

**FACTORS ASSOCIATED WITH POSTNATAL
CARE USE AMONG POST-DELIVERY WOMEN IN
BUGESERA DISTRICT, RWANDA**

VICTOR NDARUHUTSE

MASTER OF SCIENCE

(Public Health)

JOMO KENYATTA UNIVERSITY

OF

AGRICULTURE AND TECHNOLOGY

2023

**Factors associated with Postnatal Care use among post-delivery women
in Bugesera District, Rwanda**

Victor Ndaruhutse

**A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Public Health of the
Jomo Kenyatta University of Agriculture and Technology**

2023

DECLARATION

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

Signature Date

Victor Ndaruhutse

This thesis has been submitted for examination with our approval as University Supervisors:

Signature Date

Prof. Kenneth Ngure, PhD

JKUAT, Kenya



Signature Date

Dr. Mercy Nwankwo, PhD

Kabale University, Uganda

DEDICATION

This work is dedicated to my wife Mrs Byukusenge Francine and my children Ange Bessie, Annaelle Benie and Alois Benoit who missed me so much while I was away for the courses and field work and who always bring a smile on my face.

ACKNOWLEDGMENT

I would like to acknowledge almighty God who is my father, for keeping me healthy and safe throughout the study period. This study was carried out at the School of Public Health, Jomo Kenyatta University of Agriculture and Technology/ Kigali Campus. I am grateful to the University for providing me with the opportunity and skills to conduct this study.

I express my deep and sincere gratitude to my supervisors, Prof Kenneth Ngure and Dr Mercy Nwankwo for their guidance and constant support throughout the entire study period. Their vast knowledge, brilliant instructions, swift responses, great patience and sound advice paved my way to the goal.

My sincere gratitude goes to my dear wife and children for their love, spiritual, financial and moral support throughout my studies and for their special patience during my absence. My appreciation also goes to all JKUAT lecturers for their teachings in class that opened me to the world of scientists.

I wish to thank my research assistants who tirelessly helped me to collect the data I needed. I further thank the respondents; without you this work would not be possible.

Special thanks to my JKUAT classmates for the good moments we had together during class works and research processes, you are great people to be with.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGMENT	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	x
LIST OF FIGURES	xii
LIST OF APPENDICES	xiii
ABBREVIATION AND ACRONYMS	xiv
DEFINITION OF OPERATIONAL TERMS.....	xv
ABSTRACT.....	xvi
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background	1
1.2 Statement of the problem	4
1.3 Justification of the study	5
1.4 Research questions	6
1.5 Objectives.....	6
1.5.1 General objective	6

1.5.2 Specific objectives	6
1.6 Conceptual framework	6
CHAPTER TWO	8
LITERATURE REVIEW.....	8
2.1 Introduction	8
2.2 Socio- Demographic and economic characteristics	8
2.3 Person level factors or women reproductive health related factors	11
2.4 Health facility related factors	14
CHAPTER THREE	16
METHODOLOGY.....	16
3.1 Study site	16
3.2 Study design	17
3.3 Study populations	17
3.3.1 Inclusion criteria.....	17
3.3.2 Exclusion criteria	17
3.4 Sample size determination	18
3.4.1 Assessment of the Health Center	18
3.5 Sampling techniques	19
3.6 Study variables	20

3.6.1 Independent variables.....	20
3.6.2 Dependent variable.....	20
3.7 Data collection tools.....	21
3.8 Validity and Reliability of the data collection tools	21
3.9 Pre-testing	21
3.10 Data collection procedure	22
3.11 Data management and analysis	23
3.12 Ethical considerations	23
3.13 Study limitations	24
CHAPTER FOUR.....	25
RESULTS	25
4.1 Introduction.....	25
4.2 Distribution of socio-demographic and socio-economic characteristics of post-delivery women in Bugesera District.....	25
4.2.1 Socio- Demographic characteristics.....	25
4.1.2 Socio-economic characteristics.....	26
4.2 Person level factors associated with postnatal care utilization among post-delivery women.....	27
4.2.1 Pregnancy and parity.....	27
4.2.2 Delivery and outcome	27

4.2.3 PNC attendance and reasons for attendance or not attending	28
4.2.4 Information about PNC	30
4.2.5 Services offered during PNC session	31
4.2.6 Necessity of PNC and reasons	31
4.2.7 PNC attendance and Socio-demographic characteristics of mothers.....	33
4.2.8 PNC attendance and Socio-economic characteristics of mothers	35
4.2.9 PNC attendance and person level factors of mothers.....	36
4.3 Health facility level factors associated with postnatal care utilization among post-delivery women.	40
4.3.1 Waiting time and customer care at health facility.....	40
4.3.2 Distance to each health facility	41
4.3.3 PNC attendance and health facility level factors (distance and customer care).....	42
4.3.4 Characteristics of health facilities	43
4.3.5 PNC influencing factors by heads of health facilities.....	44
CHAPTER FIVE.....	45
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	45
5.1 Discussion	45
5.1.1 Socio –demographic and socio-economic factors.....	45
5.1.2 Personal level factors	47

5.1.3 Health facility related factors	48
5.2 Conclusions	49
5.3 Recommendations	50
REFERENCES	52
APPENDICES	59

LIST OF TABLES

Table 3.1: Distribution of sample size per health center (Nyamata Hospital, 2015)	19
Table 4.1: Socio – demographic characteristics of the respondents (n=168)	25
Table 4.2: Socio – economic characteristics of the respondents	26
Table 4.3: Pregnancy: Gravidity, parity, attendance of ANC	27
Table 4.4: Delivery: Place of delivery (n=168)	28
Table 4.5: Reasons for attending and not attending postnatal care services	29
Table 4.6: Information about PNC	30
Table 4.7: PNC content (What was done during the post-natal care visit?)	31
Table 4.8: Summary reasons why PNC is or not necessary	32
Table 4.9: Relationship between the PNC attendance vis-à-vis age and education of the mother	33
Table 4.10: Relationship between the PNC attendance vis-à-vis marital status and religion of mothers	34
Table 4.11: Relationship between the PNC attendance and socio-economic characteristics of mothers	35
Table 4.12: Relationship between the PNC attendance vis-à-vis gravidity and parity of mother	36
Table 4.13: Relationship between the PNC attendance vis-à-vis ANC attendance and number of ANCs made	37
Table 4.14: Relationship between the PNC attendance vis-à-vis place of delivery and mode of delivery	38

Table 4.15: Relationship between the PNC attendance vis-à-vis the appointment for PNC, timing of PNC appointment and experience of postpartum complications	39
Table 4.16: Relationship between the PNC attendance vis-à-vis information about PNC, extent of PNC information and necessity of PNC	40
Table 4.17: Waiting time and customer care.....	41
Table 4.18: Effects time made to reach health facility and customer care vis a vis the fact of attending postnatal care service	42
Table 4.19: Characteristics of health facilities, provision of PNC services, possession of PNC tools.....	43
Table 4.20: Comments of heads of health facilities on the factors influencing low use of PNC.	44

LIST OF FIGURES

Figure 1.1: Conceptual framework	7
Figure 3.1: Administrative map of Bugesera District	16
Figure 4.1: Postnatal care attendance.....	28
Figure 4.2: Postnatal care necessity	32
Figure 4.3: Time to nearest health facility	41

LIST OF APPENDICES

Appendix I: Questionnaire / Structured Interview.....	59
Appendix II: Checklist (interview guide) for health facility	63
Appendix III: Informed consent	65
Appendix IV: Recommendation for ethical clearance from JKUAT	67
Appendix V: Approval from Rwanda Ministry of Education.....	68
Appendix VI: Collaboration to conduct a study from RBC	69
Appendix VII: Scientific Review Approval Notice	70
Appendix VIII: Publication	71

