UTILIZATION OF POST NATAL CARE SERVICES IN KIAMBARA
SUB-COUNTY, KIAMBU COUNTY, KENYA

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P57/PT/13523/2009

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF PUBLIC HEALTH (MONITORING AND EVALUATION) IN THE SCHOOL OF PUBLIC HEALTH OF KENYATTA UNIVERSITY

DECEMBER, 2015
DECLARATION

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

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DEDICATION

I dedicate this thesis to all Kenyan mothers. No mother need suffer maternal death from preventable causes.
ACKNOWLEDGEMENT

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I appreciate the administrative leaders of Kiambaa Sub County, the elders and community health workers for the support they extended to me during the data collection period and the respondents of Kiambaa sub County who took time to complete the questionnaires.

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Finally, I give thanks to the Almighty God for His abundant grace.
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# ACRONYMS

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<thead>
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<th>Description</th>
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<tbody>
<tr>
<td>ANC</td>
<td>Ante Natal Care</td>
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<tr>
<td>DHS</td>
<td>Demographic Health Survey</td>
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<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
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<tr>
<td>FP</td>
<td>Family Planning</td>
</tr>
<tr>
<td>G.O.K</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>HCW</td>
<td>Health Care Worker</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal and Child Health</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of Mother to Child Transmission of HIV</td>
</tr>
<tr>
<td>PNC</td>
<td>Post Natal Care</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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DEFINITION AND OPERATIONAL OF TERMS

Utilization of post-natal care: In this study, it is accessing the post-natal care more than once within 42 days after delivery.

Determinant of Post-natal care: This is a variable that influenced up take of post-natal care, either positively or negatively on Multinomial regression at significant level (p<0.05).

Socio Demographic factors: Characteristics of the study population expressed in age, highest education level attained, religion, marital status, parity, household wealth status.

Health systems: Defined as the health facilities functioning or services related to Post-natal care including staffing, availability, and accessibility, perceived quality of services and previous use of health services.

Perceived quality of care: Care that is acceptable and patient-centered, which takes into accounts the preferences of individual service users. The following areas were studied: staff attitudes, availability of medications, availability of services, opening hours of the facility, privacy during procedures, and cleanliness of the facility. A composite variable measure was constructed and ranked into; good, average and poor.

Accessible: Delivering health care that is timely, geographically reasonable and resources are appropriate to medical need. Geographical access looked at distance to nearest facility and categorized at less or more than five kilometers.

Knowledge: This is a familiarity or awareness of services available in the post-natal care, such as; counselling on HIV, breast feeding and nutrition, health checks on mother and child. A composite indicator was constructed and knowledge of services ranked into very knowledgeable, average knowledge and low knowledge.

Attitude: This is an expression of favor or disfavor towards utilization of Post-natal services, reported as positive or negative.
Woman of reproductive age: Women aged 15-49 years.
ABSTRACT

Post Natal Care (PNC) has been demonstrated to reduce both the maternal and infants’ morbidities and mortalities; however, the uptake has been low. It is just about 51% of women in Kenya, who receive these services from a skilled health care worker. There has been little investigation of factors associated with the use of these services. The objective of the study was to determine factors that influence utilization of PNC services. Specifically, the study focused on the socio-demographic, health systems factors; and knowledge and attitude towards utilization of PNC services. A cross sectional descriptive study design was conducted among 399 mothers randomly selected from Kiambaa Sub-County. Mothers at household level were included in the study if they had a child aged < 1 years. Data was collected using structured questionnaire, focus group discussion, and key informant interview guides. Quantitative data was analyzed using Stata version 13, while qualitative data was analyzed based on themes. Relationships between variables were tested using chi square test and logistic regression and a p-value of <0.05 was considered significant. The average age of the women interviewed was 26 years (SD 4.9), with a median of 26.8 years. More than three-quarters (75.7%) of the respondents were married. Less than half (43.1%) of the women interviewed had secondary school education and majority of the women (67.4 %) had more than 2 children. Utilization of PNC services was 45.1%. The health care workers had informed only 15 % of the women, to attend the PNC services. The determinants of utilization of PNC services were having college education (OR=12.292, p=0.000); high household wealth status (OR=3.6211, p=0.000); formal employment (OR=2.705, p=0.008); delivery at a private facility (OR=2.9269, p=0.000) and high knowledge of PNC services (OR=2.2307, p=0.008). Perceived good quality of care (OR=5.2607, p = 0.000), and a positive attitude (OR=3.6507, = 0.000) were other determinants. There was low utilization of PNC services, influenced by level of education, household wealth index, delivery at a private facility, perceived good quality of services, good knowledge of services and a positive attitude. The government should enhance uptake of PNC services through community-based strategies; such efforts should target those with low education and economic status. The health care workers need to inform the clients about PNC services and schedule appointments. Qualities of services in the facilities need to improve.
CHAPTER ONE: INTRODUCTION

1.1 Background

Post-natal period is defined by World Health Organization (WHO, 2010), as the period one hour after the delivery of the placenta and includes the six weeks that follow. This period is called postpartum period when referring to the mother alone and post-natal when referring to both mother and baby. The services provided during this period are referred to as post-natal care (PNC) services. WHO (2013) suggests that there are some "crucial" moments when contact with the formal health system during the post-natal period by skilled attendants could be instrumental in identifying and responding to needs and complications after childbirth. These are: the first few hours after birth (whether at home or in a health facility), between three to seven days, and at six weeks (Lawn & Kerber, 2006). However, it has been noted that many women who give birth at health facilities in the developing world are discharged within hours after childbirth without any indication where they can obtain further care or support (Titaley, Dibley & Roberts, 2009).

The global Maternal Mortality Ration (MMR) in 2013 was 210 maternal deaths per 100 000 live births, developing countries accounted for 99% of these deaths and Sub-Saharan alone accounting for 62% (WHO, 2013). The adult lifetime risk of maternal death as measured in 2013 is highest in sub-Saharan Africa (at 1 in 31), in contrast to 1 in 3800 among women in developed countries (WHO, 2013). The adult lifetime risk of maternal death in Kenya is 1:55 (WHO, 2010) translating to maternal mortality ratio of 400/100,000 live births (WHO, 2013). These maternal deaths represent 11.3% of all deaths among women aged 15-49 years; which has largely remained unchanged over the last 10 years (WHO, 2013). Maternal health is a challenge and efforts need to be put in place to achieve the global goal of reducing
the maternal mortality ratio to less than 70 per 100,000 live births by year 2030 (WHO, 2015). In addition to maternal deaths, almost 40% of women experience complications after delivery and an estimated 15% develop potentially life-threatening problems (WHO, 2013). Maternal mortality occurs from risks attributable to pregnancy and childbirth as well as from poor availability and quality of health services. The most common causes of maternal mortality in sub-Saharan Africa include haemorrhage (34%), sepsis/infections (10%), hypertensive disorders (9%), HIV and AIDS (6%) and other direct causes (5%); other indirect causes contribute approximately 17% (WHO, 2013).

The postnatal period is also very important for the newborn; of the approximately 130 million infants born annually, four million infants die in the neonatal period, representing almost 40% of deaths of children under 5 years of age and developing countries account for 98% of these deaths (WHO, 2013). Africa accounts for 11% of the world’s population but more than 25% of the world’s newborn deaths (up to half a million African babies die on the day they are born), and the first week of life is the greatest risk of death for African babies (Darmstat, et al, 2005). Owing to the dramatically increased risk of newborn deaths in the first hours and the first days of life, newborns are recommended to receive postnatal healthcare immediately after delivery (WHO, 2013). Early care enables health professionals to identify potential complications in newborns, and to provide treatments promptly as well as initiating vaccinations. Childhood mortality rates are identified as basic indicators of a country’s socio-economic level and quality of life. The causes of neonatal deaths are preterm birth (40.8%) and intra-partum complications (27.0%) and nearly half of all deaths occur from infectious causes 47.6% (WHO, 2013). Child health remains a challenge and needs more attention. Despite renewed focus and recent progress in
child survival, a lot of effort need to be directed at child health to achieve the global goal of ending preventable deaths of newborns and under-five children by year 2030 (United Nations Development and Programme, 2015).

1.2 Problem Statement

The post-natal period covers a critical transitional time for a woman, her newborn and her family on a physiological, emotional and social level as reported by WHO (2013). It provides an opportunity for institution of preventive as well as curative measures. Given the exceptional extent to which the deaths of mothers and babies occur in the first days after birth, the early identification of post-natal complications for both mother and baby can reduce maternal and newborn morbidity and mortality. Thus, PNC services are important for both the mother and the child to treat complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child.

Despite the benefits of PNC services, this has remained a neglected area in child and maternal health-care services in the developing countries (Tao, Huang, Long, Tolhurst, & Raven, 2011). In Kenya the recommendations for PNC services is three visits, these are; within 48 hours before discharge from post-natal ward, at 2 weeks and again at 6 weeks (G.O.K., 2011). Despite efforts to improve post-natal visits, utilization has remained low and only about 25% of mothers who deliver in facilities in Kiambaa Sub County access PNC at two weeks. (Kiambu District medical office reports, 2010). This is far from the desired universal access as stipulated in the Kenya National road map (2010) for accelerating maternal health services, which is in tandem with the WHO recommendations of universal access of all maternity services (WHO, 2013). It has also been argued that each year 310,000 fewer newborns would die in Africa and many maternal lives would be saved if the
coverage of PNC reached 90% of women and babies (Darmsta et al., 2005). A Clear understanding of the factors associated with utilization of PNC services is important to help in the development and the implementation of evidence-based approaches to increase the use of PNC services.

1.3 Justification

This study aimed at examining the factors associated with utilization of PNC services. This study was important in the context of current efforts to address poor maternal and child health outcomes in Kenya. The information generated is useful to health research and initiatives relating to maternal and neonatal health. These include the provision of PNC services in all health facilities, training, and capacity building in the PNC services, as well as formulation of indicators to monitor the services.

1.4 Research Questions

1) What is the level of PNC utilization in Kiambaa Sub-County?

2) What are the socio-demographic factors influencing uptake of PNC services in Kiambaa Sub-County?

3) What are the health systems factors influencing uptake of PNC services among women of Kiambaa Sub-County?

4) What are the knowledge and attitude factors influencing utilization of PNC services in Kiambaa Sub-County?

1.5 Null Hypotheses

Socio-demographic, health systems, knowledge and attitude factors do not influence utilization of post-natal care services in Kiambaa Sub-County, Kiambu County.
1.6 Objectives

1.6.1 General Objective
The main objective of the study was to determine the factors influencing utilization of PNC services in Kiambaa Sub-County, Kiambu County.

1.6.2 Specific Objectives
The broad objective was further broken into the following specific objectives; these are to:

1) Identify level of utilization of PNC services in Kiambaa Sub-County.
2) Determine socio demographics factors influencing utilization of PNC services in Kiambaa Sub-County
3) Determine the health systems factors influencing utilization of PNC services in Kiambaa Sub-County.
4) Identify knowledge and attitude factors that influence utilization of PNC services in Kiambaa Sub-County.

