



**ASSESSMENT OF QUALITY OF ANTENATAL CARE IN KENYATTA NATIONAL  
HOSPITAL-KENYA**

**PRINCIPAL INVESTIGATOR:**  
DR. RUTH NAKAMYA KAVUMA  
REGISTRAR (OBS/GYN), UNIVERSITY OF NAIROBI  
P.O.BOX 19670  
NAIROBI

**A DISSERTATION SUBMITTED TO THE UNIVERSITY OF NAIROBI,  
DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY IN PARTIAL  
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF  
MEDICINE IN OBSTETRICS AND GYNAECOLOGY**

**February, 2015**

**DECLARATION**

I declare that this research is my original work and has not been undertaken and presented to any other Institution for the purpose of examination.

DR. RUTH.NAKAMYA KAVUMA (MBChB)

H58/70061/2011

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

**APPROVAL**

This dissertation has been submitted with our approval as University supervisors:

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

**PROF. P.M. NDAVI**

MB.CHBMED (OBS/GYN) MSC (EPID) FHBR DLSHTM

PROFESSOR AND CONSULTANT

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

UNIVERSITY OF NAIROBI, KENYA

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

**DR. F.X. ODAWA**

MBCHB MMED (OBS/GYN)

CONSULTANT OBSTETRICIAN AND GYNAECOLOGIST

UNIVERSITY OF NAIROBI, KENYA

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

**DR. JOHN KINUTHIA**

MBCHB MMED (OBS/GYN) MP

HEAD RESEARCH & PROGRAMS, KENYATTA NATIONAL HOSPITAL

HONORARY LECTURER, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

## CERTIFICATE OF AUTHENTICITY

This is to certify that this dissertation is the original work of Dr. Ruth N. Kavuma a Master of Medicine student in Department of Obstetrics and Gynaecology, registration number H58/68431/2011, University of Nairobi. The research was carried out in the Department of Obstetrics and Gynaecology, School of medicine; College of Health Sciences. It has not been presented in any other university for award of degree.

Signature.....

Date.....

**Prof. Zahida Qureshi**

Associate Professor of Obstetrics and Gynaecology

Consultant Obstetrician and Gynaecologist

Chairperson,

Department of Obstetrics and Gynaecology

University of Nairobi

## ACKNOWLEDGEMENT

I convey my gratitude to the Almighty God for this far I have come.

Special thanks to my supervisors, Prof. P.M.Ndavi, Dr.F.X. Odawa and Dr. John Kinuthia for every guidance and availability while supervising the conception and development of this study.

I am also grateful to the University of Nairobi and Kenyatta National Hospital for providing an enabling learning environment. I am especially thankful to all consultants and lecturers in the department of Obstetrics and Gynaecology both at UON and KNH for sharing their knowledge and experience with us during the Master of Medicine course.

I want to extend my most profound appreciation to Kenyatta National Hospital for fully sponsoring this research. I will always be gratified for the major contributions you made towards realizing my dream.

Last but not least I appreciate most sincerely all my friends, and fellow registrars for their support, cooperation and teamwork. May God bless you all.

## **DEDICATION**

To my dear husband Jimmy-the wind beneath my wings, for his love, support and encouragement throughout my studies.

To my lovely children Jeanne Davinah and Jenessa Merinah for being an inspiration in my life, you mean the world to me. God bless you.

To my beloved grandparents, Jeremiah and Mary Sebuliba for dedicating all their resources towards supporting me through the journey of life, till this far. Their words of wisdom will always be a pillar in my life.

## ACRONYMS AND ABBREVIATIONS

<b>ANC</b>	:	Antenatal Care
<b>ARV</b>	:	Antiretroviral drugs for HIV/AIDS
<b>BP</b>	:	Blood Pressure
<b>ECV</b>	:	External Cephalic Version
<b>EDD</b>	:	Estimated Date of Delivery
<b>EmOC</b>	:	Emergency Obstetric Care
<b>HIV</b>	:	Human Immune deficiency Virus
<b>HTC</b>	:	HIV Testing and Counseling
<b>IPT</b>	:	Intermittent Presumptive Treatment
<b>ITN</b>	:	Insecticide Treated Nets
<b>KNH</b>	:	Kenyatta National Hospital
<b>MDG</b>	:	Millennium Development Goal
<b>OBS/GYN</b>	:	Obstetrics and Gynecology

## **LIST OF FIGURES AND TABLES**

Figure 1: Fetal wellbeing monitoring in KNH ANC clinic

Figure 2: Relationship between Investigations done, client knowledge and ability to understand the results

Figure 3: Time spent in KNH ANC clinic by clients seeking ANC services

Figure 4: Rating of client satisfaction

Table 1: Age and Obstetric history among ANC clients at KNH

Table 2: Quality of ANC care evaluation based on physical assessment and laboratory investigations of ANC clients at KNH

Table 3: Clinical examinations of ANC clients at KNH according to exit interviews and medical record documentation

## OPERATIONAL DEFINITIONS

1. **Quality Antenatal care:** Quality medical procedures and care a woman receives during pregnancy and is important in ensuring a health pregnancy state and safe child birth.
2. **Maternal Mortality:** Death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
3. **Maternal Mortality ratio:** is the number of maternal deaths during given time period per 100,000 live births during the same time.
4. **Maternal Mortality Rate:** is the number of maternal deaths in a given time period per 100,000 women of reproductive age, or woman-years of risk exposure, in same time period.



## TABLE OF CONTENTS

DECLARATION .....	ii
CERTIFICATE OF AUTHENTICITY .....	iii
ACKNOWLEDGEMENT .....	iv
DEDICATION .....	v
ACRONYMS AND ABBREVIATIONS .....	vi
LIST OF FIGURES AND TABLES.....	vii
OPERATIONAL DEFINITIONS.....	viii
TABLE OF CONTENTS.....	ix
ABSTRACT.....	xi
CHAPTER ONE .....	1
INTRODUCTION AND LITERATURE REVIEW .....	1
Research Question .....	8
Broad Objective .....	8
Specific Objectives .....	8
RESEARCH METHODOLOGY.....	9
Study Design.....	9
Study Site and Setting.....	9
Study Population.....	10
Inclusion criteria .....	11
Sampling Technique .....	11
Reliability.....	13
Data Analysis and Statistical Plans.....	13
Data Storage.....	14
Ethical Considerations .....	14
CHAPTER THREE .....	16
RESULTS .....	16
Physical assessment .....	17
Laboratory investigations.....	17
General clinical and obstetric examination.....	18

Relationship between tests done, knowledge of findings and clients' understanding of Results. ....	21
DISCUSSION.....	25
Dissemination of Results .....	28
REFERENCES .....	30
APPENDICES .....	33
Annex III: Work plan.....	42
Annex IV: Budget of the Study .....	43

## ABSTRACT

**INTRODUCTION:** Antenatal care is one of the most fundamental aspects that promise the success of Millennium Development Goals 4 and 5. However despite improved antenatal care attendance, parameters like maternal mortality are on the rise in Kenya, which is the reason for assessment of the quality of antenatal care in Kenyatta National Hospital (KNH). KNH being the national referral hospital, it's a good representation of the quality of care and nationwide statistics.

**OBJECTIVE:** To assess the quality of antenatal care in Kenyatta National Hospital (KNH)

**STUDY DESIGN:** Cross sectional study design.

**STUDYSITE:** Kenyatta National Hospital, ANC-18

**METHODS:** 385 respondents who attended at least three antenatal visits to assess the quality of ANC and underlying factors in a broader view. Data was collected using a structured questionnaire from both interview of respondents and the respondents' records. Data was computerized using Epi Info and analyzed using SSPS, version 17.

**DATA COLLECTION:** Data was collected using a structured questionnaire prepared by the principal investigator. The questionnaire was administered by the principal investigator and two research assistants, who were registered nurses.

**DATA ANALYSIS:** Data analysis was conducted using the statistical package for social sciences version 17.0 (SPSS inc, Chicago; IL, USA). Using 95% C.I.

**RESULTS:** Of 385 respondents, the mean age was 29.1 years (SD 5) with a range from 17 to 44 years, with 37.7% of respondents aged 25-29 years. Majority (68.3%) of mothers had had a previous live birth, 28.1% were pregnant for the first time and 3.6% had had an abortion. Whereas majority (over 94%) of respondents had their height, weight and blood pressure taken and recorded, 4.7% of respondents had no height measurement, 1.04% had no weight measurement and 1.04% had no blood pressure measurement and recording by third antenatal visit. Although majority 97.9% of respondents had a recorded obstetric examination, only 28.6% of respondents had a recorded general physical examination. 7.8%, 19.5%, 28.6%, 6.2% and 5.2% had no record of haemoglobin, blood group, syphilis, HIV and Urinalysis respectively ever been taken by the third ANC visit. Among the respondents informed of the results, only 16.9% and 34.8% understood the haemoglobin and Urinalysis results. Majority could however understand HIV 83.4% and syphilis 64.9% tests. The average time spent in the antenatal clinic was 3hrs 29 minutes, with a range from 1 hour 5 minutes to 5 hours 30 minutes, majority 135 (35.1%) of respondents spent >3-4 hours. The respondents rated ANC services at KNH as 25.1% very good, 37.3% good, 30% fair and 7.6% as poor. Among other limitations to the suggested interventions were lack of funds to purchase drugs, out of stock for vaccines and reagents in the laboratory.

