THE INFLUENCE OF PRENATAL CARE ON PREGNANCY OUTCOME IN A RURAL AREA IN KITUI DISTRICT

Millicent Weche Ambetsa

I56/8697/99

A Thesis Submitted In Partial Fulfilment For The degree Of Master Of Public Health And Epidemiology Of Kenyatta University.

May 2003

DECLARATION

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

Signed M Mubeta Date 2-5-03

SUPERVISORS' APPROVAL :

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

1. Dr. John N. Mbithi
   School of Pure and Applied Sciences
   Department of Zoology
   Kenyatta University
   P.O. Box 43844
   Nairobi.

   Signed J N Mbithi Date 27/05/2003

2. Dr. Zipporah W. Ng`ang`a
   School of Pure and Applied Sciences
   Department of Zoology
   Kenyatta University
   P.O. Box 43844
   Nairobi.

   Signed Date 19th May 20

3. Dr. Eliab S. Some
   African Medical Research Foundation
   P.O. Box 30125
   Nairobi.

   Signed E S Some. Date 05.05.2003

DEDICATION

To my husband Steve Ambetsa and my children, Miriam, Phillip, Esther, Margaret and David.

To my parents, Makhabwa and Awinja, thanks for education.

ACKNOWLEDGEMENTS

I wish to give special thanks to my supervisors: Drs: J.N. Mbithi, Z.W. Ng`ang`a of Kenyatta University, Department of Zoology and Dr. E. S. Some of African Medical Research Foundation (AMREF) for their consistent advise, encouragement, and professional supervision in the course of the study. Their immense patience and assistance in the writing of this thesis is highly appreciated.

I am also indebted to the staff of Kalimani Rural Health Center and the Women Group at Kalimani, Kitui district hospital staff especially the Public Health Nurse, Ms Muteti and the Research Assistants for their assistance with data collection. I appreciate the support from Mrs. Mailu who co-ordinated the entire process of data collection.

I am grateful for the support that the AMREF office at Kitui offered which enabled me to implement the collection of data.

I sincerely thank all the members of staff of the Department of Zoology for the support and encouragement they accorded during the study period.

Thanks to my employer, the Nairobi City Council for sponsoring me as well as granting me study leave to accomplish this work.

Finally, I wish to thank all those individuals who participated and gave me unlimited support in typing this report.

ABSTRACT

Prenatal care during pregnancy provides an opportunity of reducing the burden of maternal and perinatal mortalities. Data to gauge prevalence of morbidity in Kenya are limited. Both women and traditional birth attendants are unaware of the signs and symptoms of pregnancy complications, their causes and appropriate treatment. The purpose of this study was to determine the influence of prenatal care on pregnancy outcome. Also, to determine the knowledge of prenatal care by childbearing women, the possible contributing factors to maternal and perinatal complications and to establish the influence of utilization of prenatal care services on pregnancy outcome.

A total of four hundred and six randomly sampled childbearing women age 15-49 years with a previous pregnancy were interviewed from nine sub-locations using structured pre-tested questionnaire ,and three focus group discussions . Data analysis was done using statistical package for social sciences (SPSS). Chi- square (χ^2) test of significance was applied relating various factors with pregnancy outcome. Relationship between knowledge of prenatal care, utilization of prenatal care services and factors affecting utilization of prenatal care services by childbearing women were determined in relationship with pregnancy outcome. The 95% significance level was used to determine the significance of relationships. Results indicate that 59.1% respondents understood the meaning of prenatal care while 40.9 did not. Nearly all respondents (96.3%) utilized prenatal care services during clinic attendance. However more than half of the respondents (50.2%) started attending prenatal clinic during the second trimester (4-6 months of pregnancy). Relationship between clinic attendance and pregnancy outcome was highly significant (χ^2=8.768,df=1,p<0.003). Further, frequency of clinic attendance influenced pregnancy outcome (χ^2.=8.398,df=3,p<0.038) However , services

offered during clinic attendance were inadequate with only 10.3% women who were investigated for diseases like anaemia, sexually transmitted diseases and diabetes mellitus. In addition, utilization of prenatal care services during delivery was inadequate. Majority of the women in labour (94.1%) were attended to by the help of untrained birth attendants. Further, majority of the deliveries (66.3%) occurred at home. Qualified professionals or skilled birth attendants conducted only 5.9% of the deliveries. Under utilization of prenatal care services especially during delivery was influenced by the following factors: lack of understanding the importance of prenatal care by childbearing women, long walking distance, lack of money and transport, seeking delivery services from untrained birth attendants and provision of inadequate clinical investigations.

In conclusion, the results imply that clinic attendance was high. However a high number of the respondents (40.9%) did not understand the meaning of prenatal care. Majority of the respondents started clinic late (4-6months) and as late as seven months of pregnancy. The quality of prenatal care judged by antenatal care (ANC) profile was inadequate with only 10.3% who had clinical laboratory investigations carried out. More than half of the deliveries (66.3%) occurred at home with the help of untrained birth attendants. In addition, 22.2% women experienced pregnancy related complications. The information from this study could be useful in designing intervention prenatal care programmes and reduction of pregnancy related complications. Effective prenatal care would be achieved by educating childbearing women on the importance of investigations during prenatal clinic attendance and also by improving services offered at the clinic.

TABLE OF CONTENTS

Page

Title.....(i)

Declaration and approval.....(ii)

Dedication.....(iii)

Acknowledgements.....(iv)

Abstract .....(v)

Table of Contents.....(vii)

List of Tables.....(xi)

List of Figures.....(xiii)

Appendices.....(xiv)

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

1.1 General introduction.....1

1.2 Literature review.....3

1.3 The Research problem.....8

1.3.1 Statement of the problem 8

1.3.2 Justification for the study..... 9

1.4 Hypothesis..... 10

1.5 Objectives of the study.....10

1.5.1 General objective.....10

1.5.2 Specific objectives.....10

CHAPTER TWO: MATERIALS AND METHODS

2.1.1 Study area and population.....11

2.1.2 Climate 12

2.1.3 Health facilities and disease 12

2.1.4 Infrastructure.....12

2.1.5 Sampling procedures 12

2.1.6 Sample size determination.....13

2.2 Ethical consideration.....14

2.3 Study design.....14

2.4. Data collection.....14

2.4.1 Data Collection Technique and Procedures.....14

2.4.2 Control of bias.....15

2.4.3 Training of interviewers.....15

2..4.4 Data management and analysis.....15

CHAPTER THREE: RESULTS

3.1 Introduction.....16

3.2 Socio-economic and demographic characteristics of respondents.....16

3.2.1 Respondent age distribution.....16

3.2.2 Level of Education.....18

3.2.3 Respondents Marital status.....19

3.2.4 Respondents number of children.....19

3.2.5 Employment status.....19

3.2.6 Income generating activities.....20

3.2.7 Respondents religious affiliation.....21

3.3 Knowledge on utilization of prenatal care services by Child bearing women.....24

3.3.1 Perception of prenatal care. 24

3.3.2 The time to start prenatal clinic.....25

3.3.3 Importance of prenatal clinic.....26

3.3. 4 Frequency of clinic attendance during pregnancy.....27

3.3.5 Pregnancy complications for non-clinic attendance.....28

3.3.6 Type of complications that could arise for non-clinic attendance.....29

3.3.7 Relationship between respondent's knowledge of complications for non-clinic attendance and pregnancy outcome.....29

3.3.8 Prevention of pregnancy complications..... 32

3.4 Utilization of prenatal care services during pregnancy.....33

3.4.1 Clinic attendance.....33

3.4.2 Time of starting clinic attendance.....33

3.4.3 Frequency of clinic attendance.....33

3.4.4 Place of clinic attendance.....36

3.4.5 Services offered during clinic attendance.....36

3.4.6 Utilization of prenatal clinic services during delivery.....38

3.4.7 Reasons for home deliveries.....39

3.4.8 Assistants during delivery.....40

3.5 Factors that determine utilization of prenatal care services.....41

3.6 Referral system.....42

3.7 Inventory at health facilities.....42

3.8 Pregnancy outcomes reported by women during last delivery.....44

3.9 Disorders experienced by the baby at delivery.....45

CHAPTER FOUR: DISCUSSION

4.1 Knowledge of utilization of prenatal care services by child bearing women.....46

4.2 Utilization of prenatal care services by childbearing women 46

4.3 Factors that contribute to maternal and perinatal complications 47

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions.....50

5.2 Recommendations 51

5.3 Research recommendations.....51

REFERENCES.....52

APPENDICES.....56

LIST OF TABLES

Table Page

1. Relationship between level of education and pregnancy outcome.....18
2. Relationship between level of income and pregnancy outcome.....20
3. Relationship between income generating activities and pregnancy outcome.....21
4. Relationship between religious affiliation and pregnancy outcome.....22
5. The socio-economic and demographic characteristics of the respondent.....23
6. Knowledge of importance of prenatal clinic attendance by respondents.....26
7. Frequency of clinic attendance during pregnancy.....27
8. Pregnancy complications for non-clinic attendance.....28
9. Type of complications associated with non-clinic attendance 30
10. Relationship between respondents knowledge for non-clinic attendance and pregnancy outcome.....31
11. Prevention of pregnancy complications.....32
12. Overall clinic attendance.....34
13. Relationship between prenatal clinic and pregnancy outcome.....35
14. Relationship between frequency of prenatal clinic attendance and pregnancy outcome.....35
15. Health care facilities utilized during pregnancy.....37
16. Services offered during clinic attendance.....37

17. Utilization of prenatal care services during delivery.....38

18. Assistants during delivery.....40

19. Factors influencing utilization of prenatal care services.....41

20. Types of medical supplies and equipment at health facilities.....43

21. Pregnancy outcome among the respondents in their last delivery.....44

22. Disorders experienced by the baby at delivery.....45

LIST OF FIGURES

Figure Page

1. Age distribution of respondents.....17
2. Respondents` perception of prenatal care.....24
3. Knowledge of when a pregnant woman should start attending prenatal Clinic by respondents.....25
4. Reasons for home deliveries.....39

APPENDICES

Appendix Page

I. Map of Kitui showing Kabati Division.....56

II . Map of Kabati Division showing study area.....57

III Respondent's structured questionnaire.....58

IV. Health care providers structured questionnaire.....66

V. Assessment of the inventory at the health facilities.....69

VI. Focus group discussion with traditional birth attendants.....70

VII Focus group discussion with childbearing women aged 15-49 years.....71

VIII Letter of authority to carry out research..... 72

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

1.1 General introduction

Prenatal care, a concept of the 20th century has been embraced as a preventive measure against pregnancy complications before and during childbirth (Kenner and Maclean, 1993; Marjorie 1994; Carole ,1993; Kiiru ,1997). It is the care given to a pregnant woman from the time she realizes that she is pregnant until birth (Kiiru, 1997; Marjorie, 1994). The main objective of prenatal care is to assure that every pregnancy culminates in delivery of a normal healthy baby without impairing the mother's health (Kiiru, 1997). The care of the mother from the time of conception until delivery falls into two parts: first a series of antenatal visits must be arranged under supervision, advise and treatment of any identified diseases and secondly, plans must be made to look after the woman during labour. The measures of pregnancy outcome that is perinatal and maternal mortality and morbidity are dependent on quality of prenatal care provided during pregnancy and at delivery (Kiiru, 1997).