1.7 Significance and Anticipated Output
The study assisted in identification of the gaps in the utilization of PNC services, which will help in identifying specific strategies to increase the utilization. Increased utilization of PNC services will result in reduced risk of maternal and neonatal mortality and morbidity. The outcome will be improved maternal child health and thus contribute towards achievement of Kenya’s vision 2030 goal of reducing maternal and child mortality (G.O.K., 2007).

1.8 Limitations and Delimitations
The study should have covered a larger area but due to limited time and funds it was restricted to a Sub County, however the Sub County has both a large rural
population as well as urban and it is representative of majority of the Kenyan population. The distance between homes was far apart; and the research assistants walked long distances to reach the homes of respondents. The data was collected during the national elections campaign period and the community was suspicious of strangers, this was mitigated by working with the administrative leaders and engaging the community leaders to accompany the research assistants. This was self-reporting however after detailed explanation to the participants on study background and results dissemination, it is assumed that they were truthful while answering the questions.

### 1.9 Conceptual Framework

The conceptual framework illustrates the relationships between the dependent variable and independent variables as shown in figure 1.1.

<table>
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<tr>
<th>Socio demographic factors:</th>
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<td>Age</td>
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<td>Education</td>
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<td>Occupation</td>
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<td>Religion</td>
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<td>Parity</td>
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<tr>
<td>Spouse education</td>
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<tr>
<td>Wealth status</td>
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<td>Cultural beliefs</td>
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<th>Health systems</th>
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<tr>
<td>Availability</td>
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<tr>
<td>Accessibility</td>
</tr>
<tr>
<td>Perceived quality</td>
</tr>
<tr>
<td>Previous interaction with health system</td>
</tr>
<tr>
<td>• 4th ANC visit</td>
</tr>
<tr>
<td>• Place of last delivery</td>
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Figure 1.1 Conceptual frame work

*Source; Adopted from Behavioral Model of Health Services Use (Andersen, 1995)*

In this study, the dependent variable is the use of PNC services; while the independent variables are several socio-demographic factors, Health systems, and
knowledge and attitude of PNC services. The framework also helps understand the potential influences on an individual's decision to make use of health services. The conceptual framework was adopted from the Andersen's Behavioral Model. The model suggests that the use of health services is a function of the predisposition to use the services, factors that enable or impede use and need for the service.

Anderson (1995) refers to demographic factors and household wealth status as the predisposing factors; while availability of services, cost of care and distance to the facility are seen as enabling factors. Attitudes, values, and knowledge that people have about health care services also influence their subsequent perception of need and use of these services. This coupled by a woman's previous exposure to healthcare services indicates a strong predictor of her susceptibility to make use of available reproductive health services. According to Anderson (1995), these are the need-based characteristics. The purpose of the model is to discover the conditions that either facilitate or impede utilisation of a service.
CHAPTER TWO: LITERATURE REVIEW

The literature review is in three sections and aligned to the study objectives. Section one gives an overview the PNC services. The uptake of PNC services is described in section two, at global, African, and Kenyan level and in the last section, barriers to up take of services are deliberated.

2.1 Postnatal Services

Care in the period following birth is critical not only for survival but also to the future of mothers and newborn babies. Major changes occur during this period that determines their well-being and potential for a healthy future. The major purposes of post-natal care are to maintain and promote the health of the woman and her baby and to foster an environment that offers help and support to family and community on health needs (G.O.K., 2011; WHO, 2013). These needs can involve physical and mental health as well as social and cultural issues that can affect health and wellbeing. In addition, new parents need support for parenting and its responsibilities. Thus, the conceptual framework for guidance on post-natal care should place the woman and her baby at the centre of care provision. This concept promotes the appreciation of delivery of all post-natal care in partnership with the woman and her family and be individualized to meet the needs of each mother-infant dyad as reported Izudi and Amongin, (2015). It is essential to provide a seamless continuum of care from Ante Natal Care (ANC) to skilled delivery and post-natal period as this provides a transition to up-take of reproductive and for child health services (WHO, 2013). Postnatal care is one of the pillars of maternal and newborn health in Kenya; the others are FP and pre pregnancy care, ANC,
essential obstetric and neonatal care and post abortion care as stated in G.O.K., (2011).

WHO (2013) recommends that PNC services should be provided at 6 hours, 6 days, 6 weeks, and 6 months post-delivery but this was generic and individual countries were encouraged to implement this according to their own needs and capabilities. In Kenya, three visits are recommended; these are: within 48 hours on the post-natal ward before discharge; or as soon as possible after delivery, a second assessment is recommended one to two weeks following delivery in the Maternal Child Health-Family Planning (MCH-FP) clinic; and again at six weeks (G.O.K., 2011).

According to WHO (2013), the first consultation (within 48 hours) assures that the mother and infant are evaluated by a health provider after delivery. This consultation presents an opportunity to identify and address problems, to counsel on essential care like exclusive breastfeeding, cord care, keeping the infant warm, counsel on nutrition, Prevention of Mother To Child Transmission (PMTCT), sensitize on FP methods and to commence immunizations. The mother is also, informed, about her danger signs and that of the neonate and encouraged to seek health care early if they identify danger signs in-between postnatal care visits.

Although the PNC visits is perceived as a service for children, the second post-natal consultation within 7 – 14 days provides opportunity to assess both infant and the mother’s general health, and to re-iterate health promotion messages. This visit is also referred to as early post-natal visit; it is important because the Health Care Worker (HCW) is able to evaluate how the mother is coping and identify areas of intervention (G.O.K., 2011). During this early PNC visit; the HCW also evaluates
nutrition status of the neonate and clarifies any issues regarding exclusive breastfeeding and general care of both mother and infant.

The six-week consultation provides an opportunity for the infants to be immunized and growth monitoring to be monitored, but according to Titaley, et al., (2009) it is viewed as a survivors visit because many infants who need care die before this visit. The well-being of the mother is monitored as well as providing the mothers with access to counseling in FP and subsequent uptake of modern contraceptive methods and cervical cancer screening.

### 2.2 Utilization of PNC Services

In developed countries, virtually all women, and their infants receive postnatal care (WHO, 2013); this is in tandem with The Fifth United Nations Millennium Development Goal, which aims to achieve universal access to reproductive health services by 2015.

In a study conducted in 30 developing countries, an average of 40% of all women with a live birth in the previous five years did not receive any postpartum care check-ups (WHO, 2010). According to Malawi demographic and health survey (MDHS, 2011) 30% of mothers attend PNC services while in Congo 34.6% postnatal women had attended PNC by 42 days after delivery (Mil, Francoise, Dramax & Donnen, 2012). In Palestine, uptake of PNC services has been, reported to be 36.6% (Dhaher, Mikolajczyk, Maxwell, & Krämer, 2008). Another study done in Uganda showed that only 15.4% of mothers attend the early post-natal care (Izudi & Amongin, 2015).

In Kenya PNC utilization has marginally increased from 47% in 2009 (KDHS 2008/2009) to 51% (KDHS, 2014). The timing of the PNC services is also very important and at least one in four child deaths occur during the first month of life
(WHO, 2013). These deaths often take place before child health services begin to provide care, usually at six weeks for the first immunization visit. From these studies it is clear that a large proportion of the women and children are without health care during this critical period.

2.3 Barriers to Utilization of PNC services

The barriers were explored under three areas; namely the socio demographics, the health systems and knowledge and attitude towards PNC services.

2.3.1 Socio-Demographic Factors

The period following birth in Africa is often marked by cultural practices. Understanding these beliefs and practices is an important part of ensuring effective and timely care. Many communities throughout Africa observe practices that keep mothers and babies indoors for the first month after birth; this is seen as a period of seclusion (Mrisho et al., 2009). Also, the older women dictate the behaviour of the newly delivered woman. Lubbock and Stephenson (2008) reported that the mother in law gives out instructions on whether the new mother would seek care or not. Where Traditional Birth Attendants (TBA) assists in delivery, they carry on with the PNC services and many women prefer the TBAs because they are accessible compared to the health workers (Titaley et al., 2010).

Maternal health care-seeking behaviours are shaped by other factors such as parity. Reasons ascribed to this attitude included the experience women gain with each succeeding pregnancy and childbirth, and the time and cost pressures associated with larger families, which decrease utilization (Mrisho et al., 2009). Maternal education has a profound effect on seeking medical care (Titaley et al; 2009). Educated women are more likely to enjoy more autonomy within and outside the
household and the skills acquired from schooling enable women to communicate with the health professionals and demand health care services as reported by Dhaher, Mikolajezyk & Kramer, 2008). Educated women are also likely to have improved knowledge and information on modern medical treatment and have greater capacity to recognize specific illness and appreciate the need to seek health care (Titaley et al., 2009). The influence of education is also associated with high age at marriage, low fertility, and mortality, good maternal care, and reduced vulnerability to HIV/AIDS as reported by Awusi, Anyanwu and Okeleke, (2009).

In Kenya, the under-five mortality is noticeably lower for children whose mothers either completed primary school, which is 68 deaths per 1,000 live births or attended secondary school that was 59 deaths per 1,000 live births compared to those whose mothers have no education, which was 86 deaths per 1,000 live births (KDHS, 2008/2009). The father’s education status and economic status also has a positive influence on utilization of maternal services (Awusi et al., 2009).

### 2.3.2 Health Systems Factors

Health systems factors are presented in two dimensions: quality and accessibility of services. The ultimate aim of a health system is to equitably maintain or restore the health of all the people it serves. Health system is defined by WHO (2010) as the sum of the organizations, institutions, and resources whose shared primary purpose is to improve health. The broad health system includes everyone responsible for good health, it also encompasses sanitation, and nutrition, involves all branches of government, and operates within the public sector, civil society, and non-for-profit entities. WHO (2010) states that there are six building blocks that are the foundation for health systems that support access to high-quality health services. These are: leadership and governance, motivated workforce, financial management, medicines
and medical supplies, health information, health service delivery that addresses the basic health needs of the populations to be served. Together, these building blocks are the foundation for health systems that support access to high-quality health services, leading to positive health outcomes for clients and communities as identified by Management Sciences for health (2010).

At the center of health system are two groups of people; the health care providers and the clients, the goal of providing quality health care cannot be achieved without the powerful interaction of these two groups of people. The health workers look at quality objectively; they consider products or services that meet or surpass standards of safety, proper function, and otherwise general excellence. This is often referred to as quality assurance or medical quality, and it depends mainly on providers' perspectives as documented Donabedian (2005). Providers tend to highlight technical competence, infrastructure, and logistical support in an effort to improve quality. On the other hand, clients often emphasize the human aspects of care; respectful treatment, privacy and confidentiality, information, and counseling in addition to safety, convenient locations and hours, reasonable waiting times, affordable cost, and a clean, comfortable facility (Onah, Ikeako & Iloabchia, 2006; Mrisho et al., 2009; Kamau, 2014). In provision of maternity services, staff attitudes keeps the women away from hospital delivery, as they prefer the TBAs who are perceived to be friendlier than health care providers (Fomba et al., 2010; Bowser & Hill, 2010). This negative provider attitude at health facilities gives TBAs an edge over the health providers. Women’s subjective experiences are at the core of measuring disrespect and abuse in childbirth, as their perceptions would have the most influence in their decisions to use health facilities in the future. Disrespectful and abusive treatment covers a range of provider behaviors, such as shouting at or
scolding patients, requesting bribes, threatening to withhold health care, physical abuse, abandonment in times of need, conducting procedures without consent and detaining mothers or babies at the facility due to failure to pay. It may also include abuses stemming from lack of resources within the health system, such as forcing women in labor to share a bed as reported by Bowser and Hill (2010). Health care providers need to foster a positive relationship with the clients to achieve the desired health outcomes as women’s memories of their child bearing experiences stay with them for a life time and are often shared with other women, contributing to a climate of confidence or doubt around childbearing.