**CONCLUSION:** The study showed that the quality of antenatal care in KNH is above average although there are gaps in the passage of information, failure to document findings and basic investigations have not been done for some clients. This can hamper the timely intervention.

## **CHAPTER ONE**

### **INTRODUCTION AND LITERATURE REVIEW**

Antenatal care (ANC) coverage is a success story in Africa, since over two-thirds of pregnant women (69 %) have at least one ANC contact<sup>1</sup>. However, to achieve the full life-saving potential that ANC promises for women and babies, ANC will not only aim at four visits but also the care content and so providing essential evidence based interventions – a package often called focused antenatal care, which is the quality of antenatal care – is required<sup>1</sup>. Many of these opportunities continue to be missed, even though over two-thirds of pregnant women have at least one antenatal visit. There is need to strengthen ANC to provide the priority interventions, even though there is critical shortage of human resources for health in Africa.

The essential elements of a focused approach to antenatal care involve identification and surveillance of the pregnant woman and her expected child, recognition and management of pregnancy-related complications, recognition and treatment of underlying or concurrent illnesses, screening for conditions and diseases, preventive measures, and advice and support to the woman and her family.

Antenatal care was introduced as early as 1901 by Ballantyre as a plea for “promaternity hospital” and following its inception, there was marked reduction in maternal and perinatal mortality. The purpose of antenatal care is to ensure as far as possible an uncomplicated pregnancy and delivery of a live healthy infant<sup>2</sup>. In Kenya, antenatal care was introduced into comprehensive maternal and child health care and family planning programs in the early 1970s.

In 1952, the World Health Organization, WHO committee on maternity care, recommended at least eleven visits throughout the pregnancy for a mother who is progressing normally<sup>3</sup>. A review by WHO in 1994 recommended a minimum of four antenatal visits for a normal uncomplicated pregnancy with the first visit by the fourth month (sixteen weeks); second visit between fifth -seventh month (twenty-four to twenty-eight weeks); third visit in eighth month (thirty-two weeks) and the fourth visit in the ninth month but allowing for more frequent visits depending on the need e.g. Rhesus incompatibility screening tests, alpha fetal screening tests etc<sup>4, 5</sup>. This is the current recommended practice in Kenya, as recommended by WHO clinical guidelines.<sup>1; 6</sup>Quality antenatal care should address both the psychosocial and medical needs of a woman within both the health care system delivery and cultural setup<sup>7</sup>. It involves history taking, physical examination, laboratory tests, health education and care provision. It is mandatory that all important data to the care of the mother and the fetus be clearly recorded so that all members of the health care team can interpret them uniformly and correctly<sup>8</sup>.

The need for early initiation and continued regular attendance of antenatal clinics till birth is not appreciated as should be by majority of women in Kenya<sup>9</sup>. Many women start antenatal clinics at an advanced stage of the pregnancy while others only turn up for delivery with no antenatal care. It is important for the mothers to start early clinic attendance preferably in the first trimester so as to recognize high risk pregnancies and plan management and so reduce pregnancy complications and maternal mortality<sup>7</sup>.The essential elements of a focused approach to antenatal care include;<sup>1</sup>Identification and surveillance of the pregnant woman and her expected child, recognition and management of pregnancy-related complications, particularly pre-eclampsia, recognition and treatment of underlying or concurrent illnesses,

screening for conditions and diseases such as anaemia, STIs (particularly Syphilis), HIV infection, mental health problems, and/or symptoms of stress or domestic violence, preventive measures, including tetanus toxoid immunization, de-worming, iron and folic acid, intermittent presumptive treatment of malaria in pregnancy (IPTp), insecticide treated bed nets (ITN), advice and support to the woman and her family for developing healthy home behaviors and a birth and emergency preparedness plan to:

- Increase awareness of maternal and newborn health needs and self-care during pregnancy and the postnatal period, including the need for social support during and after pregnancy.
- Promote healthy behaviors in the home, including healthy lifestyles and diet, safety and injury prevention, and support and care in the home, such as advice and adherence support for preventive interventions like iron supplementation, condom use, and use of ITN.
- Support care seeking behavior, including recognition of danger signs for the woman and the newborn as well as transport and funding plans in case of emergencies.
- Help the pregnant woman and her partner prepare emotionally and physically for birth and care of their baby, particularly preparing for early and exclusive breastfeeding and essential newborn care and considering the role of a supportive companion at birth.
- Promote postnatal family planning/birth spacing. ANC also provides women and their families with appropriate information and advice for a healthy pregnancy, safe childbirth, and postnatal recovery, including care of the newborn, promotion of early, exclusive breastfeeding, and assistance with deciding on future pregnancies in order to improve pregnancy outcomes. An effective ANC package depends on competent health care providers in a functioning health system with referral services and adequate supplies and laboratory support. ANC improves the survival and health of babies directly by reducing stillbirths and

neonatal deaths and indirectly by providing an entry point for health contacts with the woman at a key point in the continuum of care.

Maternal mortality is the worst outcome of poorly utilized or ineffective antenatal care and our aim is to reduce this to 131 deaths per 100,000 by 2015; in line with Millennium Development Goal, MDG 5 which stated that maternal mortality be reduced by three quarters of 1990 by the year 2015. This seems to be unachievable in relation to where we are currently<sup>10</sup>. Over 500,000 women die annually due to pregnancy related complications globally<sup>11, 12</sup> of which 90% of these are in developing countries. The commonest cause of death in developing countries is obstetric haemorrhage whereas in the developed world the commonest cause is thromboembolism.<sup>13-15</sup>

Experience from countries that have achieved low maternal mortality suggests that access to good-quality maternity services is critical to improving maternal health and in turn reduces maternal mortality<sup>16</sup>

Antenatal care services are equipped to impart preventive services, diagnose and treat complications during pregnancy, and provide proper information to promote the use of skilled attendance at birth, including emergency obstetric care (EmOC) if needed<sup>16</sup>. In addition, as the essential entry point to maternal care services, ANC should not only promote birth preparedness and readiness for unpredictable obstetric complications, but also maximize the distribution of anti-malarial drugs as well as iron and folic acid tablets and Prevention of Mother To Child Transmission, PMTCT<sup>17,18</sup>. Coverage of ANC services in SSA is generally high, with more than 90% of all women attending at least one visit.

Concerns however remain about the quality of the ANC services offered in many settings. Despite high coverage rates, ANC often fails to prevent, diagnose, and treat complications. To serve as an effective entry point to all other maternal care services, ANC ought to be of undoubtedly high quality<sup>19</sup>.

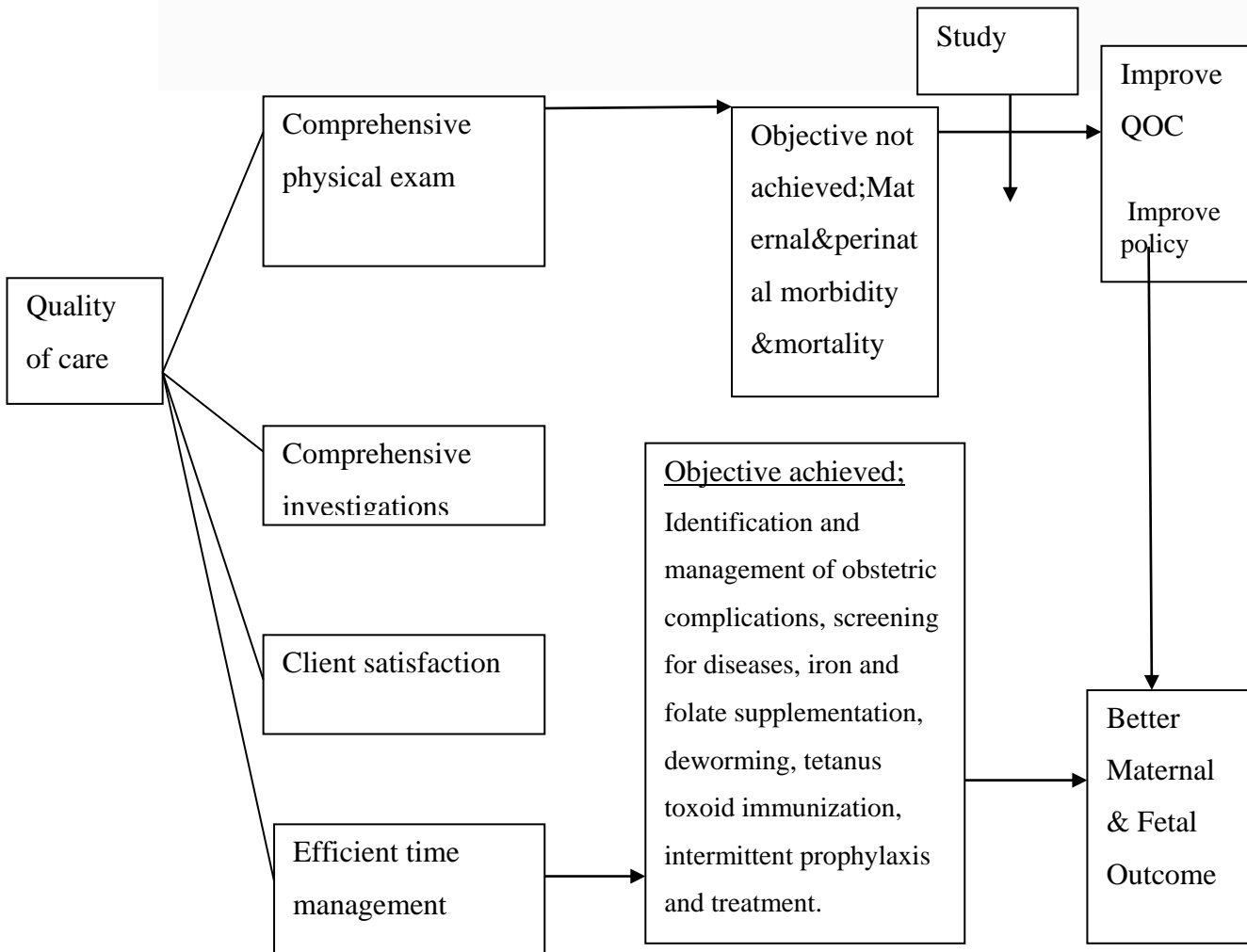
Different models have been used to assess quality of care. Donabedian's quality assessment paradigm is focused primarily on structure, process, and outcome, where structure shapes process and in turn process shapes outcome. He suggested that alongside the provision of the service itself, the client's experience is fundamental to ensure effective care<sup>20,21</sup>. Moreover some researchers argued that quality is a dynamic, fluid construct, resulting from the relative balance of the three dimensions of care: system, experiential process, and clinical decision skills.