ABBREVIATION AND ACRONYMS

ADEPR	Association des Eglises de Pentecôte au Rwanda
ANC	Antenatal care
APP	Africa Progress Panel
DRC	Democratic Republic of Congo
EAR	Eglise Anglicane au Rwanda
HMIS	Health Management Information System
ISTEEBU	Institut de Statistiques et d'Études Économiques du Burundi
KNBS	Kenya National Bureau of Statistics
PNC	Postnatal care
UBOS	Uganda Bureau of Statistics
UN	United Nations
WHO	World Health Organisation

DEFINITION OF OPERATIONAL TERMS

Postnatal period	The postnatal period is the time after the birth of the baby and goes up to 42 nd day of life. It consists of immediate, early and late periods.
Immediate postnatal period	The immediate postnatal period refers to the time just after childbirth, covering first 24 hours from birth.
Early postnatal period	This is a period covering 6 days following 24 hours of life, it goes from second day through 7 th day.
Late postnatal period	The late postnatal period covers the period from eighth days through 42 nd day.
Postnatal care	Postnatal care is known as special attention given to the mother and/or her newborn baby after childbirth through first six weeks of life, to reduce complications and deaths as well as promote health.
Routine Postnatal care	Routine postnatal care refers to preventive interventions routinely given to mother and baby to identify and manage or refer complications for both mother and baby.
Maternal death	Maternal death is defined as a death of a woman with pregnancy or a death happening to woman within 42 days of termination of pregnancy, from any cause related to pregnancy or its management, but not from accidental or incidental causes.
Socio economic class “ubudehe” category	Ubudehe incorporates what is essential a “poverty mapping” process, which has a systematic methodology and allocates each household to one of four ordinal income and poverty related categories.

ABSTRACT

The postnatal period is the time just after childbirth where the risks to the mother of postpartum hemorrhage and other significant morbidity are high. Maternal mortality is unacceptably high, 99% of all maternal deaths occur in developing countries. A significant proportion of maternal and newborn deaths take place within the 48 hours following delivery. Such problems can be detected and treated through postnatal care follow up visits. This study aimed to identify the factors associated with postnatal care services utilization in Bugesera District. This was a cross-sectional study. The study populations were 1661 women who gave birth from July to December 2015 and heads of health centers in Bugesera District. Data were collected using semi-structured questionnaire interviews. The sample size was 168 women from 5 health facility randomly selected. All women who delivered in health centers last six months of 2015 constituted the sampling frame. The sampling interval was calculated for each health center. The first number to start with was randomly selected. The selected mother was reached in her respective village. Data analysis was conducted using stata 11.7, bivariate and multivariate logistic regression analysis was done to determine statistical association between the outcome variable and independent variables. The recall bias for some respondents was noted and tracing mothers in their home places was not easy as well. The findings of this study showed that the utilization of postnatal care is 42.2%. Factors associated with the use of postnatal care (PNC) services were identified with a p-value < 0.05 include age, maternal education, socio economic class “ubudehe” category, ANC visits, mode of delivery and the fact that last born is alive or not. This study showed that the information about PNC influences the use of PNC: the fact of being informed about PNC, the extent of PNC information, understanding the necessity of the PNC and getting an appointment for PNC. In addition to all of these findings, the study also revealed other factors associated with PNC use including distance to reach health facility, customer care. The findings of this study have implications on future development regarding postnatal care therefore contribute in designing interventions to improve maternal PNC utilization.

CHAPTER ONE

INTRODUCTION

1.1 Background

The postnatal period is a very critical period for the newborn and the mother, both mothers and their newborns are vulnerable during the postnatal period, especially during the first 24 hours following the birth (Sines *et al.*, 2007). Postnatal period refers to the time just after childbirth, during which the infant's physiology adapts and the risks to the mother of postpartum hemorrhage and other significant morbidity are highest (WHO, 2010). Immediately after childbirth, bleeding and infections cause excessive risk to the mother's life (Ronsmans & Graham, 2006), while preterm birth, asphyxia and infections are major menaces to newborns (Lawn, 2009). The hours, days and weeks following childbirth constitute dangerous time for both the mother and newborn infant (Gebeyehu, 2014). During this period, mothers and babies may develop serious, life-threatening complications. Evidence has shown that a large proportion of deaths occur during this period, with postpartum hemorrhage and infections being important causes (UBOS, 2012).

The postnatal period is the ideal time for special interventions to improve the health outcome and survival of both the newborn and the mother after delivery because many maternal deaths occur in this time period. It is very important to note that failure to attend for routine postnatal care leads to mortality, morbidity and unplanned early pregnancy after delivery. Postnatal care is essential in keeping and fostering the health of the mother and the newborn baby (Sharma *et al.*, 2014). Maternal postnatal care is a concern because of potential risk for maternal deaths especially in the first week after delivery as a result of complications of delivery (Eliudi, 2010). Approximately, each year an estimated 303,000 women die worldwide from complications related to pregnancy, childbirth or the postnatal period (WHO, 2015), 90% of the deaths occurring in the developing countries (Sharma *et al.*, 2014) and up to two-thirds (estimate of 201,000 women) of all maternal deaths occur in the Sub-Saharan Africa (WHO, 2015). In low-income

countries, almost 40% of women experience complications after delivery and an estimated 15% develop potentially life-threatening problems (Langlois *et al.*, 2015).

It is an occasion for health providers and professionals to point out, monitor and follow up complications that may occur to the woman and baby during the postnatal period (WHO, 2010) and to promote healthy behaviors, ensure the establishment of successful exclusive breastfeeding, individual hygiene, appropriate feeding practices, counselling and services of family planning as well as fostering the development of good maternal infant relationships. Moreover, postnatal care allows for the provision of postnatal vitamin A and iron supplementation to the mother and immunization of newborns to provide them with optimal start to life (Matijasevich *et al.*, 2009).

Though it is a period that poses substantial health risks for both mother and newborn infant, yet it receives less attention from health care providers than pregnancy and childbirth (WHO, 2010). Lack of care in this time period may end in death or disability, may lead also to missed opportunities to encourage health behaviors, affecting women, newborns, and children: half of all postnatal maternal deaths occur during the week one after giving birth, and the majority occur during the first 24 hours. The leading causes of maternal deaths include infections, hemorrhage and sepsis. The majority of those deaths occur nearly during the postnatal period (Warren, Charlotte, Pat Daly, Lalla Toure, 2006).

Sub-Saharan Africa has the highest rates of neonatal mortality in the world and has shown the slowest progress in reducing newborn deaths, especially deaths in the first week of life. Each year, at least 1.16 million African babies die in the first 28 days of life – and 850,000 of these babies do not live after one week they are born. Asphyxia and infections claim many babies during the first day, and the majority of deaths were due to preterm birth occur during the first week (Warren, Charlotte, Pat Daly, Lalla Toure, 2006). At least one in four child deaths occur during the first month of life. These deaths often take place before child health services begin to provide care, usually at six weeks for the first immunization visit.

The first hours are the time period of highest risks for both women and their babies. The fact that 31% of women do not give birth in a health facility (NISR, 2012) constitute a challenge for planning and implementing postnatal care (PNC) for mothers and their babies. Despite of place of birth, delivered women and newborns pass most of the postnatal days (the first six weeks after birth) at home. There is a need to focus on postnatal care since many of the maternal deaths are concentrated on the first week postpartum (Eliudi, 2010).