These varied perspectives on quality alludes to offering a range of safe, effective services that meet evidence-based standards while satisfying clients’ needs and desires (Management Sciences for Health, 2010). If an individual makes what is likely to be an arduous trip to a health facility only to find staff that are indifferent and medicines out of stock, the likelihood that the same individual will make the trip again in the future is low as observed by Lubbock and Stephenson (2008). When this scenario becomes commonplace, an entire community might become less likely to seek health services, even when they are needed.

Accessibility covers cost and the physical ease of reaching the facility. Though all the maternal neonatal child care services (MNCH) in Kenya are theoretically free of cost; there are some indirect and informal payments such as travel cost to and from the facility, and paying for prescribed medicines that have been reported as considerable barriers to accessing care and treatment (Titaley et al., 2009). The distance to a health facility is not only an actual obstacle that prevents women from reaching health facilities but also a factor influencing the decision to seek care (Thaddeus et al., 1994; Titaley et al., 2009). The unavailability of public
transportation or prohibitive cost of transport means that many women have to walk or improvise a way to reach health care (Mekonnen & Mekonnen, 2002). The remoteness from health facilities also increases community members' out-of-pocket expenditure for transportation costs. In addition, the opportunity costs lost due to travel, waiting time are constraints to the uptake of services, and this is especially true for those in low economic status who depend on daily wages (Titaley et al., 2010).

2.3.3 **Knowledge and Attitude of PNC Services**

Lack of awareness is an important factor underlying maternal healthcare utilization. Lack of information affects women's capabilities to make their own decisions about seeking help. Dhaher et al., (2009) found out that the most frequent reason for not obtaining PNC services was that women did not feel sick and therefore did not require PNC services. Another obstacles is the failure by Health provider to inform them about the PNC services and when and where to obtain care (Ibid.). Low utilization of PNC services is, attributed to, women's lack of knowledge about its importance, their lack of perceived need; especially if they are feeling well (Titaley et al., 2010). In developing countries, women spend more time on many multiple household chores than on their own health as observed by Tao et al., (2011) and tend to give priority to the health needs of their infants rather than their own. This is in contrast to the fact that many women appreciate the need of monitoring child’s health but do not see the need for post-natal checkups themselves especially if delivery was uneventful (Tao et al., 2011). Many women also report that PNC services are for the child to receive vaccinations as reported by Warren, Mwangi, Owenya, Kamunya & Koskei, 2009), and therefore wait to attend clinic only when vaccinations are due. Maternal lack of knowledge of obstetric complications and
lack of exposure to mass media has been associated with low utilization of health services as reported by Titaley et al, (2009). Even for women who delivered at health facility they reported that they did not receive appointments for the services on discharge and were therefore not aware of them (Titaley et al., 2009).

2.4 Summary of Literature

While many factors contribute to maternal and child health outcomes, the use of PNC services is important in the continuum of care to improve the health and survival of mothers and infants. The G.O.K (2011) in Kenya, has recommended that a women and her infant should receive to at least three assessments within the first six weeks after childbirth. The numbers of visits or contacts that women and their infants have with their health-care providers are not well documented. This study assessed utilization of at least two visits in the post-natal period and looked into the determinants.
CHAPTER THREE: MATERIALS AND METHODS

3.1 Research Design

This survey utilized descriptive cross sectional study design. Quantitative and qualitative data was collected and then integrated in the interpretation of the overall results. This allowed for comprehensive analysis of the description of the association between the dependent variable (use of PNC services) and independent variables (socio-demographic factors, health systems factors and knowledge and attitude of women towards PNC services).

3.2 Variables

Dependent Variables

This was a dichotomous variable: use or non-use of PNC services. All postpartum women who had delivered a live baby within the past one year were asked whether they had obtained post-natal care during the first six weeks after delivery. In Kenya, three visits are recommended: within 48 hours on the post-natal ward before discharge; or as soon as possible after delivery, a second assessment is suggested one to two weeks following delivery in the MCH-FP clinic; and again at six weeks (G.O.K., 2011). In this study, a woman was deemed to have utilized services if she attended to, at a health facility at least twice in the post-natal period (within 42 days).

Independent Variables

Information was collected about several socio-demographic variables: woman's current employment status, women and husband's highest level of education, marital status, woman's age, parity and household wealth status. A wealth status variable was calculated based on household’s ownership of selected assets, these were: source of drinking water, toilet facilities, and electronics for example television, fuel
for cooking and materials used for building the house; types of water access and sanitation facilities. Health systems variables looked at perceived quality of care, which included staff attitudes, availability of medications, availability of services, opening hours of the facility, privacy during procedures, and cleanliness of the facility. Studied accessibility factors were- distance to facility, transport, and cost of care. Variables relating to medical care that were collected, were place of delivery, mode of delivery, number of antenatal visits during the last pregnancy. Variables relating to attitude are; whether the women found the recommended two visits reasonable, if they would recommend the services to others, and whether they regarded the services important to their health and that of the children. Knowledge of services was assessed through asking the respondents whether they knew the services that are offered in the post-natal period.

3.3 Location of the Study

The study was carried out in Kiambaa sub-County in Kiambu County. Kiambu County neighbours Nairobi to the south, Thika to the East, Nakuru to the West and Murang’a to the North (appendix 7). The main economic activities in Kiambu County are agriculture; mainly zero grazing of cattle and small-scale farming of coffee and tea. It is unique in that it has an increasing urban population as Nairobi extends towards it and it seen as a future anchor to the capital city Nairobi. It also has as a large high-density rural population. It covers an area of 2,449.21 Sq. Km and a Population of 1,623,282 (National Census 2009). The County has four District Hospitals and three sub-District Hospitals. The ANC attendance and skilled delivery are at 97% and 92.6% respectively (KDHS, 2014). Despite efforts to improve post-natal visits, utilization has remained low and only about 25% of women who deliver in the health facilities access PNC at two weeks (Kiambu District Reports, 2010).
Gaps identified will inform the maternal health programme managers as they strive to improve PNC services in the sub-County and the County.

3.4 Study Population

The study population was women aged 15–49 years and FGD participants and Key informants; Kiambaa Sub County.

3.4.1 Inclusion criteria

The study subjects who were included for the study were:

i) Women of reproductive age living, in Kiambaa Sub-County for at least a year.

ii) Women whose previous delivery was within the year and the infant was more than two weeks old.

iii) Women who were willing to participate in the study by signing the consent form.

3.4.2 Exclusion criteria

Women were excluded from the study if:

i) They did not meet the inclusion criteria.

ii) Those whose children had died during the period of reference

iii) Those who were unwell

3.5 Sampling Techniques and Sample Size

Sampling was conducted through purposive sampling of the Sub County, simple random sampling of two locations out of four and simple random sampling of four sub-locations out of seven. The Study respondents were drawn from the sampled sub locations. Systematic random sampling was applied with replacements of the households with a child below one year until the desired sample size was obtained. The number of children <1 year is approximately 4782 according to Kiambu
Hospital reports (2010). Three hundred and ninety nine women were recruited into the study (response rate of 102%). The sampling distribution was based on the probability proportionate to size. Kth. interval was calculated based on the study population within a given sub-location. This is shown on figure 3.1. The first respondent was identified randomly.

Table 3.1 Sampling frame

<table>
<thead>
<tr>
<th>Sub location</th>
<th>Total population</th>
<th>Number of children &lt;1year</th>
<th>Sample</th>
<th>Interval Kth.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kihara</td>
<td>14434</td>
<td>474</td>
<td>93</td>
<td>5</td>
</tr>
<tr>
<td>Gachie</td>
<td>22443</td>
<td>736</td>
<td>142</td>
<td>5</td>
</tr>
<tr>
<td>Ndenderu</td>
<td>10175</td>
<td>334</td>
<td>67</td>
<td>5</td>
</tr>
<tr>
<td>Ruaka</td>
<td>13488</td>
<td>442</td>
<td>89</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>60540</td>
<td>1986</td>
<td>391</td>
<td></td>
</tr>
</tbody>
</table>

Sample size

The formula by Fisher et al. (1998) for a population size greater or equal to 10,000 was used the formula is \( n = \frac{Z^2pq}{d^2} \)

Where, \( n \) is the desired sample size

\( Z \) is the standard normal deviate, usually set at 1.96 that corresponds to the 95% confidence level; \( p \) is the proportion in the target population estimated to have a particular characteristic. \( q = 1.0-p \) and \( d \) is the degree of accuracy desired, set at the 0.05 level

\( p = 0.5, z =1.96, \) (The target population is approximately 4782)

\( 1.96)^2(0.47)(0.53)/ (0.05^2) = 383 \)

Correction for population less than 10 000 was done as follows;

\( nf = n/(1+n/N) = 383/(1+383/ 4782) = 356+36=391. \)

10% was added to compensate for missing data as recommended by Magnami (1997). This brought the total to 391.
3.6 Research Instruments

The data was collected using structured questionnaires (interviewer administered), Focus Group Discussions (FGD), and Key Informants interviews (KII) guides. Construction of research instruments was based on the study objectives, literature review and study variables.

3.7 Data Collection Techniques

Administration of questionnaires was done to collect quantitative data. This was interviewer administered which was then transferred to Excel spread sheet. The data collected with the tool included socio-demographic data, maternal factors and institutional factors. Qualitative data was collected through two focus group discussions and three key informant interviews. The FGDs participants were not included in quantitative data and recruited by the community care volunteer. The key informants were; health care manager, health care worker, and a community health volunteer.

3.8 Pre-Testing

Pre-test study was conducted at Githunguri Sub County; which has a similar population to the study area. The pre-test was done to ensure the reliability and suitability of the questionnaire. Information from the pre-test informed the final questionnaire. The pre-test study was also used as a means of training enumerators who were involved in the main survey.

3.9 Validity and Reliability

Care in development of the instrument was taken so that the wording did not have any ambiguities; pretest was done to find out if the respondents interpreted all
questions in the same way. Information from the pre-test was used to refine the tools prior to the main study.

Reliability was also ensured through selection and training of five research assistants, engaging them in the pre-test and supervising them during the data collection process. Completed questionnaires were checked daily and errors were corrected.