Several authors have conducted research to evaluate the quality of Antenatal Care, ANC services in Sub-Saharan Africa, SSA. They have focused, however, almost exclusively on the assessment of technical skills, the validity of certain tests, the recall of the educational information received, and the number of mothers seen in the Antenatal Care, ANC clinics, neglecting to explore clients' and providers' experiences in relation to the provision of care. This means that these authors have overlooked dimensions, such as cognition, respect and dignity, and emotional support, which are also central to the experience of providing and receiving care. Cognition has been defined as a woman's assumption that she understands what is happening; the information she receives is delivered in a form that she and her family understand; and her questions are being answered adequately.



Many antenatal mothers may not be getting quality Antenatal Care, ANC that focused ANC promises to deliver, which is leading to poor maternal health in Kenya and so failure to achieve the vision 2015 of the Millennium Development Goal, MDG 5.

Figure 1: Conceptual Framework



## **Narrative**

Good quality ANC services offer pregnant women several advantages, among them are early detection of dangers signs and obstetric complications, early detection and prevention of disease transmission from mother to child, timely micronutrient supplementation like iron and folic acid to prevent anaemia and neural tube defects respectively, birth preparedness and an early linkage to formal health care delivery/system for long term follow-up and management. All these benefits will contribute towards a reduction of maternal and neonatal morbidity and mortality.

Heightened knowledge, especially in relation to health education will impact on decreased morbidity and mortality. Community education would enhance early booking and improve on maternal and neonatal outcomes, thus enhancing achievement of MDG 4 and MDG 5.

## **Justification**

KNH-a national referral and teaching hospital- is an appropriate site to assess the highest quality of ANC in a public hospital in Kenya, aimed at improving ANC services, decision& policy making.

Provision of ANC in KNH is guided by a service delivery charter and the care needs to be assessed to determine gaps in its quality.

Quality Antenatal Care is an important tool in improving maternal health. However, many women still start attending antenatal clinics at an advanced stage of their pregnancy while others only turn up for delivery with no antenatal care.

Therefore, this research attempted to evaluate the quality of ANC in Kenyatta National Hospital, KNH. The findings of the research will be useful in assessing whether the Kenyatta National Hospital, KNH antenatal care service delivery charter is fulfilled, determine the turnaround time during ANC, establish and assess mothers' knowledge of what is expected during ANC. These will be useful in improving ANC services with better client management and satisfaction as well as policy and decision making.

### **Research Question**

Do pregnant women receive quality ANC in KNH?

### **Broad Objective**

To determine the quality of Antenatal Care in KNH from April-July 2014

### **Specific Objectives**

1. To determine proportion of ANC clients with recorded obstetric observations and ANC test results.
2. To determine proportion of ANC clients informed of physical examination findings.
3. To determine proportion of ANC clients who understood the meaning of the test result.
4. To assess clients' turnaround time
5. To assess clients' rating of ANC services offered.

## **CHAPTER TWO**

### **RESEARCH METHODOLOGY**

#### **Study Design**

This was a cross-sectional study, in which 385 consenting pregnant women underwent exit interview and their ANC records reviewed. The study participants were pregnant women in their 3rd trimester that had had at least 3 ANC visits in KNH.

#### **Study Site and Setting**

This study was carried out at Kenyatta National Hospital's ante-natal clinic. KNH, being a national public referral hospital covers a wide geographical area and is a high volume hospital; therefore the study population is mixed in terms of socio-economics and areas of residence.

KNH is located in Upper Hill area, Nairobi, the capital of Kenya, Nairobi County. It is the major referral hospital for the whole country with a bed capacity of 2500 patients. It is the largest hospital in East and Central Africa and serves as the teaching hospital for the University Of Nairobi School Of Medicine and the Kenya Medical Training College (KMTC).

Antenatal care services are offered at the ANC clinics that run daily from Monday to Thursday. Postnatal clinics are conducted every Friday. These clinics are run by a team of Consultants, Registrars and highly trained Nursing Officers. There is also an outpatient

obstetrics and gynaecology consultation room at A&E department where emergencies are reviewed, stabilized and admitted as per need on a 24hour basis. About 50 mothers are seen every Monday which is the booking clinic day for Antenatal Care (ANC). There are three Obstetrics and Gynecology (Obs/Gyn) firms and each of these has one ANC day per week. On average a total of 11,100 mothers are seen in the ANC clinics per year. All services performed for the pregnant women in KNH through the ANC are free of charge except nutritional supplements and drugs, available at a fairly affordable price, e.g Anti-D costs about US \$45. Patients are admitted to labour ward directly through these clinics.

Labour ward has an acute room where severely ill antenatal and post-natal patients are managed and it is adequately equipped to handle obstetric emergencies. Adjacent to labour ward are two maternity theatres, where most emergency and elective obstetric operations are carried out. Antenatal and post-natal admissions are managed in wards GFA, GFB and 1A.

The labour ward is staffed by Resident Senior House Officers (SHO) enrolled in post-graduate training in Obstetrics and Gynaecology 24 hours every day, Medical officer interns, Clinical officer interns, and highly trained midwives. Twelve hourly ward rounds are conducted by Senior Registrars and on-call Consultants. Acutely ill patients are reviewed on need basis with consultations with other specialties as required. Monthly MMR at KNH ranges between 787/100000 to 1001/100000 live births while the monthly perinatal mortality rate ranges between 120/1000 to 151/1000. (KNH monthly mortality meetings records).

### **Study Population**

The study was carried out on pregnant women, irrespective of age, marital status, and level of education or profession.

### **Inclusion criteria**

Women that had consented to voluntarily participate in the study.

Women that had attended ANC at least 3 times in KNH only for the current pregnancy.

### **Exclusion criteria**

All obstetric emergencies because such women are considered not to be in stable conditions to give sufficient data

Women who did not consent to participating in the study

Mentally unstable and psychiatric women.

Women that visit more than one health facility for ANC purposes in the same gestation

### **Sample Size Calculation**

Formula used is

$$N = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = the standard normal deviation. This is set at 1.96 to correspond to 95% confidence level.

P = prevalence of mothers with adequate care, taken from WHO 2011 as > 50% (0.5).

C = maximum random sampling error taken as 0.05

$$N = \frac{1.96^2 * 0.5 * (1-0.5)}{0.05^2} = 384.16 \approx 385$$

This gave a sample size of 385 participants.

### **Sampling Technique**

The systematic random sampling technique was used where fifty (50) envelopes were used on any particular ANC day, with 24 of these having the word YES sealed within and the rest i.e. 26 envelopes having NO, the mothers that chose an envelope with a YES were enrolled in to the study upon informed consent. If a mother declined to participate the next mother to her number was recruited and so on if the next declined.

The plan was that 24 participants were sampled from each of the weeks of the study with the study lasting 4 months. (See annex V)

Recruitment and Consenting Procedures: Having introduced myself as the principle investigator to the in-charge of the clinic and gave a synopsis about the study and the activities to be done. Women were identified based on the sampling technique. Informed consent to participate in the study was sought from identified women. If the woman consented and signed, she would be included in the study. The investigator had to wait for such women to finish with their hospital visits and then take the opportunity to interview them.