Postnatal care (PNC) program has the lowest rate of all reproductive and child health programs. Impediments to the effective delivery of PNC imply all the factors that, directly or indirectly, hinder its utilization and these include geographical, economical, socio-cultural barriers and the characteristics of health services as well as the quality of care in influencing the decision of seeking care. The following factors contribute to perceived low use of PNC services: the fact that women do not feel sick pushes them to think that they do not need postnatal care: the use of PNC is higher among mothers who experienced complications during their delivery, knew a cesareans section, or underwent an instrumental vaginal delivery than among women who had a spontaneous vaginal delivery (Dhaher et al., 2008). Lack of advice from healthcare providers to women in post-natal care use is a major embracer to PNC service after delivery (Dhaher et al., 2008). There is a need for health care providers to sensitize community on the importance of postnatal care services and on complications that may arise during postnatal period.

Geographical inaccessibility to health facility: this may be measured by distance, travel time, means of transportation and any other physical barriers that could hinder the client from receiving PNC services (Jamei et al., 2022). Long distances to health services often impact health service utilization (Ikamari, 2004). DHS 2010 reported that 26.1% of women said a long distance to reach the health facility is among the constraints in accessing healthcare including postnatal care (NISR, 2012). The education of the mother is an important social variable that has a positive effect on the utilization of maternal and child health services. The other socioeconomic factors usually found to be important are place of residence, religion and standard of living

of the household (Chimankar et al, 2011). DHS 2010 revealed that slightly more than half of women (53%) reported that lack of money constitutes a primary barrier (NISR, 2012).

1.2 Statement of the problem

PNC services stand to support the mother and her family in the transition to a new family constellation, prevent, early diagnose and treat complications of the mother and newborn, refer the mother and new born for specialist care when necessary, counsel on baby care, support breastfeeding, maternal nutrition, provide contraception service, and immunize the infant (Eliudi 2010; Gebeyehu 2014). Even though PNC service utilization plays a critical role in reducing maternal and newborn child mortality, little is known about factors associated to its use, therefore, it is important to conduct this study to describe the factors associated with postnatal care utilization in Bugesera District.

In developed countries virtually all women and their infants receive PNC, even though the nature and frequency of this care varies considerably (WHO, 2010). In developing countries, postnatal care has long been neglected or fragmented and data for postnatal care are either unavailable or show low-level coverage in a large number of countries (Matijasevich et al., 2009), mothers and newborn babies do not receive postnatal care services from a skilled health care provider during the first few days (WHO, 2010), even the need for care and support after birth is less recognized and approximately one third of women in sub-saharan Africa give birth in facilities and no more than 13% receive PNC. Moreover, PNC services are often absent and where available, often lack essential elements of care required for the optimum health of the mother and her newborn (Fort, et al, 2006).

In East Africa Region, PNC coverage is relatively poor compared to other maternal and infant health services: in Uganda, 95% had an antenatal care visit against only 35.2% who had a postnatal checkup (UBOS, 2012); in Burundi, 98.9% of pregnant women receive antenatal care against 31.7% had a postnatal checkup (ISTEEBU, 2012) and in Kenya, 95.5% had an antenatal care with skilled provider whereas

50.6% had a checkup in Kenya (KNBS, 2015). In Rwanda, RDHS 2014/2015 revealed that 45.2% of women had a postnatal checkup (among them, 43% had a checkup within 3 days, 0.8% had a checkup within 3-6 days whereas 1.4% had a checkup within 7 - 41 days). In Bugesera District, 12.5% had a postnatal checkup where 10.8% had a checkup within 3 days, 0.7% had a postnatal checkup within 3-6 days after delivery and 1.0% had their postnatal checkup within 7 to 41 days (NISR, 2016).

Although Rwandan policies have rightly emphasized on components such as skilled birth attendance and antenatal care, they have overlooked the need to strengthen postnatal care within the reproductive health services.

1.3 Justification of the study

Maternal mortality is unacceptably high, approximately 30-40% of direct maternal deaths in Africa are due to hemorrhage, mostly in the postpartum period. Such problems can be detected and treated through proper follow up visits for women during the postpartum period. About 75% of maternal deaths occur during the process of childbirth or in the first week thereafter (Gebeyehu, 2014). The level of use of postnatal care services is an important maternal health indicator. Given the significance of postnatal care and its low uptake, it is paramount to conduct this study in order to identify factors that are associated with the utilization of postnatal care in Bugesera District. This would contribute towards understanding of factors associated with women's utilization of PNC services in Bugesera District. Assessing factors that hinder such services would help to identify the gaps in the accessibility and utilization of these services, which will influence plans for best interventions to improve them. In using the findings of this study, health care providers can understand why women are not utilizing postnatal care services. The study serves as an insight for the modification of plans and policies for future development regarding postnatal care which would contribute in designing interventions to improve maternal PNC utilization in Bugesera District and country as a whole. The study adds to the body of knowledge in the field of maternal and child health and shall serve as a reference for further studies.

1.4 Research questions

1. What are the person level factors associated with postnatal care utilization among post-delivery women in Bugesera District?
2. What are the health facility level factors associated with postnatal care utilization in Bugesera District?
3. What are the socio-demographic and socio-economic characteristics of post-delivery women in Bugesera District?

1.5 Objectives

1.5.1 General objective

To determine factors associated with postnatal care services utilization among post-delivery women in Bugesera District, Rwanda

1.5.2 Specific objectives

1. To determine the individual level factors associated with postnatal care utilization among post-delivery women.
2. To determine health facility level factors associated with postnatal care utilization.
3. To describe the socio-demographic and socio-economic characteristics of post-delivery women in Bugesera District.

1.6 Conceptual framework

Conceptual frameworks explaining the relationship between the independent variables and the dependent variables.