3.10 Data analysis

Data was entered, coded and cleaned in the excel software (Microsoft office 2010) and analyzed using STATA version 13 (Stata Corp. 2013). Chi square was used to test relationship between variables at bivariate level and the significant variables were subjected to multinomial regression to determine category significance. A wealth status variable was calculated based on household’s ownership of selected assets. Based on the predicted scores, respondents were grouped into three-wealth categories; lowest, middle and highest. Questions for quality of care, attitude towards care and knowledge of PNC services were designed using 5-point Likert scale

3.11 Logistical and ethical considerations

Ethical clearance was obtained from the Kenyatta University ethical review committee (appendix 6). Authorization to carry out the research was granted by graduate school (appendix 4). Permit to carry out the research was obtained from National Commission of Science, Technology, and Innovation of the Ministry of Higher Education Science and Technology (appendix 5). Additional clearance and cooperation was obtained from the medical officer in charge at Kiambu hospital (appendix 7) and the District Commissioner (appendix 8). Participation was voluntary. The participants were informed of their right to decline to participate and
to terminate the interview at any point during the interview session. No payments were given to the respondents for participating in this study and there were no anticipated participation costs on the part of the participants. The study purpose was explained and participants assured of privacy. Confidentiality was maintained, throughout the survey and subsequent presentations. Contacts of the principle researcher and chairperson ethical board was availed on the consent form so that any participant who had questions was in a position to contact them. A copy of the consent form was given to the participants to keep.
CHAPTER FOUR: RESULTS

4.1 Introduction

In this chapter, the results of the study are described and the analyses of the data presented. The results are derived from 399 respondents. The results describe the level of utilization of PNC services, socio-demographic characteristics of the women, relationships between socio-demographic variables, knowledge of postnatal services, and health systems factors with utilization of postnatal services.

4.2 Demographic characteristics of the respondents

Table 4.1 shows the socio-demographic characteristics of the respondents. The average age of the women interviewed was 26 years (SD 4.9), with a median of 26.8 years (interquartile range 18-40 years). According to the age distribution, most of the respondents were aged between 20-24 years (39.9%) and least proportion was aged over 35 years and above (4.3%). Nearly half (43.1%) of the women had secondary school education, while 29.8% and 27.1% of the women had college and primary school education respectively. Most of the respondents were Protestants by religion (59.7%). Nearly half (53.9) of the respondents had two or three children. More than three-quarters (75.7%) of the respondents were married. Among the married women, most of their spouses had secondary education (48%), while 36.4% and 15.6% of spouses had college and primary education respectively. Of the married women; most of their spouses were formally employed (41.4%), 32.1% were self-employed and 26.2% were in casual employment.
Table 4.1 Socio – Demographic Characteristics of the respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age categories in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>20</td>
<td>5.0</td>
</tr>
<tr>
<td>20-24</td>
<td>159</td>
<td>39.9</td>
</tr>
<tr>
<td>25-29</td>
<td>129</td>
<td>32.3</td>
</tr>
<tr>
<td>30-34</td>
<td>74</td>
<td>18.5</td>
</tr>
<tr>
<td>&gt;35</td>
<td>17</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Highest education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>108</td>
<td>27.1</td>
</tr>
<tr>
<td>Secondary</td>
<td>172</td>
<td>43.1</td>
</tr>
<tr>
<td>College</td>
<td>119</td>
<td>29.8</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>302</td>
<td>75.7</td>
</tr>
<tr>
<td>Never married</td>
<td>58</td>
<td>14.5</td>
</tr>
<tr>
<td>Separated or divorced</td>
<td>39</td>
<td>9.8</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>12</td>
<td>3.0</td>
</tr>
<tr>
<td>Roman Catholic</td>
<td>149</td>
<td>37.3</td>
</tr>
<tr>
<td>Protestant</td>
<td>238</td>
<td>59.7</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 child</td>
<td>130</td>
<td>32.6</td>
</tr>
<tr>
<td>2 or 3 children</td>
<td>215</td>
<td>53.9</td>
</tr>
<tr>
<td>&gt;3 children</td>
<td>54</td>
<td>13.5</td>
</tr>
<tr>
<td><strong>Spouse’s education N=302</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>47</td>
<td>15.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>145</td>
<td>48.0</td>
</tr>
<tr>
<td>College</td>
<td>110</td>
<td>36.4</td>
</tr>
<tr>
<td><strong>Spouse’s occupation N=302</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self employed</td>
<td>80</td>
<td>26.5</td>
</tr>
<tr>
<td>Casual</td>
<td>97</td>
<td>32.1</td>
</tr>
<tr>
<td>Formal employment</td>
<td>125</td>
<td>41.4</td>
</tr>
<tr>
<td><strong>Wealth status variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest</td>
<td>125</td>
<td>34.7</td>
</tr>
<tr>
<td>Middle</td>
<td>116</td>
<td>32.2</td>
</tr>
<tr>
<td>Highest</td>
<td>119</td>
<td>33.05</td>
</tr>
</tbody>
</table>

Abbreviations: n- Number of respondents per category; † Column percentages

4.3 Utilization of PNC Services

Utilization of PNC services was looked at from two aspects, these are; proportion of mothers who utilized services and timing of the visits in the post-natal period. In this study, a woman was deemed to have utilized services if she was attended to, at a health facility at least twice in the post-natal period (within 42 days).
4.3.1 The Proportion of women who Utilized PNC services

Utilization of the PNC services was the dependent variable in this study. Interviewed women were categorized into two groups; women who utilized PNC services and those who did not. Less than half (45.1%) of the women interviewed were categorized as having utilized PNC services. Figure 4.1 shows graphically the utilization of PNC services. During FGD when asked about frequency of the PNC visits, one of the mothers said, “It is not necessary to go to the clinic before six weeks”. Another echoed; “it is a waste of time if there is no problem.’’

![Figure 4.1 Utilization of PNC services](image)

4.3.2 Timing of First PNC Visit

Mothers and the neonates are at a great risk of developing complications during the first week following childbirth. Notably; this study showed that over half (53%) of the women sought PNC services in a health facility for the first time after more than 14 days post-delivery, while 11% and 35.6% within 7 days and between 7-14 days post-delivery respectively. This is shown in figure 4.2.
4.3.3 Reasons for Attending PNC services

Results in figure 4.3; show that women attended PNC for varied reasons; which ranged from general check-up, wellness of the baby and mother, child immunization and family planning among other needs. This was a multiple-choice question and the mothers gave more than one reason. The most frequent reason given was ensuring wellness of the baby (71.1%), while the least mentioned reason was seeking treatment services for sick mother (8.7%). This was also captured through the FGD sessions where many of the mothers stated, “We go to the clinic primarily for the baby’s health”. Another mother who said, “I take the baby at six weeks for immunization and to have the baby weighed”, echoed this. Just a few reported going for their own wellbeing. The Key Informant who said, “PNC services are associated with the baby’s health and few women go for their own health, unless there are
complications”, also captured this. Only 15.7% who reported that they went for PNC services because the health care provider had informed them.

![Figure 4.3 Reasons for attending PNC services.](image)

### 4.3.4 Reasons for Not Attending PNC services

Among the women who did not attend PNC services, lack of awareness of PNC services was highly mentioned (69.1%) as an inhibitive factor, followed by reasoning that the visit was unnecessary as both mother and baby were well and all the other reasons ranged between 11.5% and 2.7%. This was a multiple-choice question and the mothers gave more than one reason. This is shown in figure 4.4. During FGD one participant said, “Asking us to attend clinic two weeks after delivery is too early; one can hardly walk”. There was a rejoinder, “There is no need of going to clinic so soon after delivery if the baby is fine and am fine”. A third participant said that it was a waste of time going to the clinic soon after delivery if the vaccinations for the baby are not due. Many reported that they had not been
informed about the visit at two weeks. This was in congruence with one of key informant sentiments who said, “The focused PNC visits is a new concept and many of the HCW may not be aware of it and are used to the six week visit”. The issue of any socio cultural barriers was explored during the FGDs but none was cited.

Figure 4.4 Reasons for not attending PNC services

4.4 Social-Demographic Factors Influencing Utilization of PNC service.

The association of Social demographic factors with utilization of PNC services was explored using variables such as age, level of education, marital status, women occupation, wealth status, religion, parity, spouse occupation, spouse level of education and spouse occupation.

4.4.1 Association between Age and PNC Utilization

Table 4.2 shows the association of age and PNC utilization. There was no significant statistical association between age and utilization of PNC services ($\chi^2 = 8.7$ df 4, $p = 0.07$) at 95% confidence interval. The proportion of women that utilized PNC services was highest at ages 25-29 years at 52.7 %. (68)
Table 4.2 Association of age and utilization of PNC services

<table>
<thead>
<tr>
<th>Respondent’s age</th>
<th>Utilization of PNC service N=399 *</th>
<th>(\chi^2)</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;19 (n=20)</td>
<td>Utilized PNC: 4 (20.0)</td>
<td>8.70</td>
<td>4</td>
<td>0.069</td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 16 (80.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24 (n=159)</td>
<td>Utilized PNC: 67 (42.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 92 (57.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-29 (n=129)</td>
<td>Utilized PNC: 68 (52.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 61 (47.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34 (n=74)</td>
<td>Utilized PNC: 33 (44.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 41 (55.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;35 (n=17)</td>
<td>Utilized PNC: 8 (47.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 9 (52.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; \(\chi^2\) = chi square, df= degree of freedom

4.4.2 Association between Educational Status and PNC Utilization

Table 4.3 shows association between of PNC services utilization and woman’s level of education. Majority of those who attended PNC services, had college level of education at 55% (99/180). Bivariate results of these factors, indicated a statistical association between the woman’s level of education and utilization of PNC services (Chi=99.3; df=2; p=0.000).

Table 4.3 Association of educational level and PNC Utilization

<table>
<thead>
<tr>
<th>Respondents’ level of education</th>
<th>Utilization of PNC service</th>
<th>(\chi^2)</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=399</td>
<td>Utilized PNC</td>
<td>99.3</td>
<td>2</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary (n=108)</td>
<td>31 (28.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary (n=172)</td>
<td>50 (29.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College (n=119)</td>
<td>99 (83.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>77 (71.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>122 (70.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (16.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; \(\chi^2\) = chi square, df= degree

4.4.3 Association between Religion and PNC Utilization

Table 4.4 shows results of PNC services utilization by respondent’s religion. Bivariate results indicated there was no statistical association between the religion and utilization of PNC services, (Fischer’s Exact p-value= 0.86).
Table 4.4 Association of religion and PNC Utilization

<table>
<thead>
<tr>
<th>Respondents’ religion</th>
<th>Utilization of PNC service</th>
<th>Fischer’s Exact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
</tr>
<tr>
<td>Muslim (n=12)</td>
<td>4 (33.3)</td>
<td>8 (66.7)</td>
</tr>
<tr>
<td>Catholic (n=149)</td>
<td>71 (47.6)</td>
<td>78 (52.3)</td>
</tr>
<tr>
<td>Protestant (n=238)</td>
<td>105 (44.1)</td>
<td>133 (55.9)</td>
</tr>
</tbody>
</table>

Abbreviations: N, number of respondents; *row percentages; fisher exact applied.

4.4.4 Association of Marital Status and PNC Utilization

Among the respondents, the highest proportion of utilizers were married women 131 (72.7%) compared to unmarried women and divorced women at 31 (17.2%) and 18 (10%) respectively. This is shown on table 4.5. This related well with FGD findings; where the mothers reported that, “Those with husbands are more likely to visit the clinic because they can afford to take day off from their jobs as there is someone to help with the bills at home”. However, bivariate analysis indicated there was no statistical association between the marital status and utilization of PNC services ($\chi^2=2.01; df=2; P=0.37$).