The health of the mother and the foetus are closely monitored for deficiencies and illness through indicators such as: examination of blood pressure, height, weight and head to toe examination, early diagnosis of diseases and treatment given to prevent further complications, health education on areas like nutrition in pregnancy, family planning, breast feeding, rest, psychological and physical care. Repeated and regular examination during pregnancy is essential. Ideally a mother who has no complications is examined monthly from her first clinic attendance until the 28th week, every two weeks between 28th and 36th weeks and every week till birth. A minimum of at least six examinations should be insisted upon of which two should be done in the last month (Carole 1993, Marjorie, 1994). In addition prenatal care involves taking personal history, marital status, number of children, present obstetric history,

past obstetric history for example: abortions, haemorrhage, caeserian section and blood transfusions. Medical history involves data collection on tuberculosis, diabetes mellitus, allergies, and smoking among others (Marjorie, 1994; Kiiru, 1997)

In contrast to clients who attend clinic with the aim of producing a healthy baby are those who are at risk of receiving late or no prenatal care. Lack of prenatal care increases the risk of maternal and perinatal morbidity and mortality (Kenner and MacLean, 1993). Complications, which occur during pregnancy and childbirth kill more than 500,0000 women yearly and leave many women with serious and life long disabilities world-wide (WHO, 1997; 1999; 2000;Marjorie, 1994). In Kenya maternal mortality ratio is at 670 per 100,000 lives revealing a high burden of unsafe motherhood (MOH, 1994,1996). However, in Kenya there is no baseline data on knowledge of prenatal care by childbearing women, utilization of prenatal care services and contributing factors to pregnancy complications in rural areas. Hence, there is need to carry out a research to determine influence of prenatal care on pregnancy outcome among childbearing women in rural areas.

1.2 Literature Review

Several studies have shown the value of prenatal care in reducing maternal and perinatal mortality rates (Lederman, 1985; Rooney, 1992; Johnstone and Ochiel, 1990). Lack of or inadequate prenatal care during pregnancy and childbirth is a maternal health seeking behaviour whose public health implications can be devastating. This is determined by several factors that have a significant association with adverse pregnancy outcomes (Obwaka and Ruminjo, 1994; Lederman, 1985). Complications arising from pregnancy and childbirth cause world-wide deaths of between 500,000 and 600,000 women yearly and leave many women with serious and life long disabilities (WHO, 1999; 2000; Bennett, 1979). Some of these disabilities include recto-vaginal fistula, vesco-vaginal fistula, cervical and perineal lacerations, prolonged labour, maternal distress, excessive bleeding before or during labour and ruptured uterus which may lead to lifelong infertility. The outcome of any pregnancy therefore depends on the quality of prenatal care offered during antenatal, intrapartum and thereafter.

Perinatal and maternal mortality and morbidity are used as measures of pregnancy outcome (Johnstone and Ochiel, 1990; Marjorie, 1994). Almost 99% of deaths due to pregnancy or childbirth related complications occur in developing countries (Marjore, 1994). Approximately 80% of these deaths are caused by pregnancy and childbirth related complications such as haemorrhage, sepsis, unsafe abortions, pre-eclampsia, obstructed labour and ruptured uterus (Bergstrom, 1990; World Bank, 1997; Starrs, 1987). Approximately 117,000 of the deaths occur in adolescent women (WHO, 2000). In developing countries, for every woman who dies in pregnancy or from pregnancy related causes, roughly 10-15 others suffer illness or severe disabilities.

Seventy five percent (75%) of the deaths are probably direct obstetric deaths with the rest attributed to pre-existing health conditions aggravated by pregnancy or factors such as malnutrition or lack of access to adequate medical care (Cohen, 1987).

In Africa, 20-30% of maternal deaths are due to unsafe abortions (Makokha, 1994). Other causes of maternal death are indirectly related to pregnancy and include diseases such as viral hepatitis, diabetes mellitus, rheumatic heart diseases, anaemia, malaria, diet, weight gain and kidney diseases which complicate or aggravate pregnancy complications (Starrs, 1987; Makokha, 1994; Cohen, 1987; Guikey *et al.,* 1986; World Bank, 1997). Factors that hinder accessibility to adequate prenatal care include lack of roads, lack of effective communication, long walking distances to the health facility and lack of money. There is lack of a properly organized health insurance scheme for childbearing women (WHO, 1989). Discrimination against women, which is present from birth to adulthood, has adverse socio-economic and political implications that leave women not empowered to make and take independent decisions concerning their health (Makokha 1994; Starrs, 1987;Marjorie, 1994). Thus, decisions about pregnancy, use of prenatal care, delivery services and childbirth are left to men (Okafor and Rizzuto, 1994).

In Africa, 70% of child deliveries take place at home without professional supervision leaving it all to unsupervised traditional birth attendants who have been trained in elementary hygienic routines or are largely untrained (Wendy and Murray, 1997; Starrs, 1987; WHO, 2000). In a study carried out in Nigeria, it was revealed that superstitions and misinformation about pregnancy are still common among practising traditional birth attendants (Okafor and Rizzuto, 1994). Both women and traditional birth attendants were unaware of the signs and symptoms of pregnancy complications, their causes and appropriate treatment. Men were

primarily responsible for all decisions concerning prenatal and delivery services (Okafor and Rizzuto, 1994). There is general lack of a coordinated referral system for life saving obstetric care in pre-eclampsia, eclampsia, haemorrhage, obstructed labour and infections that traditional birth attendants lack knowledge in (Wendy and Murray, 1997). This leads to several deaths arising from these complications. There is overwhelming evidence that appropriate prenatal care can significantly improve pregnancy outcome (Lederman, 1985; Nagatoshi, 1987; Marseden, 1992). A positive relationship between lack of prenatal care and poor pregnancy outcomes persist even when other factors that influence health and possible pregnancy outcome are controlled (Melnikow and Alernagno, 1993; Lederman, 1985; Marjorie, 1994;WHO, 2000).

Studies support the concept that in low risk women, routine prenatal care can reduce the incidence of low birth weight in part by minimizing the effects of medical conditions (Obwaka and Ruminjo, 1994; Lederman, 1985; Nagatosh, 1987). In other studies the effect of maternal age and prenatal care were evaluated in relation to pregnancy outcome with revelation that the influence of prenatal care was stronger than that of maternal age. Early prenatal care had more beneficial effects on pregnancy outcomes for young teenagers than older mothers (Elster and Naugle, 1982; Marjorie, 1994).

In women of low socio-economic status, medical conditions appear to be secondary. Pregnancy outcome such as low birth weight is largely associated with maternal behavioral risks such as dietary habits, smoking, low pregnancy weight gain (Lederman, 1985; Tokuhata *et al.*, 1979). Studies by Rowley (1987) have also found that low rates of contraceptive use contribute to approximately 25-40% of maternal deaths. If contraceptives are used effectively, unwanted pregnancies could be prevented (Rowley, 1987). Other determinants of effective

pregnancy outcome include adequate prenatal care assisted by trained personnel for all women during childbirth and accessibility to appropriate obstetric care for women at higher risk during emergencies related to pregnancy and childbirth (Rowley, 1987; Starrs, 1987). Lack of an effective referral system to deal with essential obstetric emergency care results in pregnancy related complications. High parity, poor maternal health and socio-economic factors can influence pregnancy outcome negatively (Elster and Nangle, 1982). With all these problems facing the vulnerable pregnant women, unless maternity services are effectively coordinated, women are left to deliver at home or at the nearest health facility, irrespective of the existing maternity health services.

In Kenya, just like any other developing country, obstetrical causes of maternal mortalities are the same except the distribution varies from region to region (MOH, 1994; 1996). The emerging picture from multi data sources reveals a high burden of unsafe motherhood with wide regional differentials. The distribution of causes of direct obstetrical death is typical while deaths related to malaria, anaemia, tuberculosis and HIV/AIDS may be more significant than that reported elsewhere (Wendy and Murray, 1997). In Kenya, maternal mortality ratio is 670 per 100,000 live births (MOH, 1994; 1996). However, there are wide differences from district to district due to factors such as type of health facility, health personnel, severity of complication on admission, effectiveness in referral system, denominator used and reporting procedures (Wendy and Murray, 1997). In most of the data, omission, especially in cases of abortion gives false information (Makokha, 1994). Over 30% maternal mortalities in Kenya are not reported because of abortions (a major cause of maternal mortality ratio). Recent figures of crude birth rate and maternal mortality ratios in Kenya suggests that, every year over half a million pregnant women suffer acute obstetric morbidity whereby 194,000

experience life threatening conditions. However, data to gauge maternal morbidity in Kenya are limited, due to limited experience (Graham, 1995; Stewart, 1995). Most pregnant women in developing countries have been denied access to obstetric health care. Good interventions that make a difference should be identified to alleviate the existing situation. Simple essential obstetric care both during pregnancy and at birth must be made available and accessible beyond the confines of formal health structure and its fixed facilities (Poovan *et al.*, 1990). Prenatal care provides an opportunity of reducing the burden of maternal and perinatal mortalities. This care should be provided by well trained birth attendants capable of identifying obstetric complications, dealing with them or referring them to a health facility on time (Royston and Sue, 1989; Rowley, 1987; Marjorie, 1994). Prenatal care, an important area of reproductive health remains neglected in most developing countries (Starrs, 1987). There is therefore need to identify factors associated with maternal and perinatal complications and the knowledge of childbearing women to seek prenatal care services.

1.3 The Research Problem

1.3.1 Statement of the Problem

As much as prenatal care is known to provide an opportunity for reducing the burden of maternal and perinatal morbidities and mortalities, it is still a neglected area of reproductive health in developing countries (Starrs, 1987; Rooney, 1992). Lack of or inadequate prenatal care renders women to suffer irreparable pregnancy complications (Obwaka and Ruminjo 1994). Some women end up dying in pregnancy due to pregnancy related complications while others go into labour with undetected obstetric and pregnancy related diseases. This leads to high prevalence of maternal and perinatal mortalities and morbidities (Starrs, 1987). This affects female life expectancy and creates under-development at household, national and international levels.

In Kenya, prevalence of maternal morbidity is very high revealing a high burden of unsafe motherhood with wide regional differences (MOH, 1994; 1996). Recent figures of crude birth rate and maternal mortality ratios indicate that, over half a million pregnant women suffer acute obstetric morbidity yearly with 194,000 experiencing life-threatening conditions. (Wendy and Murray, 1997; Makokha, 1994). Besides, in many parts of Kenya, maternal mortality ratio is 670 per 100,000 live births while in other developing countries it ranges between 300-1000 per 100,000 live births (MOH, 1994; 1996: WHO, 1997; 2000 and Starrs, 1987). This implies the lifetime risk of a woman in a developing country dying in pregnancy or pregnancy- related illness is one in 25 or 1 in 40 unlike 1 in several thousand risks for women in the developed world. (WHO, 1997; Marjorie, 1994; Starrs1987)

There is therefore need to determine the knowledge of childbearing women and access utilization of available prenatal care services. Factors, which hinder access prenatal care by

childbearing women in Kabati division, Kitui district will be identified .The effect of this scenario on childbearing women and remedial measures will be suggested.

1.3.2 Justification for the study

Women of reproductive age should be able to achieve their reproductive goals. Much effort has been made to provide adequate and equitably distribute health services in form of human resources and health facilities but this has been out stripped by demand (MOH, 1994; 1996). The situation is made by frequent epidemics like malaria, malnutrition and HIV/AIDS among others. Furthermore, women in developing especially those in rural areas are unable to access essential obstetric health care services at the health facilities especially during childbirth (Marjorie, 1994; WHO, 2000).

A global health program on safe motherhood which was launched in Nairobi in 1987 and supported by various international and United Nation agencies attempts to combat the alarming rate of maternal mortality resulting from pregnancy and delivery complications. The initiative aims at providing a forum for addressing various aspects of women's health and welfare at all stages of life (Rojas, *et al.,* 1993). However very little has been achieved in the provision of adequate prenatal care, which is the core of safe motherhood (Lederman, 1985).