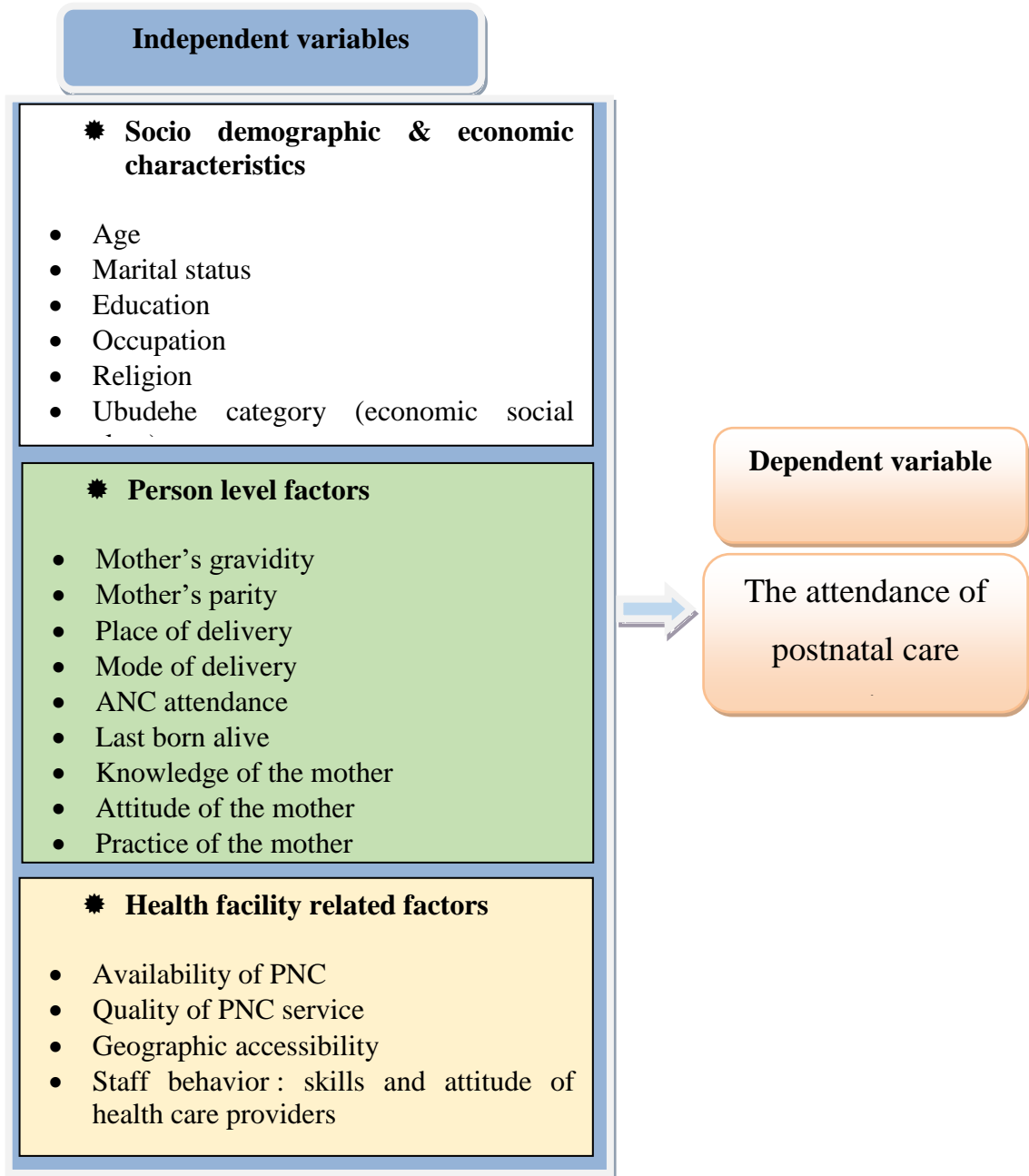


Figure 1.1: Conceptual framework

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Postnatal care is one of the most important maternal health care services for not only prevention of complications of impairment and disabilities but also reduction of maternal mortality, it seeks to improve maternal, newborn and infant receiving essential postpartum, newborn care and family planning services (Kinuthia, 2014). The postpartum care aims the following service elements: management of complications (early detection, prevention, treatment of complications, timely referral of mother and infant to specialist care when necessary needed), counselling of the mother on baby care, immunization, breastfeeding, contraceptive methods, maternal nutrition and provision of nutritional supplements if necessary and support the mother and her family in the transition to a new constellation (Eliudi, 2010; Gebeyehu, 2014).

Charlotte Warren in her work “Opportunities for Africa’s Newborns” mentioned the package of routine postnatal care which includes: essential routine PNC for all mothers and newborns, extra care for low birthweight or small babies and other vulnerable babies, such as those born to HIV- infected mothers (two or three extra visits) and early identification and referral/management of emergencies for mother and baby (Warren et al., 2006). The main causes of morbidity raised in the sanitary formations are: acute respiratory infections, malaria, diarrheal diseases, skin infections, gynecological problems. The principal causes of mortality include asphyxia, pneumonia, HIV opportunistic infections, severe malaria and hepatitis (Nyamata Hospital, 2015).

2.2 Socio- Demographic and economic characteristics

Numerous studies in developing countries have shown that socio-demographic and economic factors such as age, parity, gravidity, education and occupation are associated with the use of the PNC services.

a) Age of the mother

The age of the mother plays an important role in women's utilization of maternal health services. Since older and younger women have different experience; and influence, their behavior on seeking postnatal also vary, younger women might have enhanced their knowledge of modern medicine and are more likely to utilize modern health facilities than older women. They are likely to have greater exposure and more access to education. Different studies revealed that age of the mother is significantly associated with the use of postnatal services. A study conducted by Kinuthia in Kenya among postnatal women visiting the Maternal Child Health (MCH) at Province General Hospital Nyeri showed that women aged 30 and above are less likely to use postnatal care services (Kinuthia, 2014), the same findings were revealed by a study done in Nepal that showed that mother's age ($P < 0.001$) is associated with the use of postnatal care services (Khanal et al, 2014). Also Danielle and colleagues found that younger mothers tended to use maternal services more than older ones (Belemsaga et al., 2015).

b) Marital status

Woman's marital status significantly impacts on the utilization of postnatal care services. This is confirmed by several studies. A study conducted in Nigeria among 345 mothers revealed that marital status influenced the use of postnatal care services (Takai et al., 2015). A study conducted in South Ethiopia among women from 1,094 households showed a negative correlation between polygamy and PNC utilization (Nigatu, 2011; Belemsaga et al., 2015).

c) Spouse's level of education

Maternal education has a positive impact on the utilization of health care services, it increases women's perceived seriousness about maternal health issues. It is argued to be an effective means of achieving greater autonomy in the family, getting employment, thereby achieving economic independence. It also provides opportunities to learn about pregnancy and childbirth through exposures to mass

media (Acharya et al., 2010). Studies conducted at Bangladesh showed that maternal education is strongly associated with postnatal care. The educated mothers are more conscious than illiterate mother in utilizing the services. Similar finding has been found through studies conducted in Nepal (Khanal et al., 2014) in Ethiopia (Gebeyehu, 2014) and in Indonesia (Titaley et al., 2009). Also, Takai and his colleagues found that women with husband educated up to secondary school level had a significantly greater chance of having postnatal care than those with illiterate husbands (Takai et al., 2015). The higher the educational level of mothers, the more they attend health centres for postpartum services (Nigatu, 2011; Wanjira et al., 2011; Walker et al., 2010; Belemsaga et al., 2015)

d) Spouse's occupation

The utilization of PNC was found to be associated with the occupation of either the mother or the partner. A study conducted by Idris Usman and others in North-eastern Nigeria found that occupation was associated with postnatal care uptake. Husbands with formal sector job such as teaching or civil servant were more likely to have wives who attended postnatal care (Takai et al., 2015).

e) Religion

Religion has an important role in the utilization of postnatal care services. Religion plays a role in shaping beliefs, norms and values which women hold in society and which can prevent them from utilization of postnatal care services (Stephenson et al, 2006). In Africa and India, religious belief has been found to be a push factor or source of exclusion from maternal health care utilization (Ochako et al, 2011; Rahman et al, 2011; Stephenson et al., 2006). A cross-sectional study conducted in a peri-urban town in Zimbabwe revealed that religion (apostolic faith) was associated with non-utilization of postnatal care services because the women believed in faith healing and prefer traditional midwives (Muchabaiwa et al., 2012). It has also been found that non-catholic women were less likely to use maternal healthcare in Ghana, whilst catholic women were less likely to utilize maternal healthcare in Kenya when compared to protestants (Stephenson et al., 2006). A population based cross sectional

study done in Nigeria significantly revealed that Muslim mothers were about two times more likely not to utilize PNC compared to Christian mothers and other religions (Somefun & Ibisomi, 2016).

f) Socio-economic class “Ubudehe category”

Ubudehe incorporates what is essential a “poverty mapping” process, which has a systematic methodology and allocates each household to one of four ordinal income and poverty related categories (MOH, 2010). Women in higher socio-economic groups tend to exhibit patterns of more frequent use of maternal health services than women in the lower socioeconomic groups. A study conducted in India documented the fact that the household wealth has a positive effect on the use of maternal healthcare (Kulkarni et al., 2016). Another study from India showed that mothers from upper socio-economic class are more likely to use maternal care compared to mothers from lower socio-economic class. Household wealth may facilitate the use of maternal care in many ways. Mothers from richer households are generally more educated and have more autonomy compared to mothers from the poorest households (Babalola et al., 2009).