Table 4.5 Association of marital status and utilization of PNC services

<table>
<thead>
<tr>
<th>Respondents’ marital status</th>
<th>Utilization of PNC service</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married (n=302)</td>
<td>131 (43.4)</td>
<td>171 (56.6)</td>
<td>2.01</td>
<td>2</td>
</tr>
<tr>
<td>Singles (n=58)</td>
<td>31 (53.5)</td>
<td>27 (46.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced (n=39)</td>
<td>18 (46.2)</td>
<td>21 (53.8)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations N=total number of respondents; *row percentages; $\chi^2$ =chi square, df= degree of freedom

4.4.5 Association of Parity and PNC Utilization

Table 4.6 shows association of women’s number of children and utilization of PNC services. Results from the cross-tabulation indicated that there was no statistical association between women’s number of children and utilization of PNC services ($\chi^2=0.04; df=2; p=0.98$). During FGD; there were varied opinions, one of the
multipara mothers said; “I have delivered several times and I have the experience to look after myself and the baby.”” One of the new mothers said, “I was so afraid of touching the umbilicus and I went to the clinic for the nurses to clean it for me”.

Table 4.6 Association of parity and PNC utilization

<table>
<thead>
<tr>
<th>Respondents’ Parity</th>
<th>Utilization of PNC service</th>
<th>χ²</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (n=130)</td>
<td>58 (44.6)</td>
<td>72 (55.4)</td>
<td>0.04</td>
<td>2</td>
</tr>
<tr>
<td>2-3 (n=215)</td>
<td>97 (46.3)</td>
<td>118 (54.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;4 (n=54)</td>
<td>25(46.3)</td>
<td>29(53.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; χ²= chi square, df= degree of freedom

4.4.6 Association between Employment Status and PNC Utilization

A higher proportion 59/180 (32.7%) of women on formal employment had utilized PNC services compared to those in self-employment (24.4%). The cross-tabulation of these variables showed presence of statistical association between the woman’s employment status and utilization of PNC services (χ²=39.4; df=3; P=0.000). This is shown on table 4.7. During FGD the mothers said; “Those in formal employment enjoy maternity leave and are thus able to visit the clinic several times”. Another said; “Those in casual jobs do not have the luxury of visiting the clinic as often as may be required because every day matters and they have to work daily, and some resume work within a week after delivery”. 
Table 4.7 Association of employment status and PNC utilization

<table>
<thead>
<tr>
<th>Respondents’ employment status</th>
<th>Utilization of PNC service</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=399</td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>self-employed (n=109)</td>
<td>44 (30.4)</td>
<td>65 (59.6)</td>
<td>39.3</td>
<td>0.000</td>
</tr>
<tr>
<td>casual (n=53)</td>
<td>27 (50.9)</td>
<td>26 (49.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>formal (n=80)</td>
<td>59 (73.8)</td>
<td>21 (26.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>housewife (n=157)</td>
<td>50 (31.9)</td>
<td>107 (68.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; \( \chi^2 \) = chi square, df= degree of freedom and p value

4.4.7 Association between Spouse’s Education and PNC Utilization

Table 4.8 shows association of spouses’ education and utilization of PNC services. Cross-tabulation indicated that there was a statistical association between spouses’ education and utilization of PNC services (\( \chi^2=56.69; \) df=2; p=0.000). Among the married women, a higher proportion 81 (72.3%) of women whose spouse had college utilized PNC services more compared to those whose spouse had secondary education (26.2%) or primary education (27.9%).

Table 4.8 Association between spouse’s educational status and PNC utilization

<table>
<thead>
<tr>
<th>Spouse education status</th>
<th>Utilization of PNC service</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=302</td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary (n=47)</td>
<td>12 (27.9)</td>
<td>31 (72.1)</td>
<td>59.69</td>
<td>0.000</td>
</tr>
<tr>
<td>Secondary (n=145)</td>
<td>38 (26.2)</td>
<td>107 (73.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College (n=110)</td>
<td>81 (72.3)</td>
<td>31 (27.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; \( \chi^2 \) = chi square, df= degree of freedom and p value

4.4.8 Associations Between Wealth Status and PNC Utilization

A wealth status variable was calculated based on household’s ownership of selected assets. All the interviewed households were categorized into three groups; lowest, the middle and the highest. Table 4.8 shows result of wealth status by utilization of
PNC services. The utilization of PNC services was highest 76/173 (43.9%) among women ranked highest by wealth status variable as compared to those women who ranked middle 56/173 (30.6%) and lowest (23.6%). This was captured during FGD where some mothers said; “Going to the clinic requires money which is not enough”, another echoed, “It is not just about money for paying for services, you just need to have some extra money to buy medicines and provisions”. There was statistical significant difference in utilization of PNC by wealth status ($\chi^2= 23.57$; df=2; $p = 0.000$). This is reflected in table 4.9.

Table 4.9 Associations between wealth and Utilization of PNC services

<table>
<thead>
<tr>
<th>Wealth status</th>
<th>Utilization of PNC service</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest (n=125)</td>
<td>41 (32.8)</td>
<td>84 (67.2)</td>
<td>23.57</td>
<td>2</td>
</tr>
<tr>
<td>Middle (n=116)</td>
<td>56 (48.3)</td>
<td>60 (51.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest (n=119)</td>
<td>76 (63.9)</td>
<td>43 (36.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; row percentages; $\chi^2$ = chi square, df= degree of freedom and p value

4.5 Health Systems Factors

Factors that were examined under Health systems; were accessibility to the health facility, cost of care, place of delivery, 4th ANC visit, and perceived quality of the services.

4.5.1 Association between Distance to the Health facility and PNC utilization

Table 4.10 shows association of women’s living distance to a nearest health facility and utilization of PNC services. A higher proportion of those who utilized services lived more than five kilometers of a health facility at 62% and this was significant ($\chi^2 = 9.97$  df=1; P=0.002).
Table 4.10 Association between distance and PNC utilization

<table>
<thead>
<tr>
<th>Distance to nearest health N=399</th>
<th>Utilization of PNC service</th>
<th>(\chi^2)</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5Km (n=330)</td>
<td>Utilized PNC: 137 (41.5)</td>
<td>9.97</td>
<td>1</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 193 (58.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 5Km (n=69)</td>
<td>Utilized PNC: 43 (62.3)</td>
<td>0.002</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did not utilize PNC: 26 (37.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; \(\chi^2\)=chi square, df= degree of freedom and p value

4.5.2 Association between mode of Transport to the Health Facility and PNC utilization

Mothers were asked about mode of transport to the nearest health facility and were categorized into three groups; those who said that they walked, those who used public transport and those who use private transport. The association between the rate of utilization of PNC services was significantly different by mode of transport used by women (Fischer’s exact p-value=0.000). The proportion of those who utilized PNC services was highest at 92.1% among those using private transport compared to those walking (20%) and those using public means at (52.2%). This is presented on table 4.11

Table 4.11 Association between mode of Transport and PNC utilization

<table>
<thead>
<tr>
<th>Mode of transport to health facility (N=399*)</th>
<th>Utilization of PNC service</th>
<th>Fischer’s exact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
</tr>
<tr>
<td>Walking (n=138)</td>
<td>27 (20.0)</td>
<td>108 (80.0)</td>
</tr>
<tr>
<td>Public transport(n=226)</td>
<td>118 (52.2)</td>
<td>108 (47.8)</td>
</tr>
<tr>
<td>Private transport (n=38)</td>
<td>35 (92.1)</td>
<td>3 (7.9)</td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; \*row percentages, fisher exact applied; p value
4.5.3 Cost of Care

Mothers were asked how much they were required to pay to access post-natal services. They were then they were categorized into four groups; those who did not pay anything, those who paid <100, those who paid between 101 shillings and 500 and those who paid from Ksh 501 or more. Results from the cross-tabulation indicated that there was a statistical association between cost of care and utilization of PNC services ($\chi^2=33.17; \text{df}=3; \text{p}=0.000$). The proportion of those utilizing PNC services was highest among those who paid more than Ksh.500 at 77.6% and lowest among those who had free services at 34.6%. This is displayed on table 4.12. During FGD the mothers reported that they did not mind paying as long as they were attended to quickly and got the services they wanted while others reported that clinic visits required money to buy medicines and supplies and this put them off.

<table>
<thead>
<tr>
<th>Fees paid to access services in Ksh</th>
<th>Utilization of PNC service (N=399*)</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free (n=188)</td>
<td>65 (34.6)</td>
<td>123 (65.4)</td>
<td>33.17</td>
<td>0.000</td>
</tr>
<tr>
<td>1- 100 (n=111)</td>
<td>49 (44.1)</td>
<td>62 (55.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101-500 (n=47)</td>
<td>28 (59.6)</td>
<td>19 (40.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;500 (n=49)</td>
<td>38 (77.6)</td>
<td>11 (22.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; $\chi^2 =$ chi square, df = degree of freedom and p value

4.5.4 Association between Place of Delivery and Utilization of PNC services

Mothers were asked about the place of last delivery and categorized into four groups; those who delivered in public health facilities, private health facilities, faith-based health facility and home. The chi-square statistics showed that utilization of PNC services was associated with place of delivery PNC ($\chi^2=26.63, \text{df}=3, \text{p}=0.000$). This is depicted on table 4.13. The proportion of women who utilized PNC services...
was highest among those who delivered at faith based health facilities (66.7%), followed by those who delivered at private health facilities (66.3%) and public health facilities (40.2%) and lowest among those who delivered at home (30.4%). During FGD one mother who delivered at a private facility reported; “The nurses were very kind and helpful I had no problem going their several times to ask for assistance”. Another said, “I declined to go to the clinic as informed because I felt they just wanted money as I was feeling well and the baby was fine as well. Another rejoinder from a mother using the public facility said, “The nurses are unfriendly and the queues are so long they just put me off”. Key informant said, “There was shortage of nurses at the public facilities resulting in delayed services and clients may not get enough attention.

Table 4.13 Association between Place of last delivery and utilization of PNC services

<table>
<thead>
<tr>
<th>Place of last delivery</th>
<th>Utilization of PNC service</th>
<th>Utilized PNC</th>
<th>Did not utilize</th>
<th>χ²</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government hospital (n=229)</td>
<td>92 (40.2)</td>
<td>137 (59.8)</td>
<td>26.63</td>
<td>3</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Private hospital (n=86)</td>
<td>57 (66.3)</td>
<td>29 (33.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission Hospital (n=15)</td>
<td>11 (66.7)</td>
<td>5 (33.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home (n=69)</td>
<td>21 (30.4)</td>
<td>48 (69.57)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; χ² = chi square, df= degree of freedom and p value

4.5.5 Association between 4th ANC Visit and Utilization of PNC services

Table 4.14 shows association between 4th ANC visit and utilization of PNC services. The chi-square statistics showed that utilization of PNC services was associated with 4th ANC attendance (χ² =4.62 df =1 p=0.032). The analysis revealed that, a higher proportion 171/180 (95%) of women who attended the 4th ANC visit utilized the
PNC services compared to those who had not completed the four ANC visits (5%).