### **Data Collection and management**

A cross-sectional study was performed, involving pregnant women attending antenatal care as well as health providers engaged with these women at Kenyatta National Hospital. An estimated precision of 5% and the 95% confidence interval was used. A sample of 385 participants was used in the data collection exercise.

Data was collected using a structured pretested questionnaire shown in appendix 1. The study instrument collected data in the following domains: Age and parity information, physical and

obstetric history, and antenatal profile. Patient's medical records and antenatal care cards with data provided additional information on ANC utilization during the antenatal visits.

The period of active data collection was four months which includes four days a week (as per the ANC clinic days). It was assumed that if on each Monday (which is the booking day for those visiting for the first time although clients attending subsequent visits may be slotted in) a total of four mothers were successfully recruited and seven mothers for the other ANC days, the sample size of three hundred eighty five, 385 would be achieved within the four months of data collection. The data was then entered into Microsoft access data base with inbuilt consistency and validation checks. Data was cleaned and stored in a password protected external storage device (USB) with data being accessible to the principal investigator, statistician and supervisors.

### **Reliability**

The questionnaire was pre-tested on a small number of randomly selected patients who fit the inclusion criteria. The tool was then re-assessed and necessary adjustments made to further improve it.

### **Data Analysis and Statistical Plans**

Data was computerized using Epi Info and analyzed using SPSS version 14. Overall quality of care was measured by calculating an index score summarizing 11 processes of care indicators: weight, height, blood pressure measurement, performing general physical and obstetric examination, monitoring fetal wellbeing and 5 basic laboratory investigations (hemoglobin, blood grouping, VDRL, HIV and urinalysis). Each indicator was awarded a point for performance and no point when the process was not conducted. The total score was then presented as a percentage.



For demographic variables, the mean, mode and standard-deviation were used. The percentages mean and mode were used to describe the occurrence of the outcomes. Narrative descriptions were used to describe specific observations, cases or trends, as appropriate, basing on variables such as services offered to expectant women, laboratory investigations done, documentation and intervention, patient turnaround time, patients' knowledge and understanding of test results and midwives' performance.

Random sampling of individuals to serve as informants was used and this approach was assumed to negate charges of researcher bias in the selection of participants. It also provided the greatest assurance that those selected were a representative sample of the larger group.

### **Data Storage**

The Principal Investigator, after collecting and analyzing data, diligently kept records of all important data as this was essential to ensuring the integrity of research data and to help maintain data validity and reliability. However, such important data calls for its protection. The researcher aimed at securing the raw data in form of electronic database, with limited access as a safeguard to being stolen or corrupted.

### **Ethical Considerations**

The principal investigator sought ethical approval from the Kenyatta National Hospital – University of Nairobi Ethics Research Committee (appendix 3). Written Informed consent was sought from the potential participants before recruitment in the study. Information obtained from the participants and/or participants' file was kept confidential and used for purposes of the study. No names or data identifying particular participants were written on data collection tools. The consent explanation and form is attached (See annex I).

### **Study Limitations**

There was poor recording of results in the participants' antenatal cards. There were scenarios where a participant was sure about having performed an investigation and results informed but with no record of same.

This study considers only tests and physical examination in the process and time spent in the clinic with the participants' satisfaction of the ANC services in KNH. Hence it's overlooking the whole structure, process and outcome as parameters for assessment of quality of care.

## CHAPTER THREE

### RESULTS

Exit interviews were conducted among 385 antenatal mothers attending care at KNH during the period April 2014 to 15th July 2014.

#### Descriptive results

Table 1 summarizes the Age and obstetric characteristics of the participating mothers. The mean age was 29.1 years (SD 5), with a range from 17 to 44 years. One-hundred and forty five (37.7%) mothers were aged between 25 and 29 years and 117 (30.4%) were aged 30 to 34 years. There were 108 (28.1%) primigravida ANC clients and 65 (17.1%) mothers reported ever having had a miscarriage. Of the 212 (68.3%) respondent who had not had a miscarriage and had a previous live birth, 98 (25.5%) had a single live birth (table 1).

**Table 1: Age and Obstetric history among ANC clients at KNH**

	Frequency (n)	Percent (%)
<b>Age in years</b>		
17 to 24	70	18.2
25 to 29	145	37.7
30 to 34	117	30.4
35 to 39	42	10.9
40 to 44	11	2.9
<b>Obstetric history</b>		
Primigravida	108	28.1
Previous miscarriage in participants with live births	65	6.9
Previous live births in participants with no miscarriage		
One	98	25.5
Two	76	19.7
Three	29	7.5
Four or more	9	2.3

### **Physical assessment**

Three indicators namely weight, height and blood pressure measurements were used to evaluate quality of care during performance of physical assessment in ANC respondents since these are the recorded numerical values. During the exit interviews 379 (99.2%) and 380 (99.5%) respondents reported that blood pressure and weight measurements had been taken during the current ANC visit, respectively (table 2). Height was measured and recorded in 296 (77.5%) respondents and 295 (77.2%) respondents had all the three measurements taken and recorded during the current visit. Out of the 86 clients who did not have weight measured during the current visit 71 indicated that their weight had been measured during previous ANC visits. Over 90% of respondents reported that they were informed of the findings related to the three physical assessments: height (94.6%), weight (98.2%), blood pressure (98.2%), and all the three indicators (94%).

### **Laboratory investigations**

Five basic investigations recommended for all ANC clients were selected as process indicators for quality of ANC care: hemoglobin level, blood grouping, VDRL, HIV and urinalysis. ANC clients frequently reported having had each of the investigations done either during the current visit (between 4.4 and 90.6%) or during a previous visit (between 4.2 and 76.1%), table 4. Urinalysis was done during the current visit in 349 (90.6%) respondents. Between 4.4 and 23.9% of clients had the remaining investigations (hemoglobin, blood grouping, VDRL and HIV) conducted during current visit. Conversely, between 56.1% and 76.1% of clients had had hemoglobin, blood grouping, VDRL or HIV investigations conducted during previous visits (table 4).

**Table 2: Quality of ANC care evaluation based on physical assessment and Laboratory investigations of clients at KNH**

	Measurement done during:		Measurement not done during visits	Client informed of findings
	Current visit N (%)	Previous visit		
Physical assessment				
Height	296(76.9%)	71(18.4%)	15(3.9%)	365(94.8%)
Weight	380(98.7%)	1(0.3%)	1(0.3%)	375(97.4%)
Blood pressure	379(98.4%)	2(0.5%)	1(0.3%)	375(97.4%)
All three indicators	295(76.6%)	N/A	0	359(93.2%)

	Investigation done during:		Investigation not done	Client informed of findings
	Current ANC visit	Previous ANC visit		
Hemoglobin	67(17.4%)	288(74.8%)	30(7.8%)	227(59%)
Blood grouping	17(4.4%)	293(76.1%)	75(19.5%)	280(72.7%)
VDRL	59(15.3%)	216(56.1%)	110(28.6%)	254(66%)
HIV	92(23.9%)	269(69.9%)	24(6.2%)	335(87%)
Urinalysis	349(90.6%)	16(4.2%)	20(5.2%)	313(81.3%)

**General clinical and obstetric examination**

Assessment of Physical examination findings were obtained through record review and exit interview as shown in Table 3. According to record review which is more objective, 9% of women didn't have a record of obstetric examination findings. Performance of clinical examination of clients were used as process indicators for quality of care based on ANC guideline recommendations that all clients attending ANC should have both general physical

and obstetric examinations performed and recorded. Table 3 shows that during the exit interviews 28.3% and 97.9% of clients reported having undergone general physical and obstetric examinations, respectively. 25.2% and 98.2% of ANC clients reported that they were informed of the findings of general physical and obstetric examinations, respectively (table 3).

**Table 3: Recorded Physical and Obstetric examinations findings and passage of information to clients in ANC at KNH (N=385)**

Parameter	Current visit	Previous visit	Client informed	Never done (N=385)
	(N=385)	(N=385)		
Exit interview				
Examination				
General physical	109 (28.3%)	1(0.3%)	97(25.2%)	275(71.4%)
Obstetric	377(97.9%)	2(0.5%)	378(98.2%)	3(0.8%)
Record review				
General physical	85(22.1%)	NA	-	300(77.9%)
Obstetric	350(90.9%)	NA	-	35(9.1%)

### Fetal monitoring of clients in ANC at KNH

Of the 385 clients interviewed while exiting KNH ANC, 371 (96.4%) subjects reported that monitoring of fetal wellbeing was monitored during the current visit (figure 2). In cases where fetal wellbeing was monitored the mothers commonly reported (369; 95.8%) that health care providers informed the respondent about wellbeing of the fetus.