2.3 Person level factors or women reproductive health related factors

a) Gravidity and parity of the mother

The number of children a woman has plays an important role in utilization of postnatal care services. A study done in Nepal revealed that women with higher birth order utilized postnatal care to a lesser extent than those with one child (Khanal et al., 2014). With respect to birth order, a study by Kinuthia showed that with each additional birth, utilization level decrease. The decline in postnatal care services among higher birth had also been shown in a study done at Mbeere District, Kenya (Kinuthia, 2014). This finding is in agreement with evidence from studies conducted among mothers in Ethiopia (Gebeyehu, 2014) and Indonesia (Titaley et al., 2009) showed that women with higher birth more than five none attended postnatal care which could be associated with experience and exposure. Another study done in

Nigeria showed that higher parity has an impact on the use of PNC service (Takai et al., 2015).

b) Place of delivery

Place of delivery was significantly associated with attending postnatal care. Women who deliver in a health facility, probably receive medical care and postnatal care from skilled attendants before being discharged from the place of delivery (Khanal et al., 2014), as matter of fact, a study done in Nepal by Khanal et al. (2014) showed a significant association between place of delivery and postnatal care attendance where home delivery women are less likely to attend postnatal care service compared to health facility women. The said study showed that only 14.3% of home deliveries had a postnatal against 89.2% of health facility deliveries (Khanal et al., 2014). This finding is nearly similar with evidence from Ethiopia (Gebeyehu, 2014) and India (Jat et al., 2011). This strong positive association of PNC services utilization with place of delivery can be attributed to the fact that women who gave their last birth in health institution have greater opportunity to get exposed to health education related to PNC services at the time of delivery and thus get access to learn about the types, benefits and availabilities of PNC services during their stay in the health institutions.

c) Mode of delivery

The use of PNC is higher among women who had experienced problems during their delivery, had a cesarean section, or had an instrumental vaginal delivery than among women who had a spontaneous vaginal delivery (Dhaher et al., 2008).

d) ANC visits attendance

Surprisingly it has been found a significant effect of ANC attendance on postnatal care attendance. A study done in Nepal (Khanal et al., 2014) found that the mothers who attended four or more ANC visits as recommended by the WHO (WHO, 2010) were more likely to attend postnatal care. ANC attendance and adequate counselling of mothers has been previously reported to be associated with postnatal care attendance (Khanal et al., 2014). Antenatal care counselling could improve mothers'

awareness and knowledge of the importance and the availability of postnatal care services, and motivate them to utilize postnatal care services (Titaley et al., 2009).

e) Experience of postpartum complications

A study conducted in Palestine revealed that the use of postnatal care is relatively high among women who had experienced problems during their delivery or had a cesarean section or instrumental vaginal delivery (Dhafer et al., 2008).

f) Lack of awareness

Women's lack of awareness can range from lack of understanding what postnatal services are to lack of knowledge of importance of postnatal service. Study done in Nepal (Dhakal et al., 2007), reported that the main reason for the non-utilization of postnatal care services is lack of awareness or not perceiving a need for it. The study suggested that there is need for awareness raising programs highlighting the importance of postnatal care service. In this study 44.2% of the respondents did not attend postnatal care services because they had no problems while 49.5% failed to present themselves for postnatal care because they did not think it was necessary. Most women lacked awareness about postnatal services and those who reported they knew about the services only knew about immunization and family planning, they lacked adequate knowledge of comprehensive postnatal care services. The results from these studies concur with the study done in Kenya (Kinuthia, 2014) where 41.3% of the respondents had no knowledge about postnatal services and only 16.3% had good knowledge about postnatal care. According to Titaley et al, lack of exposure to information and lack of health knowledge about pregnancy are significantly associated with non utilisation of postnatal care services (Titaley et al., 2009).

g) Knowledge of postpartum obstetric danger signs

Knowledge of postpartum obstetric danger signs was also found to be strong predictor of PNC utilization (Gebeyehu, 2014). Once a mother knows at least one postpartum obstetric danger sign is more likely to seek for postnatal care service

which won't be the case for any mother who cannot spontaneously mention any postpartum obstetric danger sign (Gebeyehu, 2014). This statement is in line with results from studies conducted in Nepal (Dhakal et al., 2007), Ethiopia (Gebeyehu, 2014) and Uganda (Nankwanga, 2004). This can be explained by the fact that awareness of obstetric danger signs is an important factor in motivating women and their families to attend health care service at the earliest opportunity with the intention of prevention, early detection and getting managed their obstetric danger signs (Gebeyehu, 2014).

2.4 Health facility related factors

These range from geographic accessibility, health provider's behaviors, availability and quality of PNC services within the health facility.

a) Distance to reach the health facility

Distance limits women's willingness to seek healthcare services particularly when appropriate transportation is scarce and communication difficult. A study done in Kenya (Kinuthia, 2014) showed that 15.3% of the respondents who lived 0-5km from the hospital attended postnatal services whilst no respondents more than 15km from the facility attended postnatal care. Also according to Titaley and et al in a study done in Indonesia, long distance to the healthcare facility was identified by mothers as a major problem hindering the use of postnatal care services (Titaley et al., 2009). This can be explained due to the fact that accessibility and affordability to the health facility was more difficult (Kinuthia, 2014).

b) Providers' response and behavior

Providers response, and care in the facility also contributed to poor utilization of postnatal care for instance respondents reported that the health workers were rude and that the waiting time was long. The rude health workers and long waiting time should not be ignored in order to improve utilization of postnatal care services (Kinuthia, 2014). Obstacles to wider access still exist, but they may be overcome by

overt policy commitment to maternal health services, partnership between stakeholders, community involvement and quality programs (APP, 2010).

CHAPTER THREE

METHODOLOGY

3.1 Study site

This study was carried out in Bugesera District which is one of the seven Districts of Eastern Province of the Republic of Rwanda. It is situated to the Southwest of the Province, between 3005 of longitude and 2009 of latitude and covers a surface of 1337 Km². It borders with the Republic of Burundi (Kirundo Province) in the South, Nyarugenge and Kicukiro Districts of Kigali City in the North, Rwamagana District of Eastern Province in Northeast, Ngoma District of Eastern District as well in East, Kamonyi District of Southern Province in the Northwest, Ruhango and Nyanza Districts of Southern Province in West. Bugesera district's area is characterized by numerous lakes, the biggest of which are Rweru and Cyohoha. The region is predominantly vegetated by dry savannas which are characterized by short grasses, shrubs and short trees (Bugesera District, 2013).



Figure 3.1: Administrative map of Bugesera District

Bugesera District has got a population of 408 922 habitants who are subdivided in 15 sectors (NISR, 2012). Bugesera has various types of health care services designed to help citizens to access health services in clear and good conditions. It has 15 health centers located respectively in every administrative sector, it has 1 District Hospital and District Pharmacy (Bugesera District, 2013).

3.2 Study design

A cross-sectional descriptive study that utilized mixed methods approach was conducted in Bugesera District.

3.3 Study populations

The study population was women who gave birth from July to December 2015 registered at health centres and heads of health centers in Bugesera District.

3.3.1 Inclusion criteria

The inclusion criteria for women included:

- a) Women who delivered within a period from July to December 2015 registered at health center in the sampled sectors,
- b) Aged 21 and above,
- c) Residing in the sampled sectors
- d) Who were willing to participate and gave their consent note to participate.

The inclusion criteria for heads of health center included:

- a) The current head of the health facility or the deputy during data collection visit to the health center
- b) Only those who accepted to give the consent note were included in the study.

3.3.2 Exclusion criteria

The exclusion criteria for women included:

- a) Women who registered in delivery register whose identifications addresses are not completed.
- b) Women who were sick by the time of data collection and could not give their consent note.

The exclusion criteria for women included:

- a) The head or deputy head the health facility who was sick or absent during the data collection visit to the health center.
- b) Who were not willing to take part of the study.

3.4 Sample size determination

3.4.1 Assessment of the Health Center

Five out of fifteen administrative sectors were randomly selected. Each health center under each administrative sector was systematically selected.