There is therefore need to determine the knowledge of childbearing women on prenatal care and assess utilization of available services. Factors, which hinder access to prenatal care by childbearing women in Kabati division, Kitui district will be identified. The effect of this scenario on childbearing women and remedial measures will be suggested. .

1.4 The Study Hypothesis

Prenatal care does not adversely affect pregnancy outcome in childbearing women in rural areas.

1.5 Objectives of the study

1.5.1 General objective

To determine factors associated with high maternal and perinatal complications in Kabati division, Kitui district.

1.5.2 Specific objectives

1. To determine the level of knowledge of childbearing women on prenatal care.
2. To establish the level of utilization of available prenatal care services.
3. To identify factors contributing to maternal and perinatal complications.

CHAPTER TWO: MATERIALS AND METHODS

2.1.1 Study Area and population

This study was carried out in Kabati division, Kitui district, Eastern Province of Kenya (Appendices I and II). Kitui is one of the 12 districts in Eastern Province and borders Machakos and Makueni to the west, Mwingi to the north, Tana River to the east and Taita Taveta to the south. It is located between latitudes 0° 37` and 3° south and longitudes 37° 45`and 39° 0` east. The district covers an area of approximately 20, 555.74 km² including 6,369.1km² occupied by uninhabited Tsavo National Park (Appendix I).

The district has a population of 517,000 persons (MOH, 1999), which gives a density of 25 persons km². The annual population growth rate is 2.19. The number of births registered in 1999 was 17,132 with a death rate of 2269. This gives a birth and death rate of 408/1000; 10.2/1000 respectively (MOH, 1999).Kabati division covers an area of approximately 765.69 km2 and has a population of 124,389 persons.It is divided into 13 locations and 31 sub-locations .The following randomly selected nine sub-locations were covered in the study: Kavuvuu, Musosya, Kauwi, Kalia, Kyondoni, Musengo, Katutu, Kalindilo and Kithimula.

This area was purposively selected since a collaborative project by AMREF -Kenya, under which the researcher was working, had activities in the area. Women in childbearing ages, 15-49 years who had a pregnancy before were interviewed using a pre-tested structured questionnaire. In each sub-location 42-48 were interviewed. Health providers who offer maternity services were also interviewed. Focus group discussions (FGD) were held with childbearing women who were not interviewed and health providers to supplement the data. Interviews were held in randomly selected households and also at the health facility where health providers were asked to complete the structured questionnaires.

2.1.2 Climate

The district can be described as hot and dry most of the year. It is classified as arid and semi-arid with very unreliable rainfall ranging from 500-1050 mm per year. This limits intensive land use and other related development activities. It has minimum annual temperatures of 14°C to 22°C and maximum mean annual temperatures of 30°C to 40°C.

2.1.3 Health facilities and disease incidence

Kabati division has one mission hospital, one health center, two sub-health centers and four dispensaries .The area is vast and these facilities are sparsely distributed. Malaria is the leading disease. Other main diseases include: respiratory conditions, skin and diarrhoeal disorders. Malnutrition is highly prevalent during drought seasons.

2.1.4 Infrastructure

The division is traversed by partly bitumized road that links Kitui town with Thika. The main shopping centers are linked by poorly maintained marrum and earth roads, which are impassable during rain seasons. Old poorly maintained matatus that are irregular and unreliable provide transportation. In the interior areas of the division, ox-carts and bicycles are very handy for transportation.

2.1.5 Sampling procedure

Multistage sampling procedure was applied as follows:

Random sampling of eight locations from13 locations was first done. From the eight locations, nine sub-locations were also randomly selected. At the sub-location level, a

starting point was chosen from where 42 – 48 childbearing women aged 15-49 years were interviewed at household level using pre-tested structured questionnaires. Eight trained research assistants were utilized to collect data

2.1.6 Sample size determination

A sample of 406 women in childbearing age, 15-49 years was randomly selected.

The sample size was determined using the following formula by Fisher *et al.* (1998):

$$n = \frac{z^2pqD}{d^2}$$

Where,

n = Required minimum sample size

z = Standard normal deviate at the required confidence level.

P = The proportion in the target population estimated to have the characteristics being measured. In this study an estimate of 50% was used since there was no estimate available.

q = 1-p

D = 1 (The Design Effect)

D = Degree of accuracy desired (0.05) maximum error allowed at 95% level of confidence (level of statistical significance).

$$n = \frac{1.96^2 \times 0.5 \times 0.5 \times 1}{(0.05)^2} = 384 \text{ (the minimum)}$$

The sample size taken was 406 subjects. This was to account for non-response and attrition.

2.2 Ethical considerations

Permission to collect data was granted by the Department of Zoology, School of Applied and pure Sciences, Kenyatta University. Permission from District Medical Officer of Health, Environmental Health Officer in-charge of AMREF project and District Commissioner was sought before research was started. Study subjects were given informal consent requesting them to participate in the research. Confidentiality was enforced by using numbers on the questionnaires instead of names.

2.3 Study design

This was a descriptive cross-sectional study. Childbearing woman was the unit of sampling and analysis. A description of the behavioral response to prenatal care was determined in relation to pregnancy outcome. This relationship was further explored to describe the factors that determine pregnancy outcome

2.4 Data collection

2.4.1 Data Collection Technique and Procedure

Data collection started from 19th to 28th November 2000.Additional qualitative data was collected from 13th to 16th February 2001.Focus group discussions were held with childbearing women who did not participate in the interviews in three health facilities:Kauwi health center, Matinyani and Katutu dispensaries.One focus group discussion was held with Traditional birth attendants at Kavuvuu sub-location,Kalimani rural health center. Each focus group had 8-10 participants selected randomly and the discussion was recorded on an audiocassette to assist in analysis.

2.4.2 Control of bias

The questionnaire was pre-tested by the principal investigator in Kyambusya sub-location, Kabati division where the study was not going to be carried out. This was done before data collection to ensure clarity of the questions. Local research assistants were also trained who were literate and conversant with the local language and culture. In addition any problems encountered during data collection were evaluated and dealt with during the period of data collection

2.4.3 Training of interviewers

Due to the vastness of the area, research assistants were recruited. An interview was conducted to determine eligible candidates who had to be females who had completed secondary school education and above. Eight research assistants were identified with the help of community elders and trained at Kalimani rural health center for one day. After preliminary training, they were given one day to pre-test the questionnaire after which a discussion was held with the principal investigator to ensure that they understood the questionnaire and how to ask questions.

2.5 Data management and analysis

Questionnaires filled were screened and errors corrected .At the end of data collection period it was entered into the computer using SPSS computer programme (Statistical Package for Social Sciences) for management. The chi- square (χ^2) was applied when relating various factors with the pregnancy outcomes to discern the relationships. The qualitative data from the focus group discussions was transcribed and summarized. The FGD results were collaborated with results from structured questionnaires.

CHAPTER THREE: RESULTS

3.1 Introduction

The aim of this study was to establish the factors that contribute to lack of or inadequate utilization of prenatal care services by childbearing women. A total of 406 women were interviewed in nine sub-locations of Kabati division, Kitui district using structured questionnaire (Appendix III), and Focus Group Discussion Guide (Appendices VI and VII).

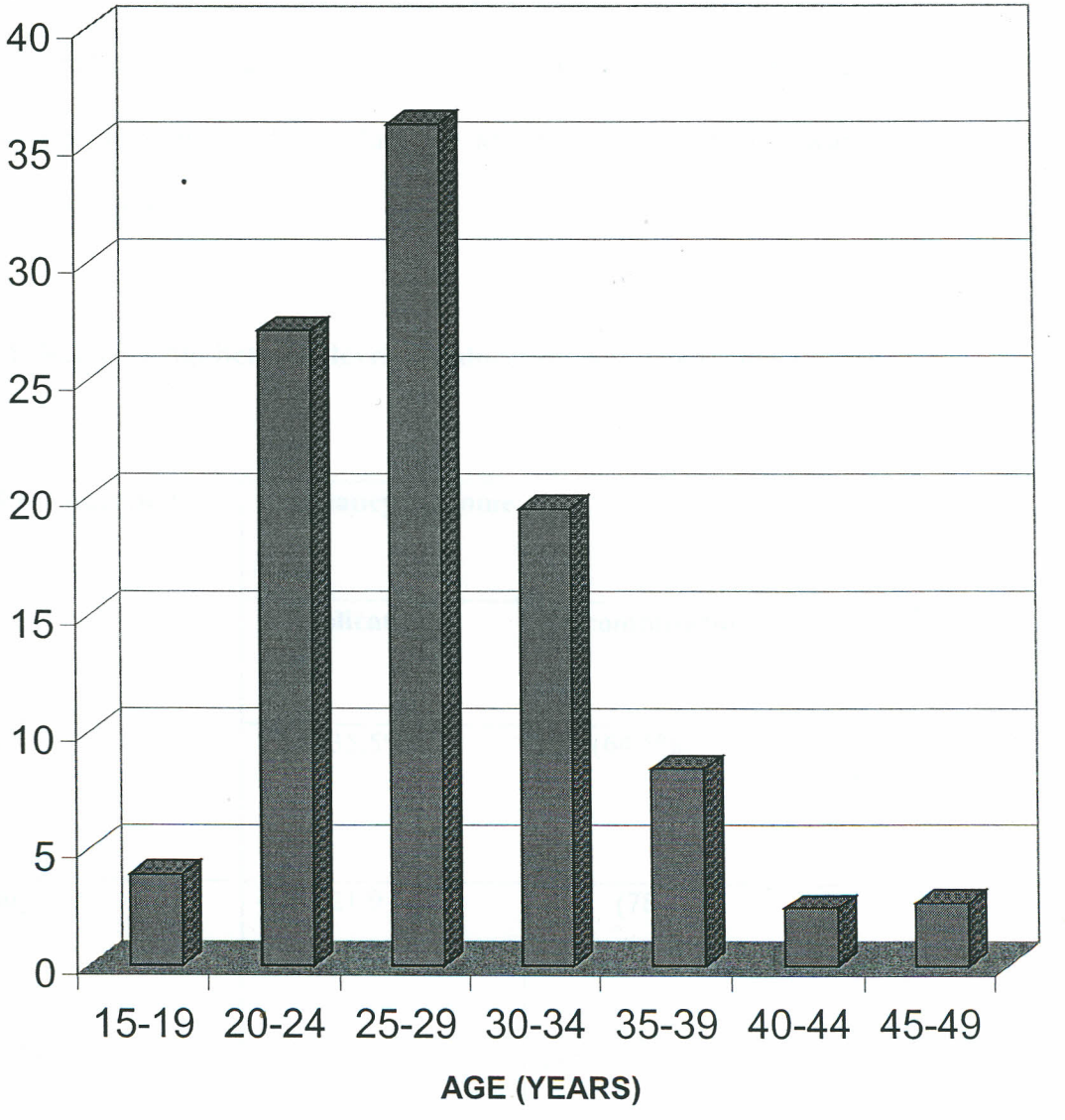
The following results represent the survey of socio- economic and demographic characteristics, knowledge of prenatal care by childbearing women, utilization of prenatal care services and other factors contributing to maternal and perinatal complications.

3.2 Socio demographic and economic characteristics of the respondents.

3.2.1 Respondent age distribution

Respondent distribution among the sub-locations of the study area was almost equal. Majority of the childbearing women were aged between 20-34 years with the highest in age group 25-29 years and lowest aged 40-49 years respectively (Figure 1).