During FGD the mothers stated that at the 4th ANC visit they received a lot counselling on the post-natal care, one of the mothers reported that she used to wait until 6 weeks to start PNC care but with the last pregnancy she was encouraged by the nurse to go after two weeks.

Table 4.14 Association between recommended 4th ANC visit and utilization

<table>
<thead>
<tr>
<th>Four ANC visit N=399</th>
<th>Utilization of PNC service</th>
<th>χ² df p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
</tr>
<tr>
<td>Yes (n=366)</td>
<td>171 (46.7)</td>
<td>195 (53.3)</td>
</tr>
<tr>
<td>No (n=33)</td>
<td>9 (27.3)</td>
<td>24 (72.7)</td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; χ² = chi square, df= degree of freedom and p value

4.5.6 Quality of Care and Utilization of PNC services

Women were asked several questions, which assessed perceived quality of care received during their most recent health facility/clinic visit. These questions were designed using a 5-point Likert scale and they included; friendliness of health workers, availability of staff when needed, privacy accorded during examination, availability of medicines, reasonable health facility working hours, and cleanliness of facility. The clients were asked to rank their experience from 1 to 5 representing very poor to very good servicers respectively. Using these questions, a composite quality of care indicator was constructed whereby nearly half of the women perceived quality of services as poor (46.6%), while 34.8% and 18.1% perceived health services as average and good quality respectively. Figure 4.6 shows rating of perceived quality of care.
Figure 4.6 Rating of quality of care

Figure 4.7 shows the aspects of care studied. Only 26.6% of the mothers who reported that drugs were available and 25.3% thought that the hours that the facility was open were reasonable.

Figure 4.7 Aspects of quality of care studied

About 31.8% said that the staffs are friendly while 33.6% and 35.8% respectfully reported that the staffs listened and are available. This was captured during the FGD sessions when participants reported that; “The nurses often report to work late and
take long breaks thus keeping us in the facility for too long and we have numerous chores to complete at home”. Another participant asked; “Could the facility open on Saturdays to enable us to attend with our spouses?” Several mothers reported that they preferred being attended to by the TBAs, one said ‘The TBA does not keep you waiting and is available at any time’. Another had this to say; “The nurses were very rude to me during delivery I cannot go back there”. Another had this to say, “You are in pain and all she does is give you a harsh and rude answer, that is why I don’t go to the hospitals, I am not used to somebody who roughs me up.” Key informant said, “The work load is high and the nurses may not have much time to spend with a client and this may make the client feel rushed, though undignified care cannot be ruled out”. The chi-square statistics showed that utilization of PNC services was significantly associated with the woman’s perceived quality of health services ($\chi^2=48.87$, df = 2; $P= 0.000$).

Table 4.15 Association of quality of care and PNC utilization

<table>
<thead>
<tr>
<th>Perceived quality of care</th>
<th>Utilization of PNC service</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=399</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good (n=187)</td>
<td>137 (73.3)</td>
<td>50 (26.7)</td>
<td>48.87</td>
<td>2</td>
</tr>
<tr>
<td>Average(n=139)</td>
<td>57 (41.1)</td>
<td>82 (58.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor (n=73)</td>
<td>25 (34.3)</td>
<td>48 (65.8)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; $\chi^2$ = chi square, df= degree of freedom and p value.

4.6 Women’s Knowledge towards PNC Services

Women were asked several questions, which assessed knowledge regarding PNC services. These questions were designed using a 5 point Likert scale and they included Knowledge of; breast feeding counseling, mother health check, health check on baby, immunization, family planning, HIV counseling and nutrition guidance services. Using these questions, a composite knowledge indicator was
constructed whereby slightly over a quarter of the women were categorized as very knowledgeable about PNC services (28.6%), while 50.1% and 20.8% of woman had average and low knowledge respectively. This is presented in figure 4.8.

Figure 4.8 Women knowledge of PNC services

Table 4.16 shows Association of Knowledge and utilization of PNC services.

Utilization of PNC services was significantly associated ($\chi^2 =9.26$, df=2; P= 0.010) with the woman’s’ knowledge of PNC services.

<table>
<thead>
<tr>
<th>Knowledge of services</th>
<th>Utilization of PNC service (N=399*)</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNC</td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (n=104)</td>
<td>57 (50.0)</td>
<td>50 (50.0)</td>
<td>9.26</td>
<td>2</td>
</tr>
<tr>
<td>Average (n=172)</td>
<td>97 (48.5)</td>
<td>103 (51.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>low (n=122)</td>
<td>26 (30.6)</td>
<td>59 (69.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; $\chi^2 =\chi$ square, df= degree of freedom and p value.

This however, contrasted, with results from qualitative finding, which reported low awareness levels as captivated by FGD: one mother said, “The only PNC services that I know off, is immunization for the baby and the family planning Clinic.’’

Another echoed this and said ‘‘These are the only two services that take us to the
facility after delivery and these are offered at six weeks after delivery. Several said, “We do not know about the two weeks visit, and the return date I received was for sixth week”.

4.7 Association between PNC Attitude and Utilization of PNC services

Table 4.17 shows attitude of PNC services among interviewed women. Women were asked several questions that assessed their attitudes regarding PNC services using a 5-point Likert. Using these questions, a composite indicator was constructed whereby more than two thirds of the respondents’ (69.4%) had positive attitude towards PNC services as illustrated in figure 4.9.

![Figure 4.9 Attitude toward PNC services](image)

Bivariate analysis (table 4.17) showed utilization of PNC services was associated with the woman’s attitude towards PNC services ($\chi^2 = 13.19$, df=1; P= 0.000). This finding was complimented by qualitative findings. For instance, during FGD when asked if they would in future utilize the PNC service as per guidelines from the
G.O.K one mother said “No I still feel the visit at six weeks is enough,” another said “I would only go to the facility before the immunization at six weeks if the baby or I are unwell.” Another felt that it is important to keep the appointments as given by the health care workers; she said “They know the best for us.” key informant said “There is need to educate the community on post-natal services because the mothers feel that they do not need further care after delivery; that is the reason between the high proportions of mothers attending ANC compared to PNC services.” Majority of the women were resolute that PNC services are for the child’s welfare.

Table 4.17 Association of PNC attitude and utilization of the service

<table>
<thead>
<tr>
<th>Attitude towards PNC services N=399</th>
<th>Utilization of PNC service (N=399*)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Utilized PNC</td>
<td>Did not utilize PNC</td>
<td>χ²</td>
<td>df</td>
</tr>
<tr>
<td>Positive (n=277)</td>
<td>143 (51.6)</td>
<td>134 (48.4)</td>
<td>13.19</td>
<td>1</td>
</tr>
<tr>
<td>Negative (n=122)</td>
<td>39 (32.0)</td>
<td>83 (68.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: N, total number of respondents; *row percentages; χ² = chi square, df= degree of freedom and p value.

4.8 Determinants of PNC Utilization

A multinominal logistic regression analysis was performed on multiple factors to eliminate confounding factors and examine the effect of predictive factors, which significantly associated (independently), with utilization of PNC services at bivariate analysis. The results are presented in table 4.18.

Women’s level education was significant; those with college education were more likely to be utilizers (OR=12.292, p=0.000) compared to those with primary level. Utilization of PNC services was enhanced with employment status with those respondents who were in formal employment being more likely to utilize the
services compared to those who were self-employed or in the casual employment. Similarly, household wealth index boosted respondent’s utilization level; those in high income (OR=3.6211, p=0.0000) and middle-income earners (OR= 1.9121, p=0.015) respectively were more likely to seek PNC service than those in low-income category. Adjusting place of delivery, respondent who delivered in private and mission hospitals respectively were three times more likely to be PNC service utilizers (OR 2.926912, P=0.000) and (OR 2.978261, P=0.053) than respondents who delivered in government facilities. Mode of transport affected utilization of PNC service. Walking to a health facility (OR 0.0214, P<0.001) and using a public transport (OR 0.0936, P<0.001) reduced the odds of seeking PNC services compared to those using private transport. Utilization of PNC services were inversely proportional to cost. Knowledge of services was directly proportional to services utilization. Highly knowledgeable people (OR=2.2307, p=0.008) were more likely to be utilizers compared to those who rated services poorly. Quality of service endeared people to be utilizers. Those who perceived quality of care to be good and average were 4 (OR 3.9941753-, P<0.001) and 5 (OR 5.260799, P<0.001) times more likely to be utilizers compared to those who perceived care to be poor. Similarly, attitude to PNC service was a predictor. Those who had positive attitude (OR=3.6507, p=0.000) towards PNC services more likely to be utilizers compared to those who had a negative attitude.

The null hypothesis is rejected as socio demographics, health systems and knowledge and attitude factors were found to influence utilization of PNC services.
| Variable                          | Odds Ratio | Std. Err. | z    | P>|z|  | 95% Confidence Interval (CI) |
|----------------------------------|------------|-----------|------|------|-----------------------------|
| **Woman’s education**            |            |           |      |      |                             |
| Primary                          | Ref        |           |      |      |                             |
| Secondary                        | 1.01798    | 0.2758    | 0.07 | 0.948| 0.5984                      | 1.73147                      |
| College                          | 12.2915    | 3.9906    | 7.73 | 0.000| 6.5081                      | 23.2278                      |
| **Employment status**            |            |           |      |      |                             |
| Self employed                    | 0.6518519  | 0.2197    | -1.27| 0.020| 0.3366                      | 1.2619                      |
| Casual                           | Ref        |           |      |      |                             |
| Formal                           | 2.705466   | 1.0125    | 2.66 | 0.008| 1.2991                      | 5.63389                     |
| Housewife                        | 0.4499827  | 0.1457    | -2.47| 0.014| 0.2385                      | 0.84881                     |
| **Wealth index**                 |            |           |      |      |                             |
| Lowest                           | Ref        |           |      |      |                             |
| Middle                           | 1.912195   | 0.5088    | 2.44 | 0.015| 1.1350                      | 3.22145                     |
| Highest                          | 3.6211     | 0.9764    | 4.77 | 0.000| 2.1346                      | 6.14275                     |
| **Distance to facility**         |            |           |      |      |                             |
| <5km                             | 0.4292082  | 0.1169    | -3.11| 0.002| 0.2515                      | 0.73203                     |
| >5km                             | Ref        |           |      |      |                             |
| **Mode of transport**            |            |           |      |      |                             |
| Walking                          | 0.0214286  | 0.1369    | -6.02| 0.000| 0.0061                      | 0.07496                     |
| Public                           | 0.0936508  | 0.5770    | -3.84| 0.000| 0.0079                      | 0.31331                     |
| Private transport                | Ref        |           |      |      |                             |
| **Place of delivery**            |            |           |      |      |                             |
| Government                       | Ref        |           |      |      |                             |
| Private                          | 2.926912   | 0.7754    | 4.05 | 0.000| 1.7413                      | 4.91960                     |
| Mission                          | 2.978261   | 1.6799    | 1.93 | 0.053| 0.9858                      | 8.99695                     |
| Home                             | 0.6514946  | 0.1917    | -1.46| 0.145| 0.3659                      | 1.15993                     |
| **Cost of care**                 |            |           |      |      |                             |
| Free                             | Ref        |           |      |      |                             |
| Ksh 1-100                        | 1.495533   | 0.3664    | 1.64 | 0.101| 0.9251                      | 2.41761                     |
| Ksh 101-500                      | 2.788664   | 0.9326    | 3.07 | 0.002| 1.4477                      | 5.37137                     |
| Ksh >501                         | 6.537063   | 2.4523    | 5.00 | 0.000| 3.1336                      | 13.6368                     |
| **Knowledge of services**        |            |           |      |      |                             |
| High                             | 2.230769   | 0.6721    | 2.66 | 0.008| 1.2358                      | 4.02656                     |
| Average                          | 2.100821   | 0.5781    | 2.70 | 0.007| 1.2250                      | 3.60261                     |
| Poor                             | Ref        |           |      |      |                             |
| **Quality of services**          |            |           |      |      |                             |
| Poor                             | Ref        |           |      |      |                             |
| Average                          | 3.9941753  | 0.9414    | 5.74 | 0.000| 2.4683                      | 6.29476                     |
| Good                             | 5.260799   | 1.5618    | 5.59 | 0.000| 2.9400                      | 9.41345                     |
| **Attitude**                     |            |           |      |      |                             |
| Positive                         | 3.650794   | 0.885316  | 5.34 | 0.000| 2.2697                      | 5.87223                     |
| Negative                         | Ref        |           |      |      |                             |
CHAPTER 5: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

The study assessed the utilization of PNC services and factors that influence its utilization. It was based on a sample size of 399 respondents.