3.4.2 Women who delivered from July to December 2015

The necessary sample size of women to meet during data collection was calculated based on Cochran formula (Glenn, 2013) as follows:

$$n = \frac{z^2 \cdot p (1 - p)}{d^2}$$

Where:

n: is the required sample size

z: the confidence level at 95% (standard value of 1.96)

p: the estimated PNC utilization rate which equals to 12.5%

d: the margin of error (standard value of 0.05)

According to the last RDHS 2014/2015, 12.5% percent of women with a postnatal check-up within 6 weeks after delivery in Bugesera District.

The final sample size was: $n = \frac{1.96^2 \times 12.5\%(1-12.5\%)}{0.05^2} = 168$ which were distributed

respectively to each health facility as follows (see table 4):

Table 3.1: Distribution of sample size per health center (Nyamata Hospital, 2015)

Health Facility	Total number who delivered in health facility from July to December 2015	Proportion of deliveries per health center	Sample size per health center
Mayange	395	24%	40
Ruhuha	333	20%	34
Mareba	384	23%	39
Juru	357	21%	36
Gihinga	192	12%	19
Total	1661	100%	168

The number of women selected per health center was determined through probability proportional to size. The selection was done as follows: from the HMIS data, the researcher extracted the total number of deliveries in the five selected health facilities covering a period of 6 months, next, the researcher calculated the proportion of deliveries per health facility relative to the total, then, these proportions were applied to sample size to get the number of women to be selected for each health center.

3.5 Sampling techniques

Simple random sampling was used to select five sectors from the list of 15 sectors of Bugesera District. Every health center serving in selected sector was visited. The number of women selected per health center was determined with probability proportional to size. The sampling frame is composed of women who delivered and registered at health centers from July to December 2015 who complied with

inclusion criteria. The sampling interval varied from one health center to another depending on the number of total deliveries and total number to be collected. Randomly, the first number to start with was selected. A selected mother was reached in her respective village.

3.6 Study variables

3.6.1 Independent variables

The independent variables used in this study include:

- a) Social demographic and economic characteristics of the mothers,
- b) Person level factors related to mothers
- c) Health facility level factors.

It is conceptualized that independent variables such as the social demographic and economic factors (such as mothers' age, marital status, education, education, occupation, place of delivery, religion and economic social class) and external factors to mothers like accessibility and availability of PNC all influence the dependent variable, which is utilization of PNC services.

3.6.2 Dependent variable

All postpartum women having delivered a baby within the past 6 months (n=168) were asked whether they attended PNC services anytime during the first six weeks after delivery. Women who had attended PNC services were asked about the reasons for seeking PNC with an open-ended question. Women who did not attend PNC services were also asked possible reasons for not attending the service and the question was close-ended and women were able to provide multiple reasons. In the later part of the questionnaire women were asked about their attitudes towards PNC: "In your opinion is postnatal care necessary for a woman's health?"

Therefore, the primary outcome of this study is the utilization or non-utilization of PNC services. The variable is constructed using the WHO definition of postnatal

care, which takes into account attendance of PNC services within 42 days of birth. Thus, the categorization of PNC use and non-use complies with the highest level of PNC (appropriate care). Mothers are considered to have made adequate utilization of PNC services if she and her baby were checked by qualified healthcare personnel within 42 days of child birth.

3.7 Data collection tools

Questionnaires and in-depth guide checklist were used in data collection:

- a) A structured questionnaire for mothers was used during data collection phase.
- b) An in-depth guide checklist for health facility administered heads of the selected health facilities was also used.

3.8 Validity and Reliability of the data collection tools

Content validity of the instrument was ensured through constructive criticism from colleagues in the Maternal, Child and Community Health Division within Rwanda Biomedical Centre who had had an extensive experience and expertise in questionnaire construction and in addition through the use of peer reviews. The items were revised and improved according to advice and suggestions made. The reliability of the instrument was improved through piloting and pre-testing. Furthermore, the reliability and validity of the results were obtained through member checks to help indicate whether the findings appeared to match with perceived authenticity. This was done to limit the distorting effects of random errors on the findings. Three staff (senior maternal, newborn and child health advisor, maternal and newborn health senior officer, monitoring and evaluation officer) reviewed the results of the study to find out if the results were matching with actuality.

3.9 Pre-testing

A pretest was conducted to check for glitches in wording of questions, lack of clarity of instructions, in fact, anything that could impede the tool's ability to collect data in an economical and systematic fashion. This pre-test took place in one health facility

of Bugesera District but not included in the other 5 health facilities for the study. The pre-test was conducted among 25 women in postpartum period.

3.10 Data collection procedure

Firstly, face to face interviews were conducted for both mothers and heads of health facilities to allow all participants with different education background to participate, hence all participants were qualified for the questionnaire irrespective of the education level. The researcher had an interview with the head of the health center. Before the interview started, the researcher introduced himself and explained the purpose of the research, guaranteed the confidentiality of the information provided, asked the head of health facility if he/she is willing to participate, therefore requested for signature of consent form. Once the consent signed, the researcher started an interview with the head of health facility. Each time the researcher noted down responses from the interviewee on the questionnaire. For the questions requiring an observation, the researcher inquired for the observation. Both questionnaire and signed form were stapled and kept for further analysis.

Secondly, the researcher consulted delivery register from the visited health center. Using a pencil, registered deliveries were numbered to facilitate the calculation of sampling step and find where to start. From a selected woman, the researcher noted down the identification of the mother including place of residence (Sector, Cell and Village). Under guidance of the health center staff the mother was reached in her respective village. Arriving at a mother's place in the village, the researcher introduced himself, explained the purpose and objectives of the research. The researcher ensured the utmost confidentiality to the mother visited, asked the mother if she is willing to participate and therefore requested for signature of consent form. Once a consent is signed, the researcher administered an interview to the woman using a semi structured interview tool. Each time the researcher noted down responses from the interviewee on the questionnaire. Both questionnaire and signed form were stapled and kept for further analysis.

Responses of open ended questions were recorded by the interviewer. This was applied for open ended questions where the interviewer gave time to interviewee to speak as much as he/she can. While talking the interviewer noted down key responses.

3.11 Data management and analysis

After field work, the raw data were entered in Stata. The data entry screen was created in Stata version 11.7. Quantitative data were checked, cleaned and entered into Stata version 11.7. Data from open ended interviews were not recorded but notes were taken and later on were recorded into an excel sheet. Data were analyzed for descriptive statistics to determine frequency distributions and percentages for responses for various variables under study. Furthermore, bivariate and multivariate logistic regression analysis were computed to determine statistical association between the outcome variable and independent variables using Odds Ratio; significant of statistical association were tested using 95% confidence interval (CI) and p value (< 0.05).

In this analysis, dependent variable is utilization of PNC services by post-delivery women. On the other hand, the independent variables were social demographic and economic factors such as age of respondent in years, marital status, education level, occupation, social economic class “ubudehe”, person level factors such as ANC attendance, gravidity, parity, mode of delivery, place of delivery, etc and health facility related factors such as the distance to the nearest health facility, regular, availability of PNC services. This helped in thorough data analysis and in avoiding unnecessary mistakes of calculations. Results from this study are presented using tables, charts and texts. Binary method was used to test and verify variables.

3.12 Ethical considerations

Ethical clearance and permission to carry out the study were obtained from Rwanda National Ethics Committee after the review of the research proposal. Before embarking with data collection a research permit received from ethical committee

were presented to the Head of the health facility. The researcher had a meeting with leaders of each selected health facility to present the brief summary of the research explaining the purpose of the research and methodological approach in order to get the approval and collaboration from the health center team.