Figure 1: Age distribution of respondents



3.2.2: Level of education

Of the four hundred and six (406) respondents, two hundred and twenty four (55.6%). had primary level of education, one hundred and thirty nine (34.2%) had secondary level of education and only twelve (3%) had attained university/college level of education (Table 1). Relationship between level of education and pregnancy outcome was significant. (χ^2 = 10.520, df = 3, p<0.015)

Table 1: Relationship between levels of education with pregnancy outcome.

Level of education	**Pregnancy outcome**	
	Complications	**No complications**
None	11 (35.5%)	20 (64.5%)
Primary	49 (21.9 %)	175 (78.1)
Secondary	24 (17.3 %)	115 (82.7)
University/college	6 (50%)	6 (50%)

(χ^2 = 1.520, df = 3, P = 0.015)

3.2.3 Respondents marital status

Out of the 406 women interviewed, 84.2% were married and approximately 16% were unmarried. The unmarried group included singles (11.3%), separated (1.5%) widowed (1.7%) and divorced (1.2%).

3.2.4 Respondent number of children

Majority of the women (93.3%) had six children and below with only 6.7% having more than 6 children. The number of children per woman ranged between one and twelve.

3.2.5 Employment status

A high number of women (88.4%) were unemployed. Only forty-seven women (11.6%) were in formal employment as teachers, clerks, nurses and secretaries. Among those employed, 2.5% earned over Kshs. 8,000 per month, while 9% earned Kshs. 8,000 and below per month. One respondent did not know her income (Table 5). Monthly income had no significant influence on pregnancy outcome ($\chi^2 = 5.482$, df = 4, $p<0.241$).

Table 2: Relationship between level of income and pregnancy outcome

Income per month (Kshs)	Respondents with complications	Respondents without complications
Below 1500	1 (8.3%)	11 (91.7%)
1500-3000	6 (50%)	6 (50%)
3001-8000	4 (33.3%)	8 (66.7%)
Over 8001	3 (30%)	7 (70%)
Unknown income	--	1 (100%)

($\chi^2 = 5,482$, df = 4, P = 0.241)

3.2. 6: Income generating activities

Of the four hundred and six women interviewed, 22.7%, had income generating activities while 77.3% did not have. The various income generating activities were: selling second hand clothes, grocery, farming, weaving, shop keeping, dressmaking and selling baskets (kiondo). The results of this study indicate that 31.5 % of women with income generating activities experienced complications at delivery but only 19.4% of women without income generating had pregnancy related complications (Table 3). Relationship between income generating activities and pregnancy outcome was significant

Table 3: Relationship between Income Generating Activities with pregnancy outcome

Income Status	Complications	No complications
Income generating activity	29 (31.5%)	63 (68.5%)
No income generating activity	61 (19.4%)	253 (80.6%)

($\chi^2 = 6.033$, df = 1, $p<0.014$).

3.2.7: Religious affiliation

The respondents belonged to two major religious groups; Protestants 62.6% and Catholics 36.7%. Muslims were a minority representing 0.7% (Table 5). Relationship between religion and pregnancy outcome was highly significant ($\chi^2 = 16.380$, df = 2, $p<001$) (Table 4).. Respondents who were Muslims experienced most complications while Protestants had the least complications.

Table 4: Relationship between religious affiliation and pregnancy outcome.

Religious affiliation	**Pregnancy outcome**	
	Complications	**No complications**
Protestant	41 (16.1%)	213 (83.9%)
Catholic	47 (31.5%)	102 (68.5%)
Muslim	2 (66.7%)	1 (33.3%)

(χ^2 = 16,380, df = 2, P<0.001)

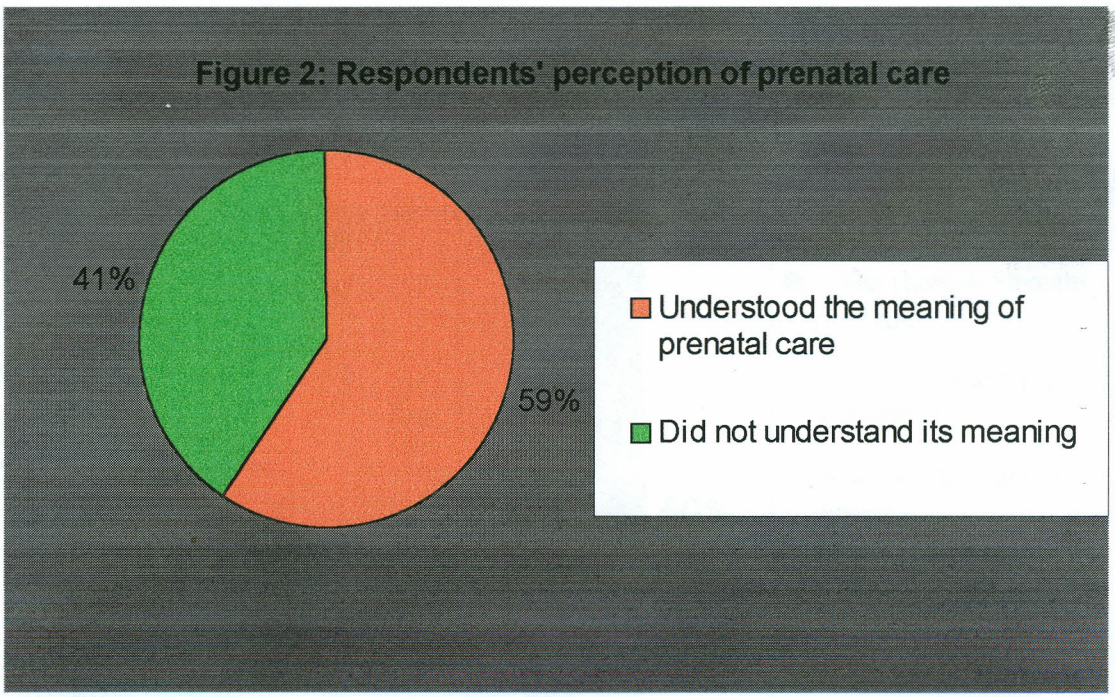
Table 5: The socio-economic and demographic characteristics of the Respondents

Respondents characteristics	No.	%	Respondents Characteristics	No.	%
Level of Education			**Type of Business**		
None	31	7.6	Second hand clothes	6	1.5
Primary	224	55.2	Grocery	13	3.2
Secondary	139	34.2	Shop Keeping	11	2.7
University/College	12	3.0	Farming	5	1.2
			Weaving	10	2.5
			Dressmaking	4	1.0
			Basket making (Kiondo)	17	4.2
			Others	26	6.2
Marital status			**Religious affiliation**		
Single	46	11.3	Protestant	254	62.6
Married	342	84.23	Catholic	149	36.7
Separated	6	1.5	Muslim	3	0.7
Windowed	7	1.72			
Divorced	5	1.23			
Number of children			**Income generating activities**		
Six children and below	379	93.3			
Above six children	27	6.7	Yes	92	22.7
			No	314	77.3
Monthly Income (Kshs)			**Employment status**		
			Employed	47	11.6
Below 1500	12	3.0	Not employed	359	88.4
1500-3000	12	3.0			
3001-8000	12	3.0			
Over 8000	10	2.5			
Don't know	1	0.2			

3.3 Knowledge of utilization of prenatal care services by childbearing women

3.3.1 Perception of prenatal care

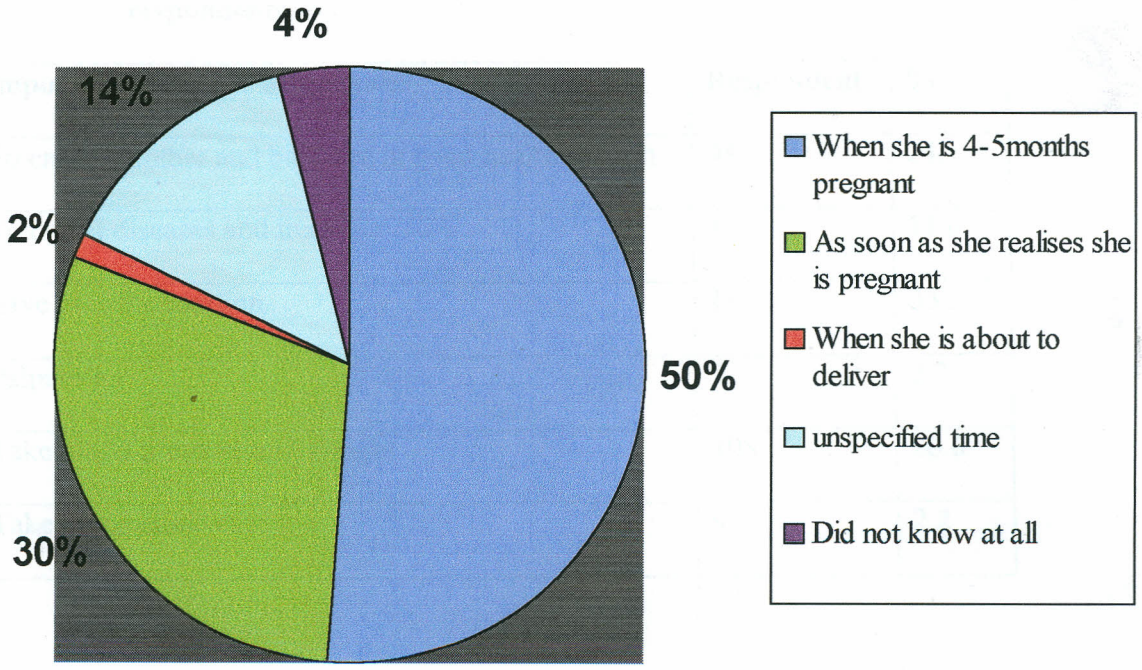
Of the four hundred and six women interviewed, 59.1% had knowledge of prenatal care while40.9% did not have. Among the 40.9% who did not have knowledge of prenatal care, thirty one (7.6%) women interpreted prenatal care to mean the growing of a baby in the uterus, 4.7% women reported it to mean getting a card for hospital delivery, and 28.6% had no idea what prenatal care meant. (Fig.2).



3.3.2 The time to start prenatal clinic.

Majority of respondents, 51.2% reported that a pregnant woman should start attending prenatal clinic when she is 4 – 5 months pregnant. One hundred and twenty women (29.6%) reported that she should start attending the clinic as soon as she realizes that she is pregnant and 1.5% reported that a woman starts attending clinic when she is about to deliver. Fifty six (13.8%) of the respondents reported unspecified times and 3.9% did not report time of starting to attend clinic. (Fig 3).

Fig 3: Knowledge of when a pregnant woman should start attending prenatal clinic.



3.3.3 Importance of prenatal clinic.

Majority of the women, 33.3% understood the importance of prenatal clinic as a means of disseminating health education, 26.6% understood its importance as taking of blood pressure, weight and height and 24.1% attached its importance to ensuring that mother and baby were in good health at birth. Forty seven (11.6%) women understood prenatal clinic as help towards detecting and treating diseases. Nine (2.2%) women understood prenatal clinic as help in getting a card so as to deliver in health facility and 2.2% women understood it as help in palpation of abdomen. (Table 6)

Table 6: Knowledge of importance of prenatal clinic attendance by respondents

Importance of clinic attendance	**Respondent**	**%**
To ensure mother and baby are in good health at birth	98	24.1
To detect diseases and treat	47	11.6
Give health education	135	33.3
Palpation	9	2.2
Take blood pressure and Weight	108	26.6
Take home clinic card	9	2.2

3.3.4 Frequency of clinic attendance during pregnancy

Of the 406 women interviewed, 37.7% reported that a pregnant woman should attend clinic as often as is required by the health provider while 28.8% reported that a pregnant woman should attend clinic more than six times during a normal pregnancy. Seventy eight women (19.2%) reported at least once monthly and 13.8% reported unspecified times. Only 0.5% reported none. (Table 7).