5.2 Utilization of PNC services

In the study, less than half of the women (45.1%) attended PNC at least twice as recommended by the G.O.K, (2011) during the first 42 days post-delivery. Nationally 51% received a postnatal checkup in the first two days after their last live birth (KDHS 2014). This confirms that in the PNC, services are poorly utilized, and the weakest in the maternal neonate continuum of care compared to ANC attendance of 98% and Delivery with skilled attendance of 70% (KDHS 2014). This is a far cry from the recommended universal access of maternal services as advocated by the WHO, (2013) and G.O.K, (2010). Poor rates of PNC attendance have been previously reported in other setting within African states; according to a Lawn and Kerbe (2006). Ethiopian DHS reports that, the attendance of PNC within six weeks after childbirth was only 19 % among the surveyed post-natal mothers (Mekonnen et al., 2002). Results from a study conducted in Congo showed that only 34.6% of postnatal women had attended PNC within 42 days following childbirth (Dramax et al., 2012). The poor up-take of PNC services means that for many mothers and the infants the continuum of care is disrupted during this critical period, when lack of appropriate care could result in significant ill health and even death. Timing of the PNC visit is also very important and in this study it only 26% who attended clinic within two weeks. This is similar to a study done in Uganda that reported 15.4% had post-natal care within a week (Izudi et al., 2015).
5.3 Socio-Demographic Determinants PNC utilization

The study has identified several Socio demographic factors that have important influence on PNC utilization.

Education was significant and regression findings revealed that respondents who had completed college and secondary education were more likely to utilize PNC services than those in the primary category. Similarly, in Indonesia, Titaley and colleagues observed that maternal education had a profound effect on seeking medical care (Titaley et al., 2009). There are a number of explanations as to why education is a key determinant of health service use. Women, who are highly educated have increased access to medical information and generally capacitated to make decisions or choices regarding their health seeking behaviours. Indeed, according to a study conducted in 2009, educated women are more likely to be financially independent; enjoy more autonomy within and outside the household and greater confidence to make decisions about their own and demand health care services (Dhaher et al., 2009). Educated women are also likely to have improved knowledge and information on modern medical treatment and have greater capacity to recognize specific illness (Mrisho et al., 2009). Awusi et al., (2009) reported similar results that respondents married to spouse with college education were likely to utilize PNC services. This this is in tandem with a previous study by Employment status was a determinant of use of services and those in self-employment were 65% less likely to utilize the services than those, in formal engagements. From the FGDs, this was attributed to opportunity loss when mothers take time off from their daily work to attend clinic. Employment is synonymous with empowerment, which may affect family’s wealth status that in turn motivates health services utilization.
Wealth status was found to be a predictor of utilization of services with respondents from lower and middle class being less likely to be utilizers than those in the highest wealth status. These findings are consistent with findings by Wang et al., (2011) and Izudi et al., (2015) who reported that women from richer households were more likely to access postnatal care. Other demographic factors such as woman’s marital status, religion and parity status were not associated with utilization of PNC services contrary to other findings (Mwaniki 2002, Rullbock et al., 2008).

Mode of transport was predictor of utilization of PNC services, those who used private means were more likely to be utilizers than those who used public transport; while those who walked were less likely to utilize service compared to those who used public transport. Mode of transport is influenced by level of education; as those with higher levels of education are more likely to have finances for transport. In the study, area transport infrastructure is good and this may be an enabler to utilization of services.

5.4 Health Systems Factors Associated with PNC utilization

From this study, distance to the health facility was a found not to deter utilization; this can be attributed to the good road network found in the study area and thus there is ease of movement. This finding contrasts with other studies that documented distance to the health facility to be a barrier to uptake of services (Mwaniki et al. 2002; Kamau, 2014).

Perceived quality of services was found to be predictive of PNC utilization with bias for good services. Respondents who rated services as good were 52% more likely to utilize the services compared to those who rated services as poor. This is in tandem with other studies (Onah, et al., 2006; Mrisho et al., 2009; Kamau 2014); which highlighted that promptness of care, competence of health workers, desire for
privacy, perceived availability of equipment, friendliness of staff were all determinants of utilization of health services. It was observed that where people have the choice between several facilities, they sometimes travel further if the target facility is perceived to offer superior quality care (Gbrysch & Campbell, 2009). They further reported that even where facilities are conveniently located, they are underused if their quality is considered bad. This was found to compare well with this study as findings from the FGDs showed that many women from the area travel to a certain hospital that was reported to offer very good services. Cost of care did not deter the mothers from seeking care and in this study; those who paid for services were more likely to utilize PNC services than those who had free services. This is important in our setup since maternity services are free but the mothers seem to have focused more on quality.

From this, study it evident that the mothers experienced some form of disrespectful care; this is consistent with other studies in Kenya that reported undignified care (Centre for Reproductive Rights and Federation of Women Lawyers, 2007). Disrespectful care has been documented as a key barrier to uptake of services as noted by Bowser et al. (2010). Rosman et al., (2006) that women vote with their legs have also documented it; that they go to the facility that they perceive to offer good services, this is consistent with findings from this study which observed that distance and cost of care did not deter PNC utilization. Only 15% of the women had been informed about the PNC services; meaning that many HCWs did not inform the mothers about PNC services. Similar findings have been documented elsewhere by Titaley et al., (2009) who reported that even for women who delivered at health facility they reported that they did not receive appointments for the services on discharge and were therefore not aware of them. The higher utilization of PNC
services by women who had delivered in a private and faith-based hospital may be because private hospitals have more resources and therefore may be more likely to provide individualized care to their patients. These findings are similar to studies reported elsewhere by Izudi et al., (2015), Gbrysch, and Campbell (2009).

Quality may have featured prominently in this study because of the high educational level; about 73%, the respondents had secondary school education and above compared to the national level of 43% according to the KDHS (2014). It has been documented that people with more education are aware of their rights and demand quality services (Titaley et al., 2009, Awusi et al., 2009).

5.5 Knowledge and Attitude Factors associated with PNC utilization

Knowledge of services was found to predict utilization; with those who rated PNC knowledge as poor, being less utilizers. During the FGDs, it was evident that there was confusion about the frequency and components of PNC services among the women in the study population that could undermine prompt care seeking for mother and the baby. Low utilization of PNC services has been related to women's lack of knowledge about its importance and their lack of perceived need especially if they are feeling well (Lullbock et al., 2008). The majority of the mothers had an awareness of PNC services but they did not know when they should seek those services. From the results of this study, it can be concluded that mothers’ awareness about PNC service is more focused on the vaccination component than others.

Attitude towards care was also a predictor to services use; those with a positive attitude were more likely to utilize PNC services than those who with negative attitude. The fact that postnatal care was perceived to be unnecessary by women who did not feel sick demonstrates that these women do not recognize the importance of postnatal care for preventive health care. Dhaher et al., (2009)
reported that the most frequent reason for not obtaining PNC services was that women did not feel sick and therefore did not need PNC services. This has also been reported in other studies Warren et al. (2009) that many women report that PNC services are for the children to receive vaccinations and therefore wait to attend clinic only when vaccinations are due. Women might ignore some of the negative health outcomes that can occur during the puerperium may not be noticed early or initial signs; therefore, WHO (2013) recommends postnatal care for all women and infants, including those who do not perceive any problems, for the purpose of general assessment of both physical and mental well-being. There was perception that only women and neonates with health problems need to make efforts to receive postnatal care.

5.6 Conclusion

The study highlighted that utilization of postnatal care in the study area is poor; only 45.1% of women received a postnatal care at least twice in the post-natal period. The services were mainly accessed at or after 6 weeks. The socio-demographic determinants that were found to be predictive of utilization of PNC services were level of education, household wealth status, and employment status. Health systems associated with use of PNC services were; quality of care and delivery in a private hospital. Knowledge of PNC services and a positive attitude were also predictive of utilization of service.

5.7 Recommendations

Based on the results of the study, the following recommendations were made. The ministry of health needs to sensitize the communities on the importance of PNC services. The health care workers need to inform the clients about PNC services and
schedule appointments. Quality of services in the facilities needs to improve and be responsive to the users.

5.8 Further Research

There is need to carry out a longitudinal study to confirm the variables that determine utilization of PNC services.
REFERENCES


Kiambu District Medical Records Office, (2010). Kiambu District quarterly reports


StataCorp. (2013). Stata: Release 13. Statistical Software, College Station, TX: StataCorp LP.


APPENDICES

Appendix 1: Questionnaire

Questionnaire Number……………… (ID) No……………………

Date of interview……………………

Date checked…………………………

Area code……………………………

My name is Nancy Njoka. I am conducting this research as part of my study for a Master’s degree at Kenyatta University.

This questionnaire aims at obtaining information about the factors influencing utilization of PNC services. The information attained will only be used for the purpose of this study and is held confidential. (Please do not write your name). Participation is voluntary and you can stop the interview at any time. However, I hope that you will participate in this survey since your views are important.