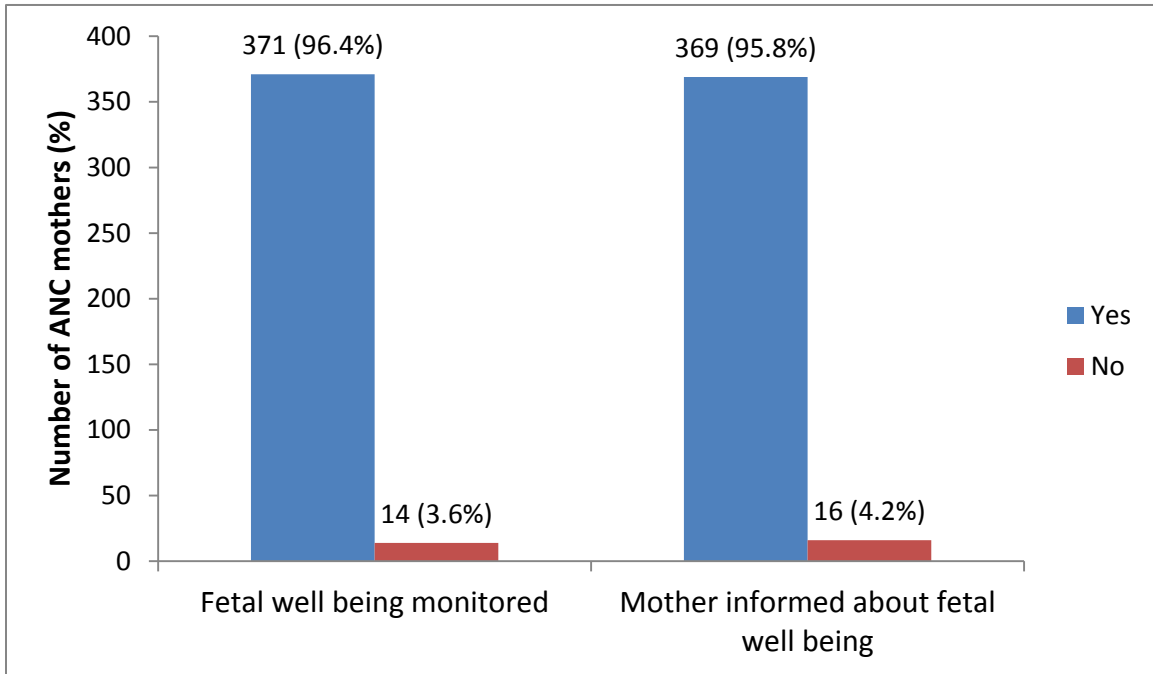
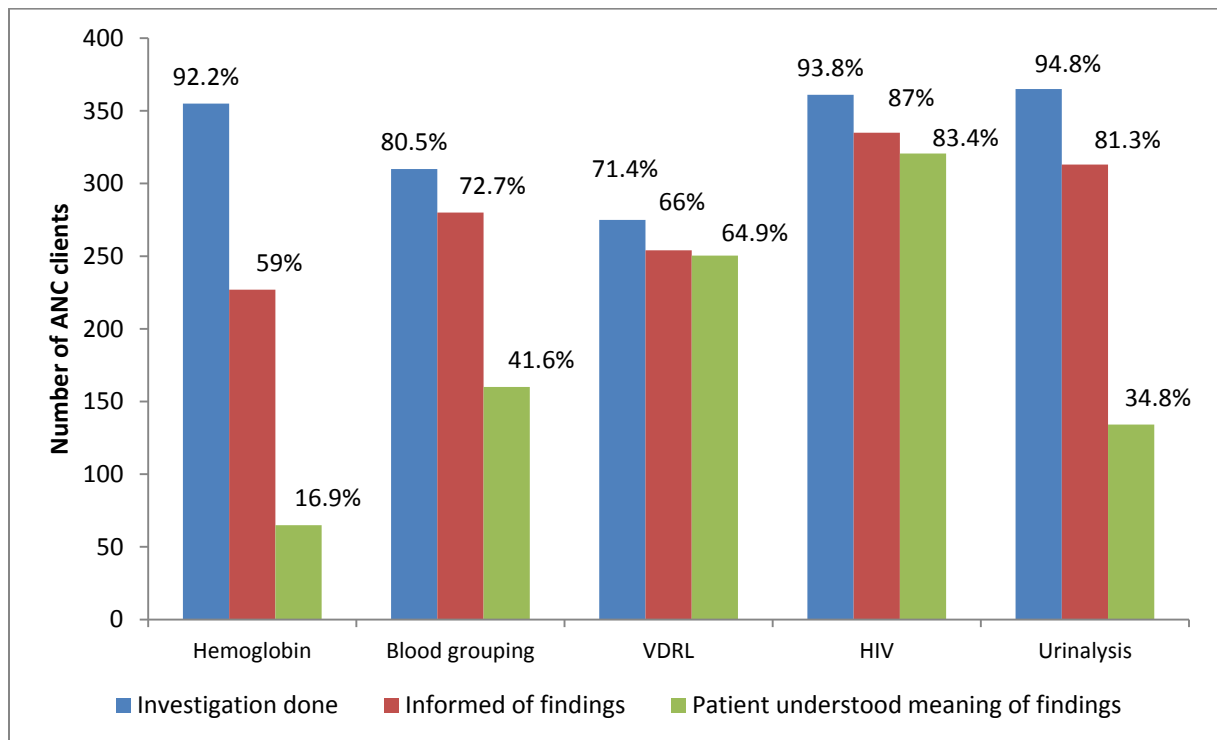


Figure 1: Fetal wellbeing monitoring in KNH ANC clinic

**Relationship between tests done, knowledge of findings and clients’ understanding of Results.**

This table shows the relationship between laboratory investigations being done, percentage of respondents informed of findings and of those, further shows those who actually understood the meaning of the findings. 94.8% of respondents had Urinalysis test done, of those 81.3% were informed of findings however only 34.8% actually understood the meaning of these results. 92.2% of respondents performed Haemoglobin test, 59% informed of findings and only 16.9% understood the meaning, compared to Syphilis test, where 71.4% performed the test, 66% informed of findings and 64.9% understood the meaning of findings. HIV test results were also well understood by the respondents.