Table 7: Frequency of clinic attendance during pregnancy

Number of respondents	Respondents	%
None	6	0.5
At least once monthly	78	19.2
As often as may be required by health promoter	153	37.7
More that 5-6 times	117	28.8
Others	56	13.8

3.3.5 Pregnancy complications for non – clinic attendance

Three hundred and forty seven women (85.5%) had knowledge of pregnancy complications, which could occur due to failure to attend prenatal clinic while 14.5% were ignorant of the negative effects of lack of prenatal care. (Table 8). The relationship between knowledge of complications that could arise due to non – clinic attendance and pregnancy outcome was significant ($\chi^2 = 8.521$, df = 1, P<0.014).

Table 8: Pregnancy complications for non – clinic attendance

Knowledge of Complications for non-clinic attendance	**Respondents**	**%**
Yes	347	85.5
No	59	14.5

3.3.6 Type of complications that could arise for non – clinic attendance.

Respondents were able to describe the various complications that could arise for none clinic attendance. These included: malpresentation (34.2%), high blood pressure (6.1%), diseases like anemia, tuberculosis and diabetes (14.1%), viral diseases (2.7%), death in uterus (14.1%), excessive bleeding (13.6%), death of woman before or during birth (4.4%) and malformation (0.2%) (Table 9).

3.3.7 Relationship between respondent knowledge of complications for non – Clinic attendance and pregnancy outcome.

From three hundred and forty seven respondents (20.5%) who had knowledge of complications for non-clinic attendance reported experiencing complications while 79.5% did not experience complications. However, among 14.5% women who did not have knowledge on complications, 32.2% experienced complications while 67.8% did not have complications. Relationship between knowledge of complications and pregnancy outcome was significant ($\chi^2 = 8.521$, df = 1, $p = 0.014$) (Table 10).

Table 9: Complications associated with for non-clinic attendance

Type of complication	Respondent	%
Malpresentation	141	34.2
Placenta praevia	44	10.7
High blood pressure	25	6.1
Diseases like anaemia, TB and diabetes	58	14.1
Viral diseases	11	2.7
Death of baby in uterus	58	14.1
Excessive bleeding	56	13.6
Death of mother before and during birth	18	4.4
Malformation	1	0.2

Table 10: Relationship between respondent knowledge of complications for non-clinic attendance and pregnancy outcome.

Knowledge of complications due to non-clinic attendance	Pregnancy Outcome	
	Complications	No complications
Had knowledge	71 (20.5%)	276 (79.5%)
No knowledge	19 (32.2%)	40 (67.8%)

($\chi^2 = 8.521$, df = 1, P = 0.014)

3.3.8 Prevention of pregnancy complications.

Of the 406 women interviewed 55.5% respondents reported that proper and early prenatal care could prevent complications, 23.4% women reported that health education to pregnant women could prevent pregnancy complications. Eleven (3.8%) women reported that immediate treatment of pregnancy complications could prevent adverse pregnancy outcome and 7% reported that pregnant women should be encouraged to have hospital delivery. Twenty-nine (10.1%) women did not know how to prevent pregnancy complications (Table 11). From this information, it is observed that a high number of women 10.1% did not know how complications could be prevented. Failure to know that laboratory investigations could prevent complications was observed. Only 3.8% knew that immediate treatment of pregnancy complications could prevent adverse pregnancy outcome.

Table 11: Prevention of pregnancy complications.

Knowledge of prevention of complications	Respondents	%
Proper health education to pregnant women	67	23.4
Early prenatal care	159	55.5
Immediate treatment of complications	11	3.8
Encourage hospital delivery	20	7.0
Don't know	29	10.1

3.4 Utilization of prenatal care services during pregnancy

3.4.1 Clinic attendance

As shown in table 12, three hundred and ninety one (96.3%) attended clinic and fifteen (3.7%) did not. Among the 391 women who attended prenatal clinic, eighty two women (21%) experienced complications compared to 53.3% women who did not attend prenatal clinic and experienced complications. This suggests that clinic attendance positively influenced pregnancy outcome (χ^2= 8.768, df=1, P<0.003) (Table 13).

3.4.2 Time of starting clinic attendance

Of the 406 women interviewed, two hundred and four (50.2%) first attended clinic during the second trimester (4-6months of pregnancy), 21.7% attended clinic during the first trimester (1-3months of pregnancy); 17.2%) attended clinic late in pregnancy; (7-9 months of pregnancy) and 7.1% attended clinic at unspecified intervals during pregnancy. Fifteen (3.7%) women did not attend prenatal clinic at all (Table 12).

3.4.3 Frequency of clinic attendance

Two hundred and ninety six women (72.9%) attended the clinic more than six times during the pregnancy, 6.7% respondents reported at least one visit during the last month of pregnancy and 16.7% attended clinic for unspecified time. Fifteen women (3.7%) did not attend clinic at all. (Table 12) The relationship between frequency of clinic attendance and pregnancy outcome was significant. (χ^2 = 8.398, df = 3,p = 0.038). (Table14). Of the fifteen women who did not attend clinic ,at least 73.3% experienced complications compared to 81.5% women who attended

clinic at least once during pregnancy and had no complications. In addition 76.7% of the women who attended clinic more than six times did not experience complications.

Table 12: Overall clinic attendance

Start of clinic attendance.	1-3months	88	21.7 %
	4-6 months	204	50.2
	7-9 months	70	17.24
	Unspecified time	29	7.1
	None	15	3.7
Frequency of clinic attendance.	At least once near time of delivery	27	6.7
	More than six times	296	72.9
	Unspecified times	68	16.7

Table 13: Relationship between prenatal clinic attendance and pregnancy Outcome

Pregnancy outcome		
Clinic Attendance	**Complications**	**No complications**
Attendance	82 (21%)	309(79%)
Non-attendance	8 (53.3%)	7(46.7)

($\chi^2 = 8.768$, df = 3, P<0.003)

Table 14: Relationship between frequency of prenatal clinic attendance and Pregnancy outcome.

Frequency of clinic attendance	**Pregnancy outcome**	
	Complications	**No Complications**
Not at all	11(73.3%)	4 (26.7%)
At least once nearing delivery	5(18.5%)	22(81.5%)
More than six times	69(23.3%)	227(76.7%)
Unspecified times	5(7.4%)	63(92.6%)

($\chi^2 = 8.398$, df = 3, p<0.038)

3.4.4 Place of clinic attendance

Majority of the women (96.3%) utilized prenatal care services. Clinic attendance was sought from the health centre/dispensaries, hospitals and private clinics as follows: 58.1%, 35.5% and 2.7 respectively. (Table 15.)

3.4.5 Services offered during clinic attendance.

Two hundred and thirty five women, (37.5%) reported that monitoring of blood pressure, weight and height measurements were the services offered. One hundred and seventeen (18%) reported that palpation for position; lie and presentation of the baby were taken. Sixty one (9.8%) were treated for various existing diseases,eg High blood pressure,anaemia and sexually transmitted diseases.Ninety three (14.9%) women were administered with tetanus toxoid immunization. Forty six (7.4%) had laboratory investigations carried out whereby blood was screened for haemogramme, blood group and sexually transmitted diseases like syphilis. Eighteen (2.9%) women were screened for diabetes and kidney diseases. Fifteen (2.4%) women were given health education on diet, exercises, pregnancy complications, labour and subsequent care of the baby. Forty (6.4%) women did not know the services that were offered (Table 16).

Table 15: Health care facilities utilized during pregnancy.

Place of clinic attendance	Respondent	%
Health centre/dispensary	236	58.1
Hospital	144	35.5
Private Clinics	11	2.7
Non-clinic attendants	15	3.7

Table 16: Services offered during clinic attendance.

Prenatal care services offered during clinic.	Respondent	%
Screening Hb, blood groups, STDs.	46	7.4
Weight, blood pressure and height	235	37.6
Urinalysis for diabetes and kidney diseases	18	2.9
Tetanus toxoid	93	14.9
Palpations for lie, position and presentation	117	18.7
Treatment for existing diseases like tuberculosis, malaria, anaemia.	61	9.8
Health education on diet, exercises, pregnancy complications.	15	2.4
Didn't know	40	6.4

3.4.6: Utilization of prenatal care services during delivery

Of the four hundred and six women interviewed, 66.3% delivered at home during their last delivery, while 33.7%) delivered at health facility. Further more, in previous deliveries, 77.3% reported to have delivered at home.

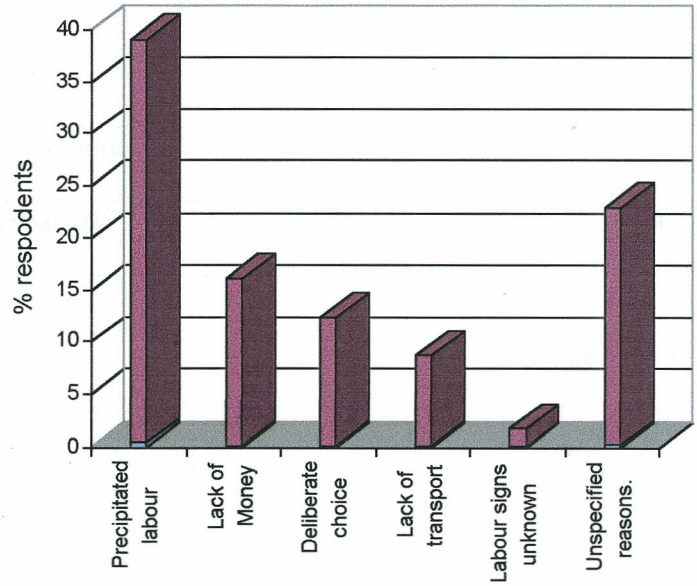
Table 17: Utilization of prenatal care services during pregnancy

Place of last delivery	**Respondent**	**%**
At home	269	66.3
At health facility	137	33.7

3.4.7 Reasons for home deliveries

Respondents interviewed had various reasons for home deliveries. These included: precipitated labour (38.7%), lack of money (16%), deliberate choice (12.3%), lack of transport (8.6%), lack of knowledge on the signs of labour (1.7%) and other unspecified reasons (22.7%) (Fig4). Focus group discussions with Traditional Birth Attendants (TBAs), reported that women mainly delivered at home because of lack of money and transport to health facilities. In the whole Kabati Division, there was only one health care centre where women could go to deliver.

Figure 4: Reasons for home deliveries



3.4.8 Assistants during delivery

Majority of the women sought assistance from untrained birth attendants. One hundred and ninety five women (48%) delivered with the assistance of Traditional Birth Attendants (TBA) while trained health personnel assisted 5.9%. Thirteen women (3.2%) had self-deliveries, 3.4% could not remember who assisted them during delivery and 16.7% were assisted by relatives or neighbours (Table 18).

Table 18: Assistants during delivery

Assistant	Respondents	%
Traditional birth attendants	195	48.2
Relative/neighbours	68	16.7
Self delivery	13	3.2
Trained health personnel	24	5.9
Others (e.g. herbalist)	14	3.4

3.5 Factors that determine utilization of prenatal care services

Utilization of prenatal care services was influenced by: lack of understanding the importance of prenatal care (39.4%), lack of money (21%), lack of transport (10.1%), lack of time (2.7%), long walking distances to health facilities during delivery (9.2%), lack of equipment at the health facility (1.4%) and 16.2% women had no tangible reason for non-utilization of prenatal services. (Table 19).