In case of any questions and further Clarification kindly contact

Nancy Njoka 0722 759 923 or

Chairman Ethical Review Committee Kenyatta University
## Questionnaire

<table>
<thead>
<tr>
<th>Socio-demographics</th>
<th>code</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 In what year were you born?</td>
<td>Year. . . . . . . .</td>
</tr>
<tr>
<td>02 What is your present marital status?</td>
<td>1. Married (go to q3) 2. Never married 3. Separated/divorced</td>
</tr>
<tr>
<td>03 In what year was your spouse born</td>
<td>Year.</td>
</tr>
<tr>
<td>07 What is the highest educational level your spouse attained? (if applicable)</td>
<td>1. Primary incomplete 2. Primary completed 3. Secondary incomplete</td>
</tr>
<tr>
<td></td>
<td>4. Secondary completed</td>
</tr>
<tr>
<td></td>
<td>5. College Incomplete</td>
</tr>
<tr>
<td></td>
<td>6. College complete</td>
</tr>
<tr>
<td></td>
<td>7. None</td>
</tr>
<tr>
<td>08</td>
<td>What is your spouse’s present occupation? (If applicable)</td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>How many children do you have?</td>
</tr>
</tbody>
</table>

**Background information**

| 10 | Did you attend Ante natal clinics during the last pregnancy? | 1. Yes… |
|    |                                                              | 2. No….go to 14          |
| 11 | How many times did you attend Ante natal clinic?             |       |
| 12 | Where did you deliver your last baby?                       | 1. Government Hospital   |
|    |                                                              | 2. Private hospital      |
|    |                                                              | 3. Mission hospital      |
|    |                                                              | 4. At home               |
| 13 | By what method did you deliver? (mark one)                   | 1. Normal delivery       |
|    |                                                              | 2. Caesarean section     |
| 14 | Who assisted you with the delivery of your last baby?        | 1. Health professional   |
|    |                                                              | 2. Traditional birth attendance |
|    |                                                              | 3. Relative/Friend       |
|    |                                                              | 4. No one assisted       |
| 15 | Did you go to the clinic during the 6 weeks after child birth? | 1. Yes |
|    |                                                              | 2. No (go to q21)        |
| 16 | Who gave information about attending clinic after delivery? | 1. Doctor  
2. Nurse  
3. Others (specify)……. | 1  
2  
3 |
| 17a | How many days after delivery did you go to clinic for the first time? | ………………………… | |
| 17b | After that when else did you go to the clinic? | ………………………… | |
| 17c | Altogether how many times did you go to the clinic during the 6 weeks following delivery? | 1.once  
2.2 times  
3.3 times  
4.> more than 3times | 1  
2  
3  
4 |
| 18 | Why did you go to the clinic? | 1. Because was I was unwell  
2. Because the baby needed immunization  
3. Because the midwife had told me I should  
4. Because I wanted to start family planning  
5. Because I wanted to make sure I am back to normal (health check)  
6. Because I wanted to make sure baby was well (Health check on baby) | 1  
2  
3  
4  
5  
6 |
| 19 | What stopped you from going to the clinic following child delivery? | 1. Attending to other family matters  
2. Not aware about the services  
3. It is expensive  
4. Did not think it was necessary as I was feeling well  
5. No money for transport | 1  
2  
3  
4  
5  
6 |
6. Waiting time is too long
7. No one to live the children with.

<table>
<thead>
<tr>
<th>20a</th>
<th>How far from here is the hospital?</th>
<th>Distance in km…</th>
</tr>
</thead>
<tbody>
<tr>
<td>20c</td>
<td>How much do you pay for transport?</td>
<td>Ksh……</td>
</tr>
<tr>
<td>20d</td>
<td>Did you have to pay any fee for the PNC services that you were Provided in the hospital?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>20e</td>
<td>How much did you pay for services?</td>
<td>Ksh ……</td>
</tr>
</tbody>
</table>

21 Quality of care

Think of previous visits to the hospital or clinic and rate the following statements, where 1 represents strongly disagree and 5 represents strongly agree.

<table>
<thead>
<tr>
<th>21a</th>
<th>The Staffs are friendly</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>21b</td>
<td>The Staff listened to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21c</td>
<td>The Staffs are available when needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21d</td>
<td>There is privacy during examinations</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>21e</td>
<td>Medications are available</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>21f</td>
<td>The hospital is clean</td>
<td></td>
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<tr>
<td>21g</td>
<td>The hours that the hospital is open are reasonable</td>
<td></td>
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</tr>
</tbody>
</table>

22 Knowledge of PNC services:

Women are provided with some services in the health facility in the 1st six weeks after delivery: Indicate to what extent you agree that the following services are available at the clinic, where 1 indicates strongly disagree and 5 strongly agree.
<p>| | | | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>22a</td>
<td>Breast feeding counselling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22b</td>
<td>Health check on mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22c</td>
<td>Health check on baby</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22d</td>
<td>Family planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22e</td>
<td>Vaccinations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22f</td>
<td>HIV counselling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22g</td>
<td>Nutrition counselling</td>
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</tbody>
</table>

**23 Attitude to PNC services**

From your opinion, rate the following statements: where 1 indicates strongly disagree and 5 strongly agree.

<p>| | | | | | |</p>
<table>
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<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>23a</td>
<td>It is recommended that women go to health facility after delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23b</td>
<td>Post-natal services are useful to the health of mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23c</td>
<td>Post-natal services are important for the child’s health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23d</td>
<td>You would attend Post-natal services in future</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23e</td>
<td>You would recommend the post-natal services to others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Wealth index status questionnaire

|   | What is the main source of drinking water for members? | 1. Piped into dwelling  
2. Piped into compound  
3. Shallow well  
4. Rain water  
5. Dam/river |   |
|---|--------------------------------------------------------|------------------|---|
| 1 | What kind of toilet facility does members of your household use? | 1. Flush latrine inside the house  
2. Flush latrine shared with other households  
3. Pit latrine private  
4. Pit latrine shared by other households |   |
| 2 | Does your household have? | 1. Electricity  
2. T/V  
3. Radio  
4. Refrigerator |   |
| 3 | What type of fuel does your household mainly use for cooking? | 1. Electricity  
2. Lpg gas  
3. Kerosene  
4. Charcoal  
5. Wood |   |
| 4 | Do you have a separate room for cooking | Yes  
no |   |
| 5 | Main material of the floor. record observation. | 1. Earth/sand  
2. Wood planks  
3. Concrete |   |
| 6 | Main material of the roofing record observation. | 1. Grass / thatch / makuti  
2. Corrugated iron (mabati)  
3. Asbestos sheet . . . . . .  
4. Tiles |   |
| 7 | Main material of the walls record observation | 2. Cardboard/reused wood  
3. Timber/iron sheets  
4. Stone |   |
| 8 | |   |
Appendix 2: Focus group discussion guide

1. In your opinion what are PNC services?

2. What services are provided?

3. What are your comments about mothers going to the clinic at 2 weeks and again at 6 weeks?

5. When would you recommend that women go to the clinic after delivery?

6. Why do you think some mothers do not go to the clinic for PNC services?

   Now let me ask you about the services

7. How satisfied are you with the services?

8. What is done well?

9. What areas need improvement?
Appendix 3: Key informant interview guide

1. Tell me about utilization of PNC services in the sub County

2. Two visits are recommended, which visit do more of the women attend, why?

3. Why is it that the other visit does not get as many women attending?

4. What have you done to encourage more mothers to have PNC services?

5. What challenges do you encounter as you offer PNC services in the division?

6. In your opinion how best can these challenges be resolved?

7. It has been argued that provider attitudes influence utilizations of services, what is your comment?
Appendix 4: Authorization letter from Graduate School

Kenyatta University
Graduate School

E-mail: kulps@yahoo.com  P.O. Box 43844, 00100
        dean-graduate@ku.ac.ke  NAIROBI, KENYA
Website: www.ku.ac.ke  Tel. 8710901 Ext. 57530

Country Ref: P57/PT/13523/2009  Date: 5th May, 2012

The Permanent Secretary,
Ministry of Higher Education, Science & Technology,
P.O. Box 30040,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR NANCY MUGURE NJOKA REG.NO
F57/PT/13523/2009

I write to introduce Nancy Mugure Njoka who is a Postgraduate Student of this
University. She is registered for a M.Ph degree programme in the Department
of Community Health in the School of Public Health.

Ms. Njoka intends to conduct research for a Proposal entitled, “Factors
Influencing Utilization of Post Natal Care Services in Kihara Division, Kiambu
District, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL

LNM/ewm
Appendix 5: Authorization letter from Ministry of Education, Science and Technology

This is to certify that:

Prof./Dr./Mr./Mrs./Miss/institution
Nancy Mugure Njoka

of (Address) Kenyatta University
P.O.Box 43844-00100, Nairobi.

has been permitted to conduct research in

Location
District
Province

on the topic: Factors influencing utilization of
Post Natal care services in Kihara Division, Kiambu
District, Kenya.

for a period ending: 31st December, 2013.
Appendix 6: Ethical clearance from KU Ethics Review Committee

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844
Nairobi, 00100
Tel: 8710901/12
Tel: 8710901/12

Our Ref: KU/R/COMM/51/48

Date: August 28th 2012

Nancy Mugure Njoka
School of Public Health
Kenyatta University
P. O. Box 43844, Nairobi.

Dear Ms. Njoka,


1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic – FACTORS INFLUENCING UTILIZATION OF POST NATAL CARE SERVICES IN KIHARA DIVISION, KIAMBU DISTRICT, KENYA, Version 2’ dated 7th August 2012.

2. APPLICANT

Nancy Mugure Njoka
School of Public Health
Kenyatta University
P. O. Box 43844, Nairobi.

3. SITE

Kihara Division, Kiambu District - Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

(i) Scientific design and conduct of study,
(ii) Recruitment of research participant,
(iii) Care and protection of research participants,
(iv) Protection of research participant’s confidentiality,
(v) Informed consent process,
(vi) Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 28th August, 2012.
5. **ADVICE/CONDITIONS**

   i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.

   ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.

   iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.

*When replying, kindly quote the application number above.*

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

\[Signature\]

Prof. Nicholas K. Gikonyo  
Chairman Ethics Review Committee

\[Signature\]  
Nancy M. Njoka

accept the advice given and will fulfill the conditions therein.

\[Signature\]  
Mugene

Dated this day of 29th August 2012

cc. Vice-Chancellor  
Director: Institute for Research Science and Technology
Appendix 7: Letter of authorization from District Medical Officer, Kiambu Hospital

MINISTRY OF PUBLIC HEALTH & SANITATION

KIAMBU DISTRICT

Ref: No. KBC/00/08/11/3/VOL/W152

Date: 25 March 2013

To: D.N. KAMARA

RE: RESEARCH AUTHORIZATION - NANCY MUGORE MOCA

This is to inform you that the above named person who is a student of Kenyatta University pursuing a Master of Public Health Degree is authorized to carry out research on Utilization of Post-Natal Care Services in Kiambu District.

Kindly accord her the necessary assistance.

DISTRICT MEDICAL OFFICER OF HEALTH
KIAMBU DISTRICT

ROMANO KINYEA
Acting District Medical Officer of Health
KIAMBU EAST DISTRICT
Appendix 8: Letter of Authorization from District Commissioner Kiambu

OFFICE OF THE PRESIDENT
PROVINCIAL ADMINISTRATION & INTERNAL SECURITY

District Commissioner
KIAMBU DISTRICT
PO Box 32
KIAMBU

CIVILIAN/WH/VI (29)

27th April, 2012

District Officer
KIHARA DIVISION

R/RESEARCH AUTHORIZATION - NANCY MUGURE NJOKA - P57/P7/13523/09

The above named person is a student at Kenyatta University pursuing a Master of Public Health Degree.

She is authorized to carry out research on "Utilization of Post-Natal Care Services" within your area of jurisdiction.

Kindly accord her the necessary assistance.

DISTRICT COMMISSIONER
PO Box 32
KIAMBU

J. K. WANGO
As DISTRICT COMMISSIONER
KIAMBU
Appendix 7: Map of study area