By then, a consent form was given to the respondent for signature. After signature of the consent form, the researcher interviewed the leader of the health center or his/her deputy if absent. Before interviews with mothers initiated, the researcher explained the purpose of the research to mothers and informed consent was requested and signed. The confidentiality, privacy and anonymous of the information given were ensured to the respondents. The mothers were informed that participation is voluntary and were free to leave the study at any point without consequence. Each participant who agreed to participate gave a written and signed consent. Data obtained from the study, in-depth interview data and the questionnaires were kept securely by the researcher. No personal identifiers of the study participants were noted on the questionnaires.

3.13 Study limitations

- **Recall bias :** Some respondents could not remember the exact period they visited the health centre for the last pregnancy, could not recall the numbers they visited the health centre, could not also remember what were done for them (ANC services received) when they made their ANC visit. For these specific cases, the researcher had to consult the books of community health workers or the health facility ANC registers.
- **Difficulties to trace mothers in their respective villages:** Tracing mothers in their home places was not easy as well because some of the targeted (selected) mothers would have lost their phone cells. For some cases, mothers were not present in their homes causes they would have gone for works. For those mothers whose phones were lost, the researcher had to go through the maternal community health worker in the village to help to reach the mother. For those mothers not present in their homes, the researcher was always obliged to come back for another day.

CHAPTER FOUR

RESULTS

4.1 Introduction

A total of 168 women and 5 heads of the health facilities met the inclusion criteria and were reached for interview. There was equal distribution from health facilities.

4.2 Distribution of socio-demographic and socio-economic characteristics of post-delivery women in Bugesera District.

4.2.1 Socio- Demographic characteristics

Almost half (46.4%) of the respondents were aged 21 to 30 years, 44% were aged 31 to 40 years old and 9.5% were aged 41 and above; 84.5% were married; concerning religion: 36% were Roman Catholics, 23.8% were from ADEPR, 17.2% are Adventists, 9.5% are in EAR.

Table 4.1: Socio – demographic characteristics of the respondents (n=168)

Variable	Frequency	%
<i>Age category</i>		
21-30	78	46.43
31-40	74	44.05
41+	16	9.52
<i>Marital status</i>		
Married	142	84.52
Widowed	8	4.76
Separated	8	4.76
Single	10	5.95
<i>Religion</i>		
ADEPR	40	23.81
Adventist	29	17.26
Anglican	7	4.17
Catholic	61	36.31
EAR	16	9.52
EPR	7	4.17
Islam	6	3.57
Others	2	1.2

4.1.2 Socio-economic characteristics

Two thirds (62.5%) of women interviewed attended primary school, 20.24% of them attended secondary school; 65.5% of their husbands attended primary school. Table 4.2 highlighted that 75% of women interviewed are farmers, 10.12% are housewives; 81.69% of their husbands are farmers and 12.68% are in private sector. 63.1% of the respondents belong in category 3, 29.17% in category 2, 7.14% in category 1; 58.93% of the respondents possess domestic animals.

Table 4.2: Socio – economic characteristics of the respondents

Variable	Frequency	%
Mother's education (n=168)		
No school education	27	16.07
Primary school education	105	62.5
Secondary school education	34	20.24
Tertiary school education	2	1.19
Husband's education (n=142)		
No school education	22	15.49
Primary school education	93	65.49
Secondary school education	20	14.08
Tertiary school education	7	4.93
Occupation of the mother (n=168)		
Employee	4	2.38
Private sector	19	11.31
Housewife	17	10.12
Agriculture	126	75
Other	2	1.19
Husband's occupation (n=142)		
Employee	8	5.63
Private sector	18	12.68
Agriculture	116	81.69
Social economic class "Ubudehe category" (n=168)		
Category 1	12	7.14
Category 2	49	29.17
Category 3	106	63.1
Category 4	1	0.6
Ownership of domestic animals (n=168)		
No	69	41.07
Yes	99	58.93

4.2 Person level factors associated with postnatal care utilization among post-delivery women.

4.2.1 Pregnancy and parity

Almost two fifths (36.9%) of respondents got pregnant three to four times, 34.5% got pregnant one to two times and 28.6% got pregnant five and more times. For the parity of respondents, 38.1% gave live birth three to four times, 36.31% one to two times and 25.6% five and more times. 83.93% of respondents attended ANC, among them 21.28% had completed ANC visits, 36.88% attended ANC three times, 24.11% 2 times and 17.73% visited ANC once only.

Table 4.3: Pregnancy: Gravidity, parity, attendance of ANC

Variable	Frequency	%
Gravidity (n=168)		
1-2	58	34.52
3-4	62	36.9
5+	48	28.57
Parity (n=168)		
1-2	61	36.31
3-4	64	38.1
5+	43	25.6
ANC attendance (n=168)		
No	27	16.07
Yes	141	83.93
ANC times (n=141)		
4 times	30	21.28
3 times	52	36.88
2 times	34	24.11
Once	25	17.73

4.2.2 Delivery and outcome

Ninety-one percent of respondents delivered in health facilities, 78.6% among them had a normal delivery whereas 21.4% had a caesarian, 91% of the respondents

delivered alive baby last time they gave birth, 23.8% experienced post-partum complications.

Table 4.4: Delivery: Place of delivery (n=168)

	Frequency	%
Place of delivery		
Health facility	153	91.07
Outside health facility	15	8.93
Mode of delivery		
Normal delivery	132	78.57
Abnormal delivery (C-section)	36	21.43
Last born alive		
No	15	8.93
Yes	153	91.07
Experience post-partum complication		
No	128	76.19
Yes	40	23.81

4.2.3 PNC attendance and reasons for attendance or not attending.

According to figure 4.1, almost three fifths (58%) of respondents did not attend the postnatal care services and 42% attended the postnatal care.

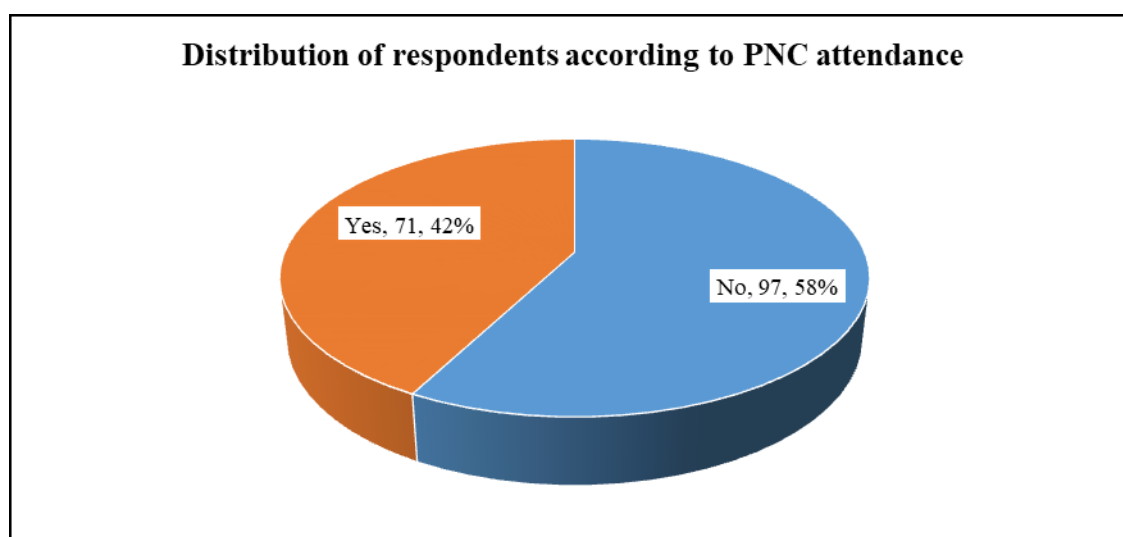


Figure 4.1: Postnatal care attendance

Half (50.7%) of those who attended postnatal care went just to check for post-delivery health status for both mother and baby, 25.35% for respect of given appointment, more than 20% went because they had health problems such as abdominal pain, postpartum hemorrhage, unknown severe pain. For those who did not go for PNC, 34.02% said they did not need to go there because they felt well, 32.99% said they were not advised, 12.37% said no time to go because of the work and forgot the date. Concerning time period to attend the PNC: only 16.9% came back within 3rd day after delivery, more than half of them (66.2%) came for PNC between fourth and tenth day after delivery. It also shows that 9.86% attended PNC three times, 49.3% attended PNC once only.