Table 19: Factors influencing utilization of prenatal care services.

Factors	Respondents	%
Long walking distance	51	9.2
Lack of transport	56	10.1
Lack of money	116	21.0
Lack of equipment at the health facility	8	1.4
Lack of time	15	2.7
Lack of understanding of the importance of prenatal care	218	39.4
No good reason	87	16.2

3.6 Referral System

In terms of existence of referred system, 3 out of 5 health facilities had complete referral system from dispensary to health facility, or health facility to district hospital 1/5. There were no referrals involving TBA in the whole study area. Overall, referrals were low and some of the contributing factors included lack of transport, long walking distance and lack of communication services such as telephone. Problems encountered by health providers during referral were the same as those encountered by pregnant women when seeking prenatal care services (Table 19).

3.7 Inventory at health facility

At the five health facilities visited basic medical supplies such as cotton wool, methylated spirit, needles, syringes and simple equipment were lacking. Some of the facilities like dispensaries were not designated to offer prenatal care services in form of laboratory services. Emergency obstetric drugs were lacking in all the four dispensaries. Kauwi, the only heath centre in the division had injectable ergometrine, which is used in emergencies to stop excessive bleeding after delivery.

Intravenous blood giving sets which are very necessary when a patient is in shock either due to excessive bleeding or exhaustion with low blood sugar, were only found in Kauwi health centre. Katutu and Kauma dispensaries were found to lack all the emergency drugs while Matinyani and Kyondoni dispensaries had only piriton and adrenaline, which are important in case of anaphylactic shock. However, they did not have ergometrine or syntometrine, drugs, which assist in uterine contraction to stop bleeding immediately after delivery. A drip stand and delivery trays were not found in any of the health facilities visited (Table 20).

Table 20: Types of Medical supplies and equipment at health facilities

Medical supply/equipment	Present	Missing	Remarks
1. Emergency drugs:			
i. Ergometrine	1	4	Present at Kauwi health centre
ii. Syntometrine	-	5	Missed in all health facilities
iii. Hydrocortisone	-	5	Absent in all health facilities
iv. Adrenaline	2	3	Present at Matinyani and Kyondoni dispensaries.
v. Piriton	2	3	Present at Matinyani and Kyondoni dispensaries
vi. Lasix	-	5	Absent in all health facilities.
2. Disinfectants	3	2	Present in three, Matinyani, Kyondoni and Kauma.
3. IV/blood giving sets	1	4	Present in Kauwi health centre.
4. Equipments:			
i. Drip stand	-	5	Absent in all health facilities
ii. Delivery couches	3	2	Present at Matinyani, Kauwi and Kauma.
iii. Examination couches	3	2	Present at Matinyani, Kauwi and Kauma.
iv. Thermometers	4	1	Present at Katutu, Kyondoni, Matinyani and Kauma.
v. Blood pressure machines	5	-	Present in all health facilities
vi. Delivery scissors	2	3	Present at Kauwi and Matinyani.
vii. Weighing scales	2	3	Kauwi and Matinyani
viii. Delivery trays	-	5	Absent in all health facilities
5. Other supplies:			
i. Syringes and needles	5	-	Present in all health facilities
ii. Cotton wool	3	2	Present at Matinyani, Kauwi and Kauma.
iii. Sanitary pads	5	-	Present in all health facilities.
iv. Cod clamps	1	4	Present at Kauwi health centre.
v. Files	1	4	Present at Kauwi health centre.

3.8 Pregnancy outcomes reported by women during the last delivery.

Ninety (22.2%) of the interviewed women experienced complications during their last delivery while 78.8% did not have any complications. Different types of complications that were experienced by the women included: prolonged labour (45.75%), maternal distress (21%), excessive bleeding (18.8%) and malpresentation (14.5%) (Table 21). Relationship between utilization of prenatal care services and pregnancy outcome was highly significant. ($\chi^2 = 8.521$, df =1, $p<0.003$) (Table 13). This suggests that prenatal clinic attendance positively influence pregnancy outcome. However, utilization of prenatal care services during delivery made no significant difference.

Table 21:Pregnancy outcome among the respondents in their last delivery

Disorder	**Respondent**	**Percentage of respondents**
Maternal distress	29	21
Excessive bleeding	26	18.8
Prolonged labour	63	45.7
Malpresentation	20	14.5

3.9 Disorders experienced during delivery

Of the 406 women interviewed, (10.3%) reported that their babies had complications at delivery. Complications experienced by the baby included: prematurity (23.8%), failure to cry at birth (26.2%), stillbirths (26.2%) and abortions (9.5%) (Table 22).

Table 22: Disorders experienced by the baby at delivery

Disorder	Respondent	%
Prematurity	10	23.8
Failure to cry at birth	11	26.2
Stillbirth	11	26.2
Abortions	4	9.52
Other	6	14.3

From the outcome, failure to cry at birth and stillbirths were closely related to prolonged labour which was the highest disorder experienced by women during childbirth.

CHAPTER FOUR: DISCUSSION

4.1 Knowledge of utilization of prenatal care services by childbearing women

In general, women's perception of prenatal care, knowledge on when to start attending prenatal clinic and its effectiveness in preventing pregnancy complications was found to be inadequate. However, women who understood the complications that could arise due to non-clinic attendance had less chances of having complications than women who did not understand (χ^2= 8,521, df= 1, p<0.014).

4.2 Utilization of prenatal care services by childbearing women

The severity and multiplicity of complications experienced by pregnant mothers in Kabati division and the high rates of mortality and morbidity at childbirth may in part be due to inadequate prenatal care during pregnancy and childbirth. This may result in devastating public health implications as suggested by the result of Obwaka *and Ruminjo*; 1994; Marjorie,1994. Overall, the results of this study indicate that most women (96.3%) attended prenatal clinic. However, women attended clinic late in pregnancy (4-6months of pregnancy). Additional information on clinic attendance was given by health providers and traditional birth attendances during focus group discussions. They reported that women could start attending prenatal clinic as late as seventh or ninth month of pregnancy However, 66.3% women could not access prenatal care at the health facility during delivery. Furthermore, 94.1% assistance during delivery was mainly offered by untrained birth attendants like Traditional birth attendants (TBA's), relatives and neighbours. This exposes women to otherwise avoidable and

preventable complications if trained birth attendants attend to them .In a study by Rowley (1987) it was found that adequate prenatal care assisted by trained personnel for all women in child birth and accessibility to appropriate obstetric care for women at risk could prevent adverse pregnancy outcomes. Also a study by Mahler (1987) showed that less than 50% of the world's women receive prenatal care by trained personnel during delivery. TBA's should therefore be trained in elementary hygienic practices and on how to identify obstetric complications and to deal with them or refer them to a health facility. This concurs with the findings of Poovan *et al.*, (1990) who suggested that simple obstetric care both during pregnancy and at birth must be made available and accessible beyond the confines of formal health structure and its fixed facilities. In a study by Feyi–Waboso (1989), it was found that Traditional Birth Attendants (TBA`s) were illiterate and lacked knowledge on aseptic child delivery techniques, since their practice was acquired through working with other TBAs. This practice may lead to long term outcomes as observed in Southern Nigeria where non-sterile deliveries and history of obstetric care through traditional birth attendants caused 90% of infertility and gynaecological consultations of tubal factor due to non sterile delivery (Feyi – Waboso, 1989). From the results of this study, it is evident that women received inadequate prenatal care at birth since trained birth attendances were few, and trained. Traditional birth attendances were only found in one sub–location, Kavuvuu.

4.3. Factors that contributed to maternal and perinatal complications

The level of education and income greatly determined the woman's choice of where and when to go for prenatal care both during clinic attendance and delivery. For example, none of the

university graduates had home deliveries nor did they have self-deliveries.

Income of the childbearing women was found to be low. Only 11.6% of the interviewed women were employed and 22.7% had income generating activities. This implies a high level of poverty among childbearing women and accounts for the many home deliveries reported in this study. Relationship between level of education and pregnancy outcome was positively significant ($\chi^2 = 10.520$, df = 3, $p<0.015$). This agrees with a study by WHO, 2000 which states that 70% of deliveries take place at home without professional supervision due to low income levels among pregnant women. The low socio-economic status of pregnant women forced them to rely on men for every decision concerning prenatal clinic attendance and where to deliver. Furthermore, focus group discussions revealed that very few men discussed prenatal care issues since they felt that this was a woman's problem. Consequently, women were forced to deliver at home since the majority did not have income. This resulted in many deaths due to childbirth at home. The results of this study compare and agree with the findings of Okafor and Rizzuto, (1994), who reported that men were mainly responsible for all decisions about the prenatal clinic and delivery services. Other factors which contributed to underutilization of prenatal care services were: lack of money, transport, long walking distances and lack of awareness of signs and symptoms of labour by both pregnant women and untrained birth attendants. Referral system was ineffectively coordinated due to lack of effective communication network such as telephone services, transport and long walking distances. In a study by Rukaria and Cheseremi (1993), it was reported that adequate referral and timely treatment in emergency obstetric complications is essential but lacks in African medical settings. While there has been some progress, the challenge to get country level safe motherhood programmes rapidly in place

remains. In addition, supplies in form of equipment at the health facility were inadequate. A study by Melnikow *et al.,* (1993) on adequacy of prenatal care among the city women in USA reported that lack of or inadequate prenatal care was a recognized risk factor for infant mortality and low birth weight. Inadequate prenatal care was independently associated with lack of medical insurance, and use of contraceptives by childbearing women. Among the women who attended prenatal clinic in this study, 21% experienced pregnancy related complications compared to 53.3% of non-clinic attendants ($\chi^2 = 8.768$. df = 1, $p<0.003$). These results suggest that prenatal clinic attendance reduces pregnancy and childbirth complications.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1:Conclusions

1. Women's perception of prenatal care and knowledge on when to start attending prenatal clinic was found to be low
2. Overall clinic attendances were found to be high. However, majority of the women started attending clinic late (4-6 months of pregnancy) and as late ninth month of pregnancy. Some women did not attend clinic at all .In addition laboratory investigations and health education talks were inadequate during prenatal clinic attendance
3. Prenatal care service offered during delivery were inadequate with majority of the women delivering at home under the care of untrained birth attendants. This endangered the lives of both the mother and the baby.
4. Access to prenatal care services especially during delivery was hampered by factors like: lack of transport, money, long walking distances and lack of time.
5. Referral system was ineffectively coordinated since there was lack of communication system. Hence women in labour were not referred for emergency obstetric care despite the fact that they had complications.

5.2 Recommendations

1. There is need for mass education on proper utilization of prenatal care services among childbearing women.
2. Childbearing women should have adequate laboratory investigations and health education during prenatal clinic attendance.
3. Early prenatal care should be encouraged (18-20 weeks of pregnancy) and high frequency of clinic attendance should be emphasized..
4. TBA's should be trained on elementary hygienic practices, on how to identify obstetric complications and to deal with them or refer them to a health facility.
5. Prenatal care services should be decentralized to communities to enable pregnant mothers be attended by skilled health providers.
6. Health facilities should be properly equipped and well staffed with skilled health providers.

5.3 Research Recommendations

There is need to carry out research to determine knowledge level of the TBA and the factors that influence the area population preference for TBA.

The findings obtained from this study are of utmost importance for further research and for the health care practice amongst reproductive health workers in this region and elsewhere.