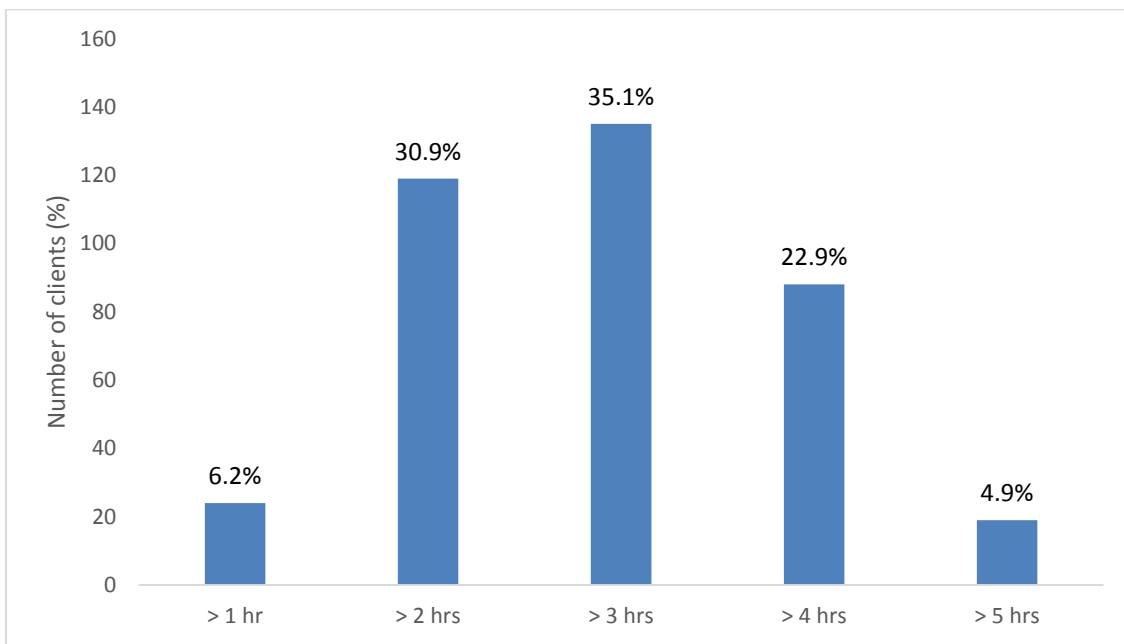


**Figure 2: Relationship between Investigations done, client knowledge and ability to understand the results**



### Time spent in KNH ANC clinic

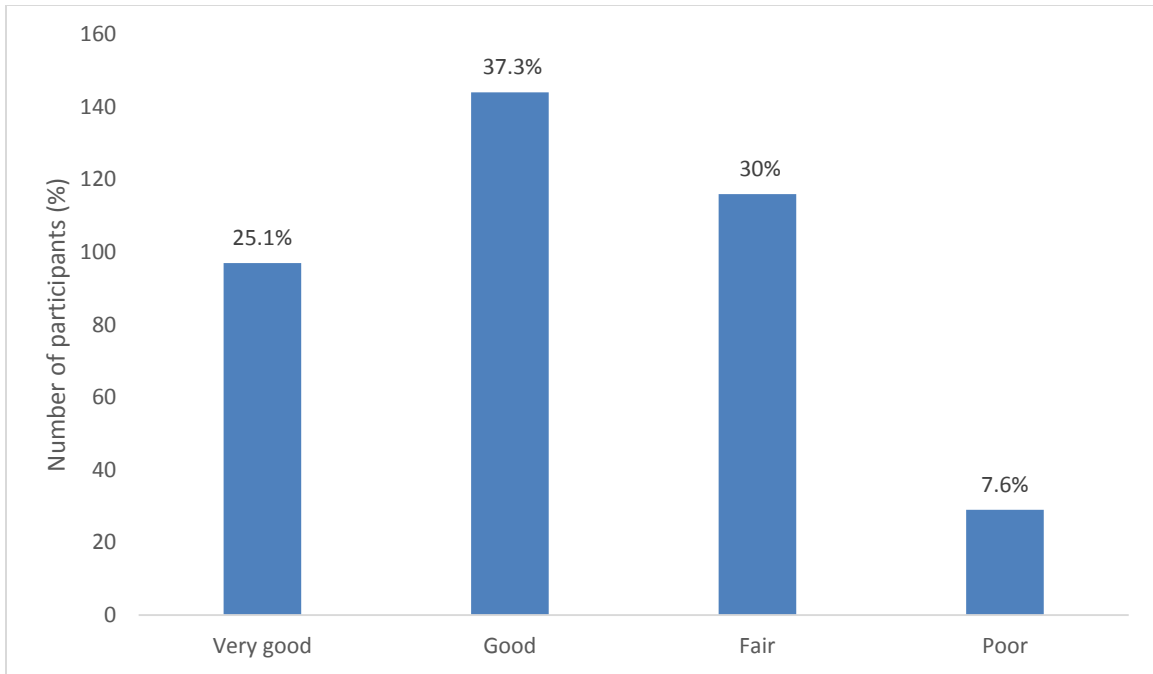
The time spent in ANC clinic at KNH was 3 hours and 29 minutes with a range from 1 hour 20 minutes to 5 hours and 30 minutes. Majority of clients exiting the KNH ANC clinic during the study period had spent between 3 hours, 119 (30.9%) and four hours, 135 (35.1%) at the ANC clinic (figure 1)



**Figure 1: Time spent in KNH ANC clinic by percentage of clients**

### Clients' rating of ANC Services at KNH

ANC client self-reported rating of the ANC services at KNH are presented in Figure 5. Close to 62% of clients rated ANC services at KNH at least good and 30% as fair



**Figure 4: Client rating of ANC Services**

### **Quality of care score**

The overall quality of care was obtained for the sample using a two stage calculation. In the first stage 11 basic process of care indicators were selected based on the current clinical guideline requirement for performing these processes for each client during ANC visits. These processes spanned three broad areas namely: assessment of ANC clients (weight, height, blood pressure measurement, performing general physical and obstetric examination); assessment of fetal wellbeing; and basic laboratory investigations (hemoglobin, blood grouping, VDRL, HIV and urinalysis). For each ANC client the number of essential processes that were performed was counted and a percentage completion rates for the indicators obtained as follows:

$$\text{Percentage (\%) completion} = \frac{\text{number of completed processes}}{\text{total number of required processes (n=11)}} \times 100$$

In the second stage an average performance for the hospital (mean quality of care [QoC] index) across the eleven assessment areas was calculated by obtaining a mean score for the sample of 385 clients as follows:

$$\text{Mean QoC} = \frac{\sum_{i=0}^n (\text{Percentage (\%) completion})}{(n - 1)}$$

Based on these calculations, the average score for quality of ANC care at KNH was 65.7%, SD (12.9) representing good quality of care. The range of the quality of care score was 27.3% to 100%.

## CHAPTER FOUR DISCUSSION

The main findings of this study are that majority of study participants were aged between 25-29 years with one previous birth. Over 90% of participants had their investigations done. Of all the investigations, participants understood the meaning of their HIV test compared to the other four investigations. The average turnaround time was 3 hours 29 minutes. Majority of respondents rated the ANC services as good.

Over 90%, of participants had their investigations done. The investigations done include haemoglobin level, blood group, VDRL, HIV test and urinalysis. These investigations are components of antenatal profiles that aid in identification of pathology with an aim of timely management for better pregnancy outcomes<sup>16</sup>. Disease conditions or risk factors for morbidity that can be identified are anemia with haemoglobin level, rhesus negativity with blood group, syphilis with VDRL, HIV infection with HIV test and urinary tract infection with urinalysis. Of importance is the haemoglobin level since obstetric hemorrhage remains the number one killer in our setting<sup>22</sup>.

This is a concerning finding because the test that participants were less likely to be informed are for identification of anemia, Rhesus factor and syphilis. Patients are able to be compliant to treatment if they are informed the meaning of their test results. For instance, an anemic pregnant woman is more compliant to hematinic if she is well informed<sup>20</sup>. As health workers it's our role not just to inform but also help these pregnant women understand the meaning of the various test results. Of over 92% of haemoglobin tests performed only about 17% could state their test result which compares with Urinalysis. Differential finding on information about test results with the HIV test rated higher can be attributed to the robust Prevention of

Mother To Child Transmission of HIV (PMTCT) Program that offers structured training and capacity building to health care providers<sup>23</sup>. This is further, supported by the finding that participants understood the meaning of HIV test result.

Performance of physical examination revealed about 10% and 78% of participants did not have a record of obstetric and general physical examination respectively. This is slightly less than findings of a study done in Kwa Zulu S. Africa in 2008 with 98% of obstetric examination performed and recorded<sup>24</sup>. This is below the stated standards of KNH where we should be able to perform 100% of the physical examination if we are to improve the maternal health of this country to achieve our vision 2030.

The average turnaround time was 3 hours 29 minutes. This time spent in the ANC could be due to introduction of free maternal care since June 2013. This time is higher than patients turnaround time of >2 hours in Mulago Hospital-Uganda<sup>25</sup>, 2.7 hours in National Hospital- Abuja<sup>26</sup> and 2 hours 40 minutes at Obafemi Awolowo University<sup>27</sup>, USA. Which are all teaching hospitals. This is beyond the expected waiting time in the KNH service delivery charter of 1 hour 30 minutes for new or booking clients.

The results from this study should be interpreted with the following limitation in mind, it only measures services offered and outcome in terms of clients 'satisfaction and turnaround time and not quality of care as a component of structure, process and outcome as described by Donabedian<sup>21</sup>. However the study has strength in that it was conducted at a time of transiting from payment system to free maternal health services as currently practiced in the government facilities in the country.

The results of this study can be generalized to tests like HIV and haemoglobin even though with a percentage performance of 93.8% and 92.2% respectively by third ANC visit which may appear high enough, but these basic laboratory tests show a high rate of missed opportunity where interventions for the conditions would salvage a lot and in addition improve maternal health.

Early diagnosis of any anomaly would help with early intervention which is the quality ANC and thus improved maternal care. The average waiting time of 3 hours and 29 minutes is still too long especially if a client has an emergency, not forgetting some clients are working and have to report back for duty, some are house wives and have left nobody to attend to their homes so such long waiting time may prevent pregnant women from attending ANC.

The average score for quality of ANC at KNH was 65.7%, SD (12.9) representing above average quality of care. This is comparable to findings of a study conducted in Jimma South West Ethiopia 2013 (60.4%), however below that in Sweden (82%)<sup>27-28</sup>. These studies correlate client satisfaction closely to quality ANC. The reason for the different scores might be attributed to difference in cultural setting in providers and receivers and due to differences in set up in which the studies are conducted at hospital antenatal units. It should however be emphasized that for our study, the quality of care score is based solely on partial elements of process and outcome whereas the other element of Quality, that is structure as described by Donabedian were not assessed in this study<sup>21</sup>. These results suggest urgent response from those in authority of the health system to invest more resources to avert the situation in order to enhance maternal health in the country.

The measure of satisfaction needs standardized scales and tools for accurate measurement since most of the literatures measure satisfaction with simple yes/no response category. These results suggest urgent response from those in authority of the health system to invest more resources to avert the situation in order to enhance maternal health in the country.

### **Conclusion**

The study findings revealed that the ANC provided at KNH was above average however being the national referral is well suited in terms of infrastructure, equipment and supplies and so ought to 100% cover basic investigations as well as be able to adequately inform clients of findings and reduce the waiting time for these pregnant women.

### **Recommendations**

- This study is a basis for further generalizable studies to determine specifics of test results.
- Upon these findings I would as well call upon improvement in the record of clients' medical records by colleagues.
- The Ministry of Health, in partnership with Kenyatta National Hospital should orient staff on the WHO clinical guidelines to incorporate them in the provision of ANC services as a way of continuously improving the quality of ANC.

### **Dissemination of Results**

By sharing research results, this study may advance new techniques and theories and benefit other research. The researcher believes that it will encourage collaboration between researchers in the same field or across disciplines. Additionally, reporting on this particular

study will have a direct impact on the quality of antenatal care provided to patients at Kenyatta National Hospital and other health facilities.

In order for the study findings to be useful to a variety of stakeholders, dissemination should be action-oriented and take the form of recognizing the outcomes of the study and making recommendations to incorporate the study's approach to antenatal care into mainstream services at Kenyatta National Hospital and other health facilities. The findings will be presented to the department, KNH/UON, presented in the Kenya Obstetrical and Gynecological Conference and for Research publications.



