clearly________
   Not clear at all________

19. After being given PIH medication, did the medical personnel attending you give you clear advice on the importance of taking those drugs?
   Very clearly___________
   Somewhat clearly________
   Not clear at all________

20. After being given PIH medication, did the medical personnel attending you give you clear instructions on the schedule and timing of taking those drugs?
   Very clearly___________
   Somewhat clearly________
   Not clear at all________

21. During your return visits, do the medical personnel attending to you follow up or ask if you are taking your PIH drugs consistently?
   Always_______ Sometimes_________ Never__________

22. Is there a time you failed to take the PIH medication because the cost of buying the drugs was not affordable to you?
   Yes___________ No__________

23. Is there a time you failed to take the PIH drugs because they were not available at the health facility that you normally visit?
   Yes___________ No__________

PART 4: COMPLIANCE TO PIH DRUGS

24. Since the first time you started taking PIH drugs, have you ever skipped any dose?
   Yes_______ No_______
   If Yes why:
   ___________________________________________________________________
   ___________________________________________________________________

25. Since you started taking the PIH drugs, is there a time you failed to take them at the required time of the day?
   Yes_______ No_______
   If Yes why:
26. Since you started taking the PIH drugs, is there a time you took a higher dose than that prescribed by the doctor?
Yes___________ No__________
If Yes why:
________________________________________________________________________
________________________________________________________________________

27. Since you started taking the PIH drugs, is there a time you took a lower dose than that prescribed by the doctor?
Yes___________ No__________
If Yes why:
________________________________________________________________________

28. Since you started taking the PIH drugs, is there a time you exhausted your drugs and failed to refill them causing you to miss some doses?
Yes___________ No__________
If Yes why:
________________________________________________________________________

29. Since you started taking the PIH drugs, is there a time you stopped taking the drugs for a period of time (days or weeks) and then resumed to taking the drugs?
Yes___________ No__________
If Yes why:
________________________________________________________________________

30. Since you started taking the PIH drugs, is there a time you stopped taking the drugs because you thought you were already better or recovered?
Yes___________ No__________

31. Since you started taking the PIH drugs, is there a time you stopped taking the drugs because you thought they were making you feel worse or feared they would hurt the unborn child?
Yes___________ No__________

Thank you very much for your responses!
Appendix 3: FGD Guide for women with PIH

1. How long has it been since you were diagnosed with PIH?
2. Had you ever heard about PIH before the diagnosis?
3. Did you start the medication immediately after the diagnosis or after how long?
4. Did the health care provider explain the importance of taking the drugs consistently and the dangers if you failed to do so?
5. Have you taken the drugs every day without missing a dose for the entire period?
6. What are some of the reasons that have made it difficult to be consistent in taking the drugs?
7. How frequent have the health workers been following you up to ensure you are taking the drugs consistently?
8. Which other issues within the health care setting have proven to be a challenge in taking your drugs consistently?
Appendix 4: Key Informant Interview Schedule for Medical Personnel

This interview schedule is prepared to facilitate in the collection of relevant data for an academic research whose aim is to study the medical Compliance and self-care strategies among pregnant women with pregnancy induced hypertension in Health Facilities in Rachuonyo North Sub-County, Homa Bay County. The information gathered will only be used and shall be treated with strict confidentiality.

1. How does human resource capacity in terms of:
   i) Numbers of the available health care providers in the region,
   ii) Qualification influence the preeclampsia health seeking behaviour in this region

2. How does health system factors in terms of:
   i) Accessibility of health services
   ii) Availability of the health services
   iii) Quality of the health services influence the utilization of pregnancy induced hypertension screening services in the region

3. Does the quality of health services in the health facilities promote the utilization of pregnancy induced hypertension screening services? Explain

4. Kindly, comment on the quality and availability of funding for pregnancy induced hypertension screening, prevention and treatment in the health facility

5. What do you think should be done by all the stakeholders to enhance the utilization of pregnancy induced hypertension screening services in the region?
Appendix 5: NACOSTI Permit

National Commission for Science, Technology and Innovation

NACOSTI/P/15/0299/5471

Eucabeth Agola Jabuya
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Treatment compliance among women with pregnancy induced hypertension attending selected health facilities in Rachuonyo North Sub-County, Homabay County, Kenya” I am pleased to inform you that you have been authorized to undertake research in Homabay County for a period ending 31st December, 2015.

You are advised to report to the County Commissioner, the County Director of Education and the County Coordinator of Health, Homabay County before embarking on the research project.

On completion of the research, you are required to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR. M. K. RUGUTT, PHD, HSC.
DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Homabay County.

The County Director of Education
Homabay County.
Appendix 6: KU Ethical review clearance

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

P. O. Box 43844 - 00100 Nairobi
Tel: 8710901/12
Fax: 8711242/8711575

Our Ref: KU/R COMM/51/421

Eucabeth Jabuya
Kenyatta University
P.O. Box 43844 -00100, Nairobi.

Dear Eucabeth,

APPLICATION NUMBER PKU/S06/1282 – “TREATMENT COMPLIANCE AMONG WOMEN WITH PREGNANCY INDUCED HYPERTENSION ATTENDING SELECTED HEALTH FACILITIES IN RACHUONYO NORTH SUB-COUNTY, RACHUONYO COUNTY, KENYA.”

1. IDENTIFICATION OF PROTOCOL
The application was received on 27th Jan, 2015, discussed on 17th February, 2015.

2. APPLICANT
Eucabeth Jabuya

3. SITE
Rachuonyo North Sub-County, Rachuonyo County, Kenya

4. DECISION
The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines AND APPROVED that the research may proceed for a period of ONE year from 26th February, 2015.

5. ADVICE/CONDITIONS
i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.
If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

PROF. NICHOLAS K. GIKONYO
CHAIRMAN ETHICS REVIEW COMMITTEE
Kenyatta University

I, ... accept the advice given and will fulfill the conditions therein.

Signature............................ Dated this day of 12th March 2015.

cc. Vice-Chancellor
Appendix 7: Letter of permission from the Homabay county Education office

MINISTRY OF EDUCATION SCIENCE AND TECHNOLOGY
STATE DEPARTMENT OF EDUCATION

COUNTY DIRECTOR OF EDUCATION OFFICE
HOMA BAY COUNTY
P.O. BOX 710
HOMA BAY.
E-mail: cdehomabay@gmail.com

DATE: 4TH MAY, 2015

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION

Authority is hereby granted to Eucabeth Agola Jabuya of Kenyatta University to conduct research on the topic: Treatment compliance among women in pregnancy induced hypertension attending selected health facilities in Rachuonyo North Sub County, Homa Bay County.

Any assistance accorded to her will be highly appreciated.

CALLEB OMONDI
FOR: COUNTY DIRECTOR OF EDUCATION
HOMA BAY COUNTY
Appendix 8: Map of the Study Area