REFERENCES

Bennet, F. J. 1979. Community Diagnosis and Health Action. *A Manual for Tropical Rural areas, London.*

Bergstrom, S. 1990. Research on material morbidity in developing countries: *a global priority AKART /NINGEN (4), 87, 14: 1175-6.*

Carole,A.K. & A.Maclean.1993.Essestials of Maternal and neonatal nursing *.Published by Spring house corporate , III Bethlehem Pike(USA).*

Cohen, S. A. 1987. The safe motherhood conference. *The International Family Planning Perspectives, 13 (2): 68-70, Nairobi.*

Elster, A.& B.Nangle. 1982. The effect of maternal age and prenatal care on infant outcome at primiparous adolescents. *Paper presented at Society for Adolescent Medicine Annual Meeting October, 1983.*

Feyi – Waboso, M. 1989. Traditional Birth Attendants. *Lancet, 15:162.*

Fisher, A. A., Laing, J. E., Stoeckel, J. E. & J. W.Townsend. 1998. Hand book for Family Planning operations Research Design *2nd Edition, Population Council New York.*

Graham, W. J. 1995. Asking Questions about Women's Reproductive Health in Community Based Surveys. Guidelines on Scope and Content. *MCEV, London School of Hygiene and Tropical Medicine, London, 6:1-79.*

Guilkey, D. K., Popkin, B. I. M., Akin, J. S. & E. L. Wong. 1986. Prenatal care and pregnancy outcome on Philippines. Population Association of America, *San Fransisco, California, 39(19) p.*

Johnstone, F. D. & S. O. Ochiel 1990. Perinatal mortality at Kenyatta National Hospital. *East African Medical Journal 57: 119.*

Kiiru, J.M. 1997. Obstetric long commentary.Pregnancy outcome in Kiambu district Hospital,central Kenya(Masters Thesis)

Lederman, S. A. 1985. Prenatal care and pregnancy outcome. *New York, Columbia University Centre for Population and Family Health (27)p.*

Mahler, H. 1987. Towards safe motherhood: A call for action. *Profamilia 3:20-3.*

Makokha, A. E. 1994. Causes and prevention of maternal mortality in Kenya. *USAID/FH 1: 1-186.*

Majorie, T. 1994. Safe childbirth ? *A critic history of maternity care .Printed in Great Britian by TJ Press Cornwall*

Marsden, S. 1992. Quality of antenatal care and outcome of pregnancy at Coast Provincial Hospital (Thesis).

Melnikow J. & S.Alemagno 1993. Adequacy of prenatal care among inner city women. Department of Family Practise, Metro Health Medical Center, Cleveland, OH. J. Farm Pract (United States) December 1993 37:575-82.

Ministry of Health .1994. Kenya's Health Policy Framework. *Government of Kenya 1-5.*

Ministry of Health .1996. National Reproductive Health Strategy 1997 – 2000. *Government of Kenya: 3-57.*

Ministry of Health .1999. District Health Annual Report. Kitui district.

Nagatoshi, C. T. 1987. The role of Medicaid in pregnancy outcomes. *Ann Arbor, Michigan, University Microfilms International, XIII, 170p.*

Obwaka, W. L. & J. K.Ruminjo 1994. Facts associated with still births and 24hour neonatal deaths. *East African Medical Journal, 75: 453-457.*

Okafor, C. B. & R. R.Rizzuto. 1994. Women's and Health care provider's views on maternal practices and services in rural Nigeria. *Studies in Family Planning, 25:353-61.*

Poovan, P., Kifle, F. & B. E.Kwasi. 1990. Safe motherhood. *World Health Forum, 11: 440-5.*

Rojas, P., Mwalali, P. & I. Camaror. 1993. The Lesotho Safe Motherhood Initiative: an experience of collaborations. The Health of women and Safe Motherhood. *Kenya Medical Women's Association, 103.*

Rooney, C. 1992. Antenatal care and maternal health: How effective is it? A review of evidence. *WHO, Division of Family Health, Maternal Health, and Safe Motherhood Programme (1992). 74p.*

Rowley, J. 1987. A death every minute. *People 14:3-7.*

Rukaria., Kaumbutho R. & E.Cheseremi. 1993. Safe Motherhood Initiative in the African Region. *Kenya Medical Women's Association International, Nairobi, Kenya: 97.*

Samsonakpan, U. S. 1993. Low socio-economic family status as a major setback to safe motherhood. (Medical Women's Association Family Care International, Nairobi, Kenya). *Kenya Medical Women's Association, 97.*

Starrs, A. 1987. Preventing the tragedy of maternal deaths. *A report on the International Safe Motherhood Conference, Nairobi, Kenya.*

Stewart, M. K. 1995. Validation study of women's reporting and recall of major obstetric complications treated at the Philippine General Hospital. *International Journal of Gynaecology and Obstetrics: Supp, 48: 553-566.*

Tokuhata, G. K., Smith, M. W., Kigon, E., Ham, K. S. & T.Hu. 1979. Factors affecting pregnancy outcome. *Some new evidence presented at the 107th Annual Meeting of American Public Health Association, New York, 33p.*

Wendy,J.,Graham., Susan, F. & Murray 1997. A Question of survival: *A Review of safe motherhood in Kenya.*

World Health Organisation (WHO). 1989. Preventing maternal deaths. *Edited by Erica Royston and Sue Armstrong. Published in Geneva, Switzerland.*

World Health Organisation (WHO). 1999. Reduction of maternal mortality. *A joint WHO/UNFPA, UNICEF, World Bank Statement, Geneva.*

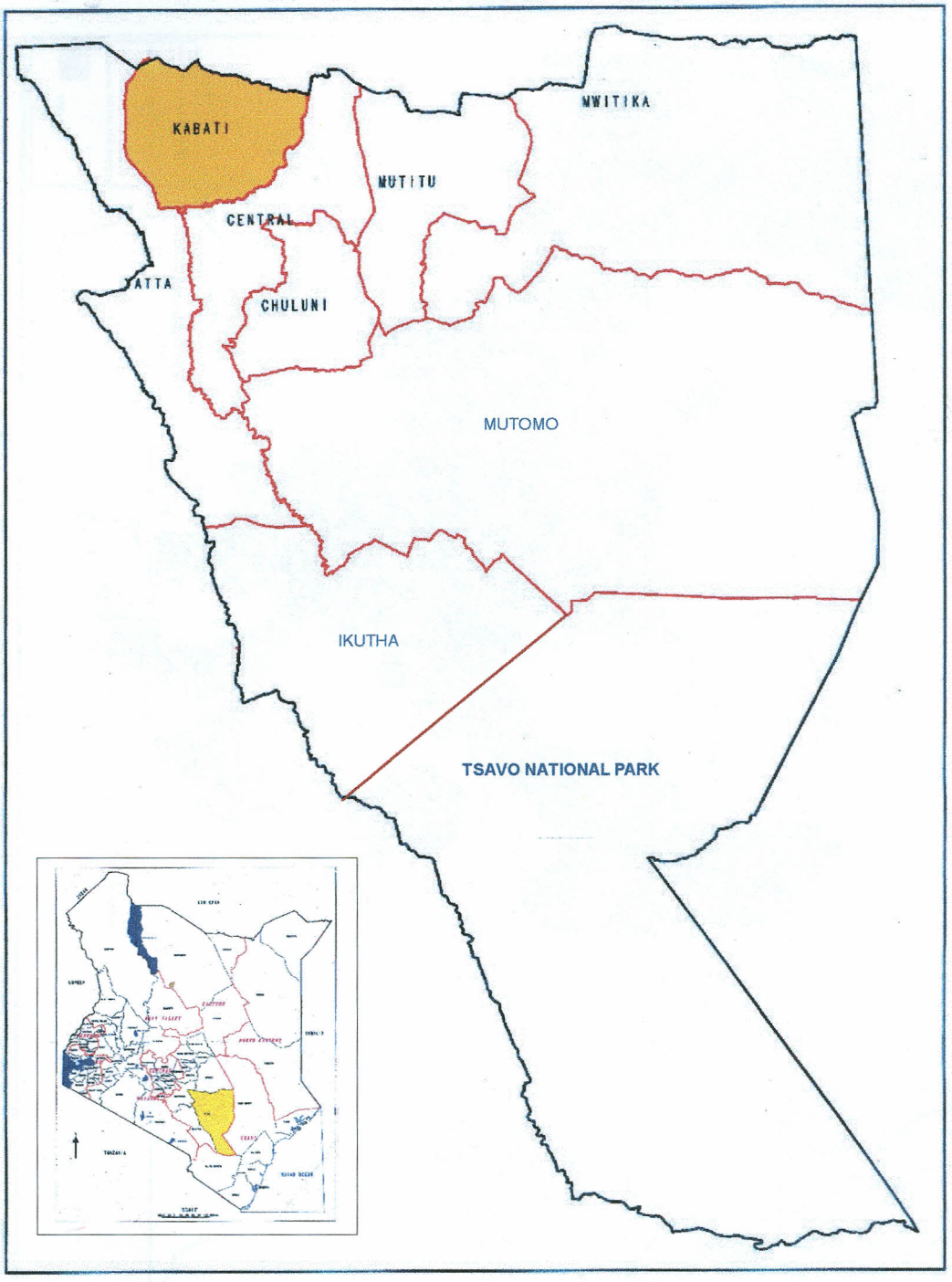
World Health Organisation (WHO). 1999. Organizing delivery care. What works for safe Motherhood? *Geneva.*

World Health Organisation (WHO). 2000. Making pregnancy safe. A health sector strategy for reducing maternal and prenatal morbidity and mortality, *Geneva.*

World Bank. 1997. A New Agenda for women's Health and Nutrition by World Bank. *Published in Washington, D.C.*