## REFERENCES

1. Joy Lawn and Kate Kerbereds.: *Opportunities for Africa's Newborns: Practical data, policy and programmatic support for newborn care in Africa*. PMNCH, Cape Town, 2006. Chapter 2; pgs.51, 53 and 55.
2. Browre J., C, Dixon G: *Role of antenatal care: Antenatal care*, 10th edition, Churchill, London, P1, 1970
3. World Health Organization, Technical report series no.51; *Expert committee on maternity care*, Geneva June 1952.
4. World Health Organization, *Antenatal care*, Report of a technical working group, Geneva, 31st Oct- 4<sup>th</sup> Nov 1994
5. Cunningham F.G, Macdonald P.C Gant N.F, Leveno K.J, Gilstrap L.C. *Prenatal care*. Williams Obstetrics 19<sup>th</sup> edition, Appleton and Lange Connecticut, Pg. 247, 1993
6. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland: KNBS and ICF Macro, Pg. 116.
7. Donald I. *The scope of antenatal care*, Practical obstetric problems, 5th Edition, Lloyd Luke publishing, 1986
8. DeCherney A. H, Pernell M.L, *Current Obstetrics and Gynecology Diagnosis and Treatment*, 8th edition 1994, Appleton and Lange, Pg. 183-201
9. John Kinuthia, *Quantity and Quality of Antenatal care in KNH*, MMed Thesis University of Nairobi 2002.
10. Campbell OM, Graham WJ: *Strategies for reducing maternal mortality: getting on with what works*. Lancet 2006, **368**(9543):1284-1299. PubMed Abstract |
11. World Health Organization. *Maternal health and safe motherhood programme Progress Report 1993-1995*, WHO, Geneva

12. WHO (World Health Organization) (1997). *The sisterhood method for Estimating Maternal Mortality: Guidance notes for Potential Users*, WHO, Geneva.
13. Hoyan M.C, Foreman K.J, Naghavi M. et al (2010). *Maternal mortality for 181 countries 1980-2008 a systematic analysis of progress towards MDG 5*. *Lancet* 375:1609-1623 doi.
14. Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF: *WHO analysis of causes of maternal death: a systematic review. Lancet* 2006, **367**(9516):1066-1074. PubMed Abstract
15. Ronsmans C, Graham WJ: *Maternal mortality: who, when, where, and why. Lancet* 2006, **368**(9542):1189-1200. PubMed Abstract
16. DeCherney A.H, Pernell M.L. *Current Obstetrics and Gynecology Diagnosis and Treatment. 8<sup>th</sup> edition 1994*, Appleton and Lange, Pg. 183-201.
17. JHPIEGO. Maternal and Neonatal Health(MNH). *Monitoring birth preparedness and complication readiness tools and indicators for maternal and newborn health*. John Hopkins, Bloomberg School of public health, centre for communication programs, family care Int; 2004. Available at [http://pdf.dec.org/pdf\\_docs/PN\\_AD\\_A619.pdf](http://pdf.dec.org/pdf_docs/PN_AD_A619.pdf)
18. Villar J, Ba'aqeel H, et al. WHO; *Antenatal care randomized trial for the evaluation of a new model of routine ANC*. *The Lancet* 2001; 357:1551-1564
19. Hoyan M.C, Foreman K.J, Naghavi M et al (2010). *Maternal mortality for 181 countries 1980-2008: a systematic analysis of progress towards MDG 5*. *Lancet* 375:1609-1623 doi
20. Mc Donald K.M, Sundaram V, Bravata D.M et al (2007). *Closing the quality gap: A typical analysis of improvement strategies vol.7: Agency for Health care research and quality (US) 2007 Jun*
21. Donabedian A. (1997). *The Quality of Care? How can It Be Assessed*. American Medical Association, USA

22. Say L et al Global Causes of Maternal death: AWHO Systemic Analysis. Lancet 2014
23. Guidelines for PMTCT of HIV/AIDS in Kenya 2014 By National Aids and STI Control Program-NBI 2014
24. Waitingtime in ANC,National Hospital Abuja Nigeria;African journal of primary health care&Familymedicine;2012,vol.4 Issue I, page1
- 25.FantayeChemir, FessahayeAlemseged and DestaWorkneh  
Satisfaction with focused antenatal care service and associated factors among pregnant women attending focused antenatal care at health centers in Jimma town, Jimma zone, South West Ethiopia. *BMC Research Notes* 2014, **7**:164 doi:10.1186/1756-0500-7-164.
- 26.Hildingsson I: Swedish women's satisfaction with medical and emotional aspects of antenatal care. *J AdvNurs* 2005, **52**(3):239-249.
27. Wait time and service satisfaction at ANC, ObafemiAwolowoUniversity,USA Ile-Ife.EastAfr J of public health 2009 Dec;6(3):309-11
- 28.Salam MA: *Factors Influencing Client Satisfaction Towards Antenatal Care Service in the MCH Hospital*. Thailand: Ratchaburi Province; 1998.

## APPENDICES

### ANNEX I- CONSENT/ASSENT EXPLANATION AND CONSENT FORM

**Principal Investigator:** Dr. Ruth N Kavuma

**Supervisors:** Prof.P.M.Ndavi, Dr F.X.Odawa and Dr. John Kinuthia

**Institution:** Department of Obstetrics and Gynecology, P .O. Box 30197-00400.

University of Nairobi

#### **Introduction**

I am Dr. Ruth Kavuma, a student in the Department of Obstetrics and Gynecology, Postgraduate program at the University of Nairobi. I am conducting a study on the quality of Antenatal care in Kenyatta National Hospital, in the antenatal clinic-clinic 18. As part of this study I will need to interview you upon exit from the clinic and your antenatal records.

#### **Main objective of the study**

In this study, I assessed the quality of Antenatal Care in Kenyatta National Hospital.

*Note: Participation in this study is voluntary, the information will be confidential and you can choose not to answer any individual question or all of the questions. However, I hope that you will participate in this survey since your views are important.*

#### **Benefits**

There are no immediate benefits to you as a patient. The long term benefits are that the information from this study will help the health professionals to know if the Kenyatta National Health service delivery charter is fulfilled. If not satisfactorily delivered, the health professionals will be aware and improve the way they manage the patients. This will in turn improve treatment outcomes and improve patients' satisfaction and maternal health and possibly reduce maternal mortality.

**Risks**

There are no risks to your health in this study.

**Compensation mechanism**

There was no compensation given for participation.

**Follow up schedules**

No follow-up was required.

**Information on researchers and telephone numbers**

In case of any questions or clarifications about the nature of this study, you are free to contact:

- The principal investigator, R.N. Kavuma on 0705972302
- The study supervisors: Prof. P.M.Ndavi, Dr.F.X.Odawa and Dr. John Kinuthia P.O. Box 30197–00400. College of Health Sciences, University of Nairobi
- The Kenyatta National Hospital / University of Nairobi / Ethics and Research Committee, P.O. Box 20723-00100 Nairobi, Tel No. 2726300/2716450 ext. 44102.

I, therefore, kindly request you to sign the attached consent form. Thank you for your co-operation.

**Expression of Consent**

I .....hereby do consent to voluntarily participate in this study. The nature of the study has been explained to me by the principal investigator.

Signature: ..... Date: .....

I confirm that I have explained to the study participant the nature of the study.

Signature: ..... Date: .....

## **I. SWAHILI VERSION CONSENT FORM FOR INTERVIEWEES**

**MUHJUMU MKUU:** Dr.RuthKavuma.

### **KIBALI CHA KUSHIRIKI**

Kwa majina naitwa **Dr. Ruth kavuma**, kutoka chuo kikuu cha Nairobi, idara ya wamama. Hili niombi kwa kukubali kushiriki katika utafiti. Lengo la fomu hii ya ridhaani kukufahamisha yale utakayo hitajika kujuaili kukusaidia kuamua ushiriki wako katika utafiti. Tafadhali soma fomu hii kwamakini, unaweza kuuliza maswali kuhusu ya lenitakayo hitaji kufanya, athari zozote, manufaa, haki za kokamamshirika.

### **LENGO NA MANUFAA YA UTAFITI**

Utafiti huu utachunguza huduma kina mama waliowajawazito wanayopewa katika zahanatiya Kenyatta namba kumi na nane. Ningependa kuchunguza kama huduma hizo zinalingana na mambo yote yaliyopendekezwa kutekelezwa.

### **TARATIBU ZITAKAZO FUATWA**

Ukikubali kuhusishwa katika utafiti, Utaulizwa maswali baada ya daktari kukuhudumia. Maswali yatagusiya juu ya jinsi ulivyotibiwa katika zahanati, Muhujumu atakuwa na kibali yakuona maktaba ya kona mambo ambayo umefanyiwa. Nambari maalum itatumika kukutambulisha wala simajina yako.