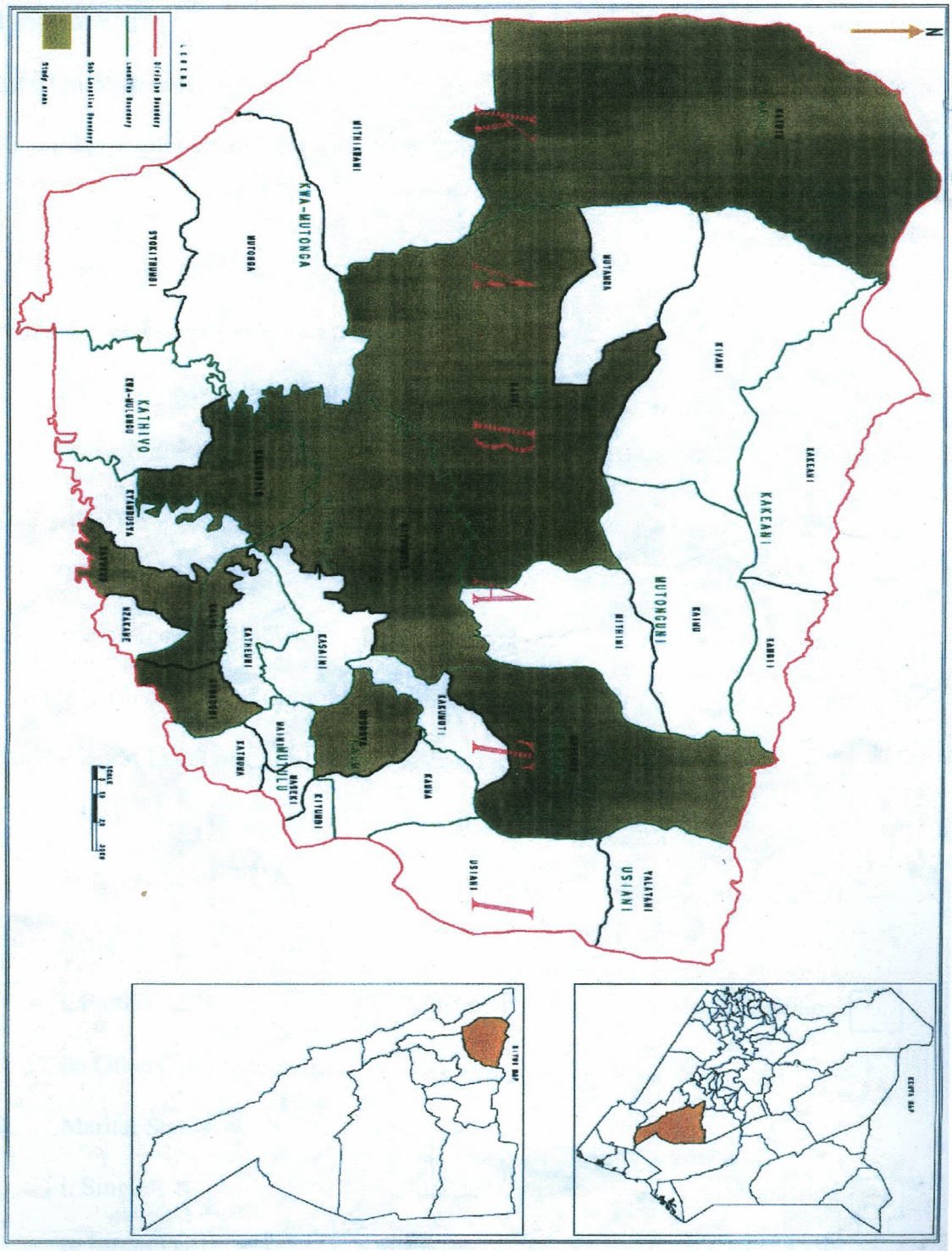
APPENDIX I

Map of Kitui showing Kabati



APPENDIX II

Map of Kabati Division showing study area



APPENDIX III

Study Questionnaire

The influence of prenatal care on pregnancy outcome in a rural area in Kitui District.

1. Name of Interviewer

Section 1: Socio- economic and demographic data

2. Study number of the client ☐ ☐ ☐

3. Name of the client.....

4. Household number ☐ ☐ ☐

5. Sub-location.....

6. Location.....

7. Age (In completed years) ☐

8. Highest Level of education (put X or a Tick)

   i. None ☐ ii. Primary ☐

   iii. Secondary ☐ iv. University/college ☐

9. Religion (Put X or a Tick)

   i. Protestant ☐ ii. Muslim ☐ iii. Catholic ☐

   iv. Others, specify.....

10. Marital Status (put X or a Tick)

    i. Single ☐ ii. Married ☐ iii. Separated ☐

    iv. Widowed ☐ v. Divorced. ☐

11. Are you employed?

Yes ☐

No ☐

12. If yes, what do you do?

i. Unskilled labourer ☐ ii. Clerk ☐ iii Professional ☐

iv. Other Specify.....

13. What is your monthly net income?.....

14. Are you involved in any income generating activities?

Yes ☐

No ☐

15. If yes, specify.....

16. If your spouse employed?

Yes ☐

No ☐

17. If yes, what does he do?

i. Unskilled labourer ☐

ii. Clerk ☐

iii. Professional ☐

iv. Other specify.....

18. What is his net pay?.....

Section II: Causes of majority of deliveries which occur at home

19. How many deliveries have you been able to carry?

.....

20. Have you had any abortion? (Put X or a tick)

Yes ☐

No ☐

21. If yes, what cause it?

.....

22. How many children are alive?.....

23. Have you ever had a home delivery?

Yes ☐

No ☐

24. If yes, why did you deliver at home? Specify.....

25. Who delivered you?

i. Self ii. Relative ☐ ii. Relative ☐

iii. Traditional Birth Attendant ☐ iv. Midwife ☐

v. Other, specify.....

26. When was your last delivery?.....

27. What do you understand by the term prenatal care?

.....

28. Did you attend prenatal clinic during your last pregnancy?

Yes ☐

No ☐

29. At what gestation did you start attending prenatal clinic?

i. 1 -3 months ☐

ii. 4 – 6months ☐

iii. 7-9 months ☐

iv. Unspecified times ☐

v. Not at all ☐

.....

30. Where did you go for prenatal care?

i. Health centre ☐

ii. Hospital ☐

iii. Private clinic ☐

iv. Did not attend ☐

31. What is the importance of prenatal clinic?

.....

.....

32. How many clinic attendances should a pregnant woman make during a normal duration of pregnancy?

i. None ☐

ii. At least once per month ☐

iii. As often as may be required by the health more than provider ☐

iv. 5-6times ☐

v. Others: specify.....

33. How frequent do you attend antenatal clinic?

i. None ☐

ii. At least once nearing delivery ☐

iii. More than six times ☐

iv. Others: specify.....

34. What services were offered at the clinic?.....

35. Were the services offered satisfactory?

Yes ☐

No ☐

36. If no, specify.....

37. If yes, how can you describe the quality of care offered to you at the clinic?

Description	Excellent	Good	Fair	Poor
Facilities				
Doctor(s)				
Nurses				
Other staff				

38. For those who did not attend antenatal clinic, what were the reasons for not attending?

i. None ☐

ii. Long walking distance ☐

iii. Lack of transport ☐

iv. Lack of money ☐

v. There were no equipment at the health facility ☐

vi. Lack of time ☐

vii. Lack of understanding the importance of antenatal care ☐

viii. Other specify.....

39. What suggestions can you make that will help overcome some of the problems you have mentioned?

40. Do you know of any complications which may arise if a pregnant woman does not attend prenatal clinic?

i. Yes ☐

ii. No. ☐

41. If yes, what are the complications?

.....

.....

42. Where did you have your last delivery?

i. At home ☐

ii. At health facility ☐

iii. Others: specify.....

43. Did you encounter any complications during delivery?

i. yes ☐

ii. No ☐

44. If yes, what were the complications?

a) Complications of mother:.....

i. Maternal distress ☐

ii. Excessive bleeding ☐

iii. Prolonged labour ☐

iv. Mal-presentation ☐

b) Complications of the baby.....

i. Abortion ☐

ii. Stillbirth ☐

iii. Prematurely ☐

iv. Failure to cry at once ☐

v. Others: specify.....

45. Do you think these complications are preventable or avoidable?

i. Yes ☐

ii. No ☐

46. If yes, how can they be prevented or avoided?

.....

.....

APPENDIX IV

Health Providers Questionnaire

Referral system from the primary set to tertiary health care facility

1. What is your designation?

   i. Doctor ☐

   ii. Nurse midwife ☐

   iii. Others specify.....

2. Do you attend seminars/refresher courses?

   i. Yes ☐

   ii. No ☐

3. If yes, how many times in a year?.....

4. How many years of experience do you have in your profession?

   .....

5. Do you have working referral system from the household to the district hospital?

   i. Yes ☐

   ii. No ☐

7. If yes, how does it function?

   .....

   .....

8. What problems do you encounter with your referral system?

   i. None ☐

   ii. No transport ☐

   iii. Impassable roads ☐

   iv. Long walking distance ☐

   v. Lack of communication telephone ☐

   vi. Other, specify.....

9. At what gestation do mothers come for prenatal care?

   .....

10. Do you know why some clients delay in seeking prenatal care?

    i. Yes ☐

    ii. No ☐

    iii. I do not know ☐

    iv. Others: specify.....

11. If yes, what are the reasons?

    .....

    .....

12. What procedures do you perform on expectant mothers during?

    i. First Visit ☐

    ii. Subsequent visits ☐

13. Do pregnant mothers come back for subsequent visits as instructed?

    i. Yes ☐

    ii. No ☐

    iii. Occasionally ☐

14. For those who come back, what is the impact of this on pregnancy outcome?.....

    .....

15. If they do not come back, what action do you take?

    .....

    .....

APPENDIX V

Assessment of the inventory at the health facility

Description of equipment	Present	Missing	In good working condition	
			Yes	No
1. Blood Pressure machine				
2. Weighing scale i. For adults ii. For babies				
3. Delivery trays with their equipment files				
4. Thermometer				
5. Emergency tray with drugs like: i. Lasix ii. Ergometrine iii. Syntometrene iii. Hydrocortisone iv. Adrenaline v. Piriton vi. Buscopan				
6. Oxygen				
7. Conches for examination				
8. Delivery couches				
9. Drip Stand				
10. Linen				
11. Disinfectants				
12.Gloves				
13. syringes 10cc 5cc 2cc				
14. Needles 1″ 1 ½ ″				
15. Blood /IV giving set				
16. Cotton wool				
17.Cord clamps				
18. Delivery scissors				
19.Sanitary pads				
20. Files				
21. Stationery.				

APPENDIX VI

Focus group discussion with traditional birth attendants

1. What is your understanding of the term prenatal care?
2. What problems do you encounter during the provision of prenatal care?
3. When faced with these problems, how do you handle them? Do you come across some that you feel cannot be handled by you?
4. Are you aware that majority of pregnant women choose to deliver at home? In your opinion, what is the reason for this behaviour?
5. What limitations do you have in dealing with pregnant women and deliveries?
6. How often do you refer pregnant women for prenatal care and delivery?
7. In your opinion, why do you think pregnant women delay in seeking for prenatal care services?
8. What complications are common among pregnant women in this area?
9. What is your assessment of pregnant woman you refer for prenatal care services as compared to those who do attend prenatal care services?
10. Generally, what problems hinder pregnant women from attending prenatal care services?
11. How can they be prevented or solved?

APPENDIX VII

Focus group discussion with childbearing women aged 15-49 years

1. What do you understand by the term prenatal care?
2. What is the importance of prenatal care?
3. How soon should a pregnant woman start attending prenatal care services?
4. When do you start going for prenatal care services?
5. How many antenatal clinic attendances should a pregnant woman make during pregnancy?
6. What problems hinder pregnant woman from attending prenatal care services?
7. It has been observed that some women when pregnant do not attend prenatal clinic services at all. What are the reasons?
8. Why do majority of deliveries take place at home?
9. What are the common complications among childbearing women during pregnancy in this area?
10. How can these complications be prevented or avoided?
11. What is the effect of these complications on the
    (a) Mother
    (b) Baby
12. During prenatal care, are the husbands involved or other concerned people?
13. Generally, are the services offered satisfactory?

AMREF KENYA
Founded 1957

AFRICAN MEDICAL AND RESEARCH FOUNDATION

Community-based Health Care • Primary Health Care • Child & Adolescent Health and Development • Training • Flying Doctor Services • AIDS and Malaria Prevention • Gender and Development • Nomadic Health Services • Health Learning Materials • Research • Water and Environmental Sanitation • Consultancies • Health Planning and Management • Emergency Response • Clinical Services • Sexual and Reproductive Health

28th August 2000

TO WHOM IT MAY CONCERN

As part of our collaborative work with Universities, AMREF assists students to carry out research work on priority health problems. The purpose of this letter is to introduce to you the following masters in public health and epidemiology (MPHE) students from Kenyatta University who will carry out studies in Kabati Division, Kitui District.

1) Julia Waithira Thuo who will carry out a study on "Determinants of unmet needs for family planning among married women

2) Millicent Weche Ambetsa who will carry out a study on influence of prenatal care on pregnancy outcome.

The studies will be on coverage and utilization of family planning and prenatal care in Kabati Division. The research findings will be used to improve maternal health services. The field work will be for a period of three to four months starting September 2000.

Please accord them the necessary support in these studies.

Yours sincerely,

DR. ELIAB SERONEY SOME
Co-ordinator, Programme Monitoring & Evaluation

C.C: Mette Kjaer, Kenya Country Director
C.C: Gerald Rukunga
C.C: Jane Carter
C.C: Isaac Isika
C.C: Dr. John Mbithi, Kenyatta University