### **MADHARA NA MATATIZO**

Kushiriki kwako katika utafiti huu ni wahari. Unaruhusiwa kutojibu swali/maswali au kujiondoa kwenye mjadala /mahojiano wakati wowote bila kuhujumiwa. Matibabu utaendelea kupata hata kama hutakubali kujiungana utafiti huu.

## **SIRI**

Habari zozote wakati wa mahojiano zitahifadhiwa vyema. Majina ya kwanza pekee ndio yatakayotumika wakati wamahojiano.

Utatakikana kutomuelezea mtu yeyote yale yaliyojiri wakati wa mahojiano. Ingawa mtafiti hawezi kuhakikisha jambo hilo, kila juhudii tati wakuhakikisha kuwa yale utakayo yasema yamehifadhiwa kwa siri, Jina lako halitatokea katika ripoti yeyote itakayo andaliwa baada ya utafiti isipokua namba ya kutambulisho waliohusika katika utafiti.

Fomu na kanda zitahifadhiwa katika sehemu maalum. Mtafiti pekee ndiye atakaye kuwa na kibali .

## **GHARAMA**

Hutahitajika kulipa chochote cha ziada ili kushiriki katika utafiti huu isipokua wakati wako.

Mimi-----Nimekubali kuhusika na utafiti kuhusiana na huduma wanayopata wamama walio wajawazito katika zahanati ya Kenyatta namba kumi na nane. Nimefahamu ya kwamba kujihusisha nikwahiyari. Ninauwezo wakujitoe katika utafiti huu wakati wowote bila kushurutishwa. Kuhusika ni bure. Nimehakikisha ya kwamba mchango wangu utahifadhiwa na kutumiwa kwa utafiti kwa manufaa ya jamiii.

SAHIHI \_\_\_\_\_

Mimi..... nina dhibitisha ya kwamba nimemueleza kwa uwazi na umakini bwana/bibi.....kuhusiana na utafiti waupungufu wadamu kwa ujauzito.

SAHIHI \_\_\_\_\_

Kwa maswala yeyote kuhusiana na utafiti unaweza kuwasiliana na Dr.Ruth kavuma Kutumia nambari 0705972302.

Unaweza kuwasiliana na Kamitii ya uadilifu kwa utafiti: KNH/UoN/ERC-0735-274288/0721-665077.

## II. DATA COLLECTION TOOL

**Tool for collection of data from patients, files and health professionals**

**Study Title: ‘Quality of Antenatal care in Kenyatta National Hospital’**

*Instructions: Tick the appropriate, write where required*

### **PART I: PATIENT BIODATA**

Patient No..... Age.....

Parity.....Address .....

### **PART II: SERVICES OFFERED**

*Exit survey for the mothers;*

1) Were the following done during this visit?

- Weight measurement YES/NO
  - If NO, has been done previously? YES/NO
  - If yes, specify visit \_\_\_\_\_
  - Were you informed of the findings YES/NO
  
- Height measurement YES/NO
  - If NO, has been done previously? YES/NO
  - If yes, specify visit \_\_\_\_\_
  - Were you informed of the findings YES/NO
  
- Blood pressure measurement YES/NO
  - If NO, has it been done previously? YES/NO



- If yes, specify visit \_\_\_\_\_
  - Were you informed of the findings YES/NO
- 2) State clearly whether the following physical examination was performed during your antenatal visit today
- (a) General Physical Examination YES/NO
- If NO, has it been done previously? YES/NO
  - If yes, specify visit \_\_\_\_\_
  - Were you informed of the findings YES/NO
- (b) Obstetric Examination YES/NO
- If NO, has it been done previously? YES/NO
  - If YES, specify visit \_\_\_\_\_
  - Were you informed of the findings YES/NO
- 3) Were the following laboratory investigations done?
- (a) Haemoglobin YES/NO
- If YES what was the result?.....
  - If NO, has it been done previously? YES/NO
  - If YES, specify visit \_\_\_\_\_ and result \_\_\_\_\_
  - Did you understand what the result means? YES/NO
- (b) Blood Group YES/NO
- If YES what was the result?.....
  - If NO, has it been done previously? YES/NO
  - If YES, specify visit \_\_\_\_\_ and result \_\_\_\_\_
  - Did you understand what the result means? YES/NO
- (c) VDRL YES/NO
- If YES what was the result?.....
  - If NO, has it been done previously? YES/NO
  - If YES, specify visit \_\_\_\_\_ and result \_\_\_\_\_
  - Did you understand what the result means? YES/NO

(d) HIV YES/NO

- If YES what was the result?.....
- If NO, has it been done previously? YES/NO
- If YES, specify visit \_\_\_\_\_ and result \_\_\_\_\_
- Did you understand what the result means? YES/NO

(e) Urinalysis YES/NO

- If YES what was the result?.....
- If NO, has it been done previously? YES/NO
- If YES, specify visit \_\_\_\_\_ and result \_\_\_\_\_
- Did you understand what the result means? YES/NO

4) Was monitoring of the fetal well being done? YES/NO

Were you informed of the condition of your baby YES/NO

5) How would you rate the services offered at this clinic?

- Very Good
- Good
- Fair
- Poor

## II DATA ABSTRACTED FROM RECORDS

1) Weight measurement YES/NO

What was the measurement.....

Appropriate intervention taken (tick appropriately)

- Repeat measurement
- Obstetric ultrasound scan
- Admission

2) Height measurement YES/NO

3) Blood pressure measurement YES/NO

What was the measurement.....

Appropriate intervention taken (tick appropriately)

- Advised check blood pressure
- Given Antihypertensive medication
- Admission

General physical examination

YES/NO

Obstetric examination

YES/NO

4) Laboratory investigations

a) Haemoglobin YES/NO

If YES, what was the value.....

Was appropriate intervention taken( tick appropriately)

- Haematinics given
- Deworming
- Admission of client
- Blood transfusion

b) Blood group

YES/NO

If YES, what was the result.....

Was appropriate intervention taken (tick appropriately)

- Partner's Blood group ordered
- Indirect Coombs Test done
- Anti-D given

c) VDRL

YES/NO

If YES, what was the result?.....

Was appropriate intervention taken (tick appropriately)

- Repeat VDRL in another centre
- Treatment given

d) HIV

YES/NO

If YES, what was the result.....

Was appropriate intervention taken (tick appropriately)

- Counseling of partner testing
- Co-trimoxazole given
- Blood taken for further tests (CD4,LFTs,RFTs)

- Started on HAART

e) Urinalysis

YES/NO

If YES, what was the result.....

Was appropriate intervention taken (tick appropriately)

- Treatment given

### Annex III: Work plan

SN	Month (2013) Activity	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1.	Submission of the proposal to KNH Research and Ethics committee																
2.	Ethics review																
3.	Data collection																
4.	Data analysis																
5.	Drafting report																
6.	Submission of draft report to supervisors for their review																
7.	Incorporation of comments from supervisors																
8.	Compiling final draft																
9.	Binding																
10.	Presenting final bound copy of the report																

**Annex IV: Budget of the Study**

<b>SN</b>	<b>Items</b>	<b>Unit</b>	<b>Approximate Unit Cost</b>	<b>Number of Units Required</b>	<b>Cost of item (KShs)</b>
1	<b>Materials /consumables</b>				
a)	Pens	Pieces	20	25	500
b)	Envelopes	Pieces	5	385	1,925
2	<b>Services</b>				
a)	Statistician's services	1	30,000	1	30,000
b)	Research assistants	2	1,500/day	17 days	51,000
c)	Printing questionnaire	1	5	3	15
d)	Photocopying questionnaires	385	3	385	3,465
e)	Printing consent forms	1	385	5	5
f)	Photocopying consent forms	385	3	3	1,155
g)	Book binding		3,000	3	9,000
	<b>Grand Total</b>				<b>97,065</b>

- Source of funds – KNH.
- No funds were given to any patient for participation.

## **BUDGET JUSTIFICATION**

1. Consumables included pens, each cost KShs25, I utilized 25 pens which is a total of KShs625 and 385 envelopes for the blinding of participants each cost KShs 5 which is a total of KShs 1,925.
2. Services included; 1 Statistician who was paid KShs30,000,2 research assistants each paid KShs 1,500 per day for a total of 17 days of the research cost KShs 51,000,printing of 1 copy of the questionnaire(3 page document),each page cost KShs 5 which cost KShs 15, photocopying of the questionnaire to make 385 copies with each page photocopied at KShs 3 cost KShs 3,465, printing of 1 copy of the consent document(1 page) at KShs 5 cost KShs 5, photocopying 385 copies of the 1 page consent document at KShs 3 cost KShs 1,155,binding of 3 copies of the final book cost KShs 3,000 per copy which was KShs 9,000.
3. The above summation gave a grand total of KShs 97,065.

## **SAMPLING TECHNIQUE**

A paper labeled with a YES or a NO was inserted in each envelope. Upon each antenatal day of my research, 50 envelopes were carried to clinic 18,24 of these would have a YES label while 26 would have a NO. The envelopes were randomly picked by patients; the patient that picked an envelope with a YES was thoroughly explained to the research and informed written consent acquired. If any patient with an envelope having a YES chose not to participate in the study then that number would be carried forward to another antenatal day of research.