Table 4.5: Reasons for attending and not attending postnatal care services

	Frequency	%
Reasons for PNC attendance		
Post-delivery health status check for mother and baby	36	50.70
Respect of given appointment	18	25.35
Just gone for vaccinations	1	1.41
Health problems		
<i>Abdominal pain</i>	9	12.68
<i>Postpartum hemorrhage</i>	4	5.63
<i>Unknown severe pain</i>	2	2.82
<i>Ombilical cord had a problem</i>	1	1.41
Reasons not to attend PNC		
Was not advised	32	32.99
No time to go because of the work	12	12.37
Felt well no need to attend	33	34.02
Forgot the date	12	12.37
No one to look after other children	8	8.25
Days of PNC after delivery		
Between 1st-3rd day after delivery	12	16.9
Between 4th-10th day after delivery	47	66.2
Between 11th-42nd day after delivery	12	16.9
PNC times		
3 times	7	9.86
2 times	29	40.85
1 time only	35	49.3

4.2.4 Information about PNC

Concerning information on PNC as described in table 4.6, three fourths (86.3%) of respondents were informed about PNC before discharge, among them, 43.4% said that they were often informed, 31% said they were informed sometimes and 25.5% said to be informed only once before being discharged. 61.4% were informed by health providers, 32.4% by CHW. 70.6% received an appointment for PNC. Describing the appointment days for postnatal care visit: only 12% received an appointment within one to three days after delivery, 82.4% said to have an appointment within four to ten days after delivery.

Table 4.6: Information about PNC

Variable	Frequency	%
Being informed about PNC before Discharge (n=168)		
No	23	13.69
Yes	145	86.31
To what extension the respondent were informed? (n=145)		
Once	37	25.52
Sometimes	45	31.03
Often	63	43.45
Information provided by (n=145)		
Health provider	89	61.38
CHW	47	32.41
Family member	5	3.45
Neighbor	3	2.07
None	1	0.69
Appointment for PNC (n=153)		
No	45	29.41
Yes	108	70.59
Appointment days (n=108)		
Within 1-3 days after delivery	13	12.04
Within 4-10 days after delivery	89	82.41
Within 11-42 days after delivery	6	5.56

4.2.5 Services offered during PNC session

The PNC attendance goes together with the content offered to mothers during the session of PNC, in this case, above two thirds (70%) of women were advised on family planning, danger signs for both mother and baby, immunization of the baby, 63.4% were physically examined and also were advised on breastfeeding, whereas 66.2% were advised on nutrition.

Table 4.7: PNC content (What was done during the post-natal care visit?)

	Yes	%	No	%
Physical examinations	45	63.38	26	36.62
Laboratory investigations	37	52.11	34	47.89
Advice on danger signs (for mother and the baby)	54	76.06	17	23.94
Advice on family planning	56	78.87	15	21.13
Advice on immunization for the baby	52	73.24	19	26.76
Advice on immunization for the mother	43	60.56	28	39.44
Advice on breastfeeding	45	63.38	26	36.62
Advice on nutrition	47	66.20	24	33.80

4.2.6 Necessity of PNC and reasons

It is shown from the figure 4.2 the necessity of PNC whereby 60.71% of respondents said that it is necessary to attend PNC.

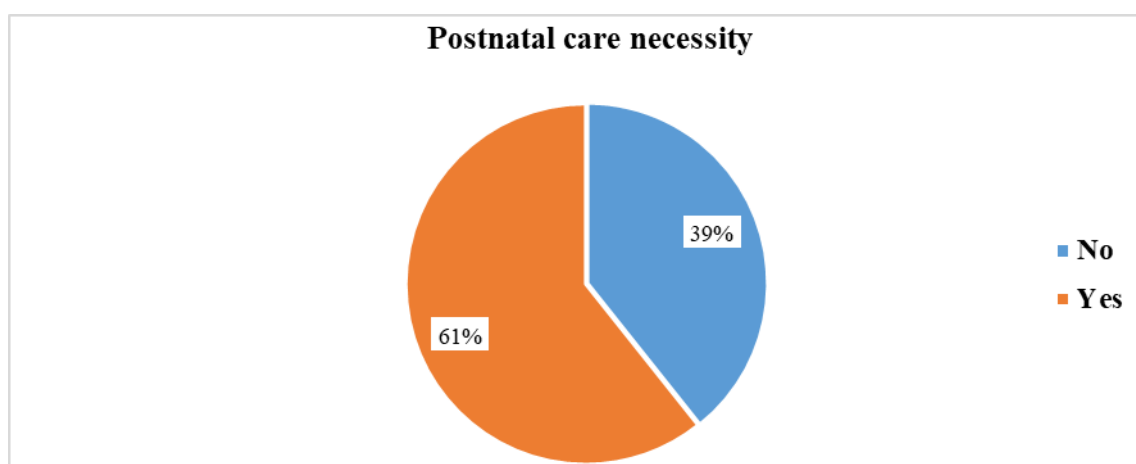


Figure 4.2: Postnatal care necessity

Almost 7 in 10 women (66.7%) said that PNC is necessary to check the safety of mother and baby after delivery. Among those who said that PNC is not necessary, 40.91% said that PNC is not necessary unless the mother got sick during postnatal period (In case of sickness during postnatal period), 24.24% said it is needful to seek for PNC in case of postpartum complications like hemorrhage.

Table 4.8: Summary reasons why PNC is or not necessary

Variable	Frequency	%
Summary reasons why PNC is necessary		
Check safety of mother and baby	68	66.67
Consulted, treated and advised	34	33.33
Summary reasons why PNC is not necessary		
Postpartum complications	16	24.24
Complications during delivery	4	6.06
In case of sickness during postnatal period	27	40.91
No necessary if you fill well	15	22.73
In case you delivered at home	3	4.55
Mother is not yet strong to walk back to health facility	1	1.52

4.2.7 PNC attendance and Socio-demographic characteristics of mothers

4.2.7.1 Age and education

When it comes to attendance of PNC vis-à-vis the age and education, 79.3% of women among those aged 40+ did not attend PNC services, 66.7% of women among those without school education did not attend PNC, 61% of women among those with only primary school education did not go for PNC services. It is also shown that mother's age and education can influence the use of PNC services with p-values of 0.032 and 0.044 respectively.

Table 4.9: Relationship between the PNC attendance vis-à-vis age and education of the mother

Variable	Attendance of PNC service				Pearson chi square	P. value
	Yes	%	No	%		
Age category						
21-30	29	44.6	36	55.4	6.915	0.032
31-40	36	48.6	38	51.4		
40 +	6	20.7	23	79.3		
Mother's education						
Without (No) school education	9	33.3	18	66.7	8.090	0.044
Primary school education	41	39.0	64	61.0		
Secondary school education	21	61.8	13	38.2		
Tertiary school education	0	0.0	2	100.0		
Husband's education						
No school education	8	36.4	14	63.6	3.392	0.335
Primary school education	39	41.9	54	58.1		
Secondary school education	12	60.0	8	40.0		
Tertiary school education	2	28.6	5	71.4		

4.2.7.2 Marital status and religion

Two fourths (57.4%) of married respondents did not attend PNC, 60% of singles did not attend PNC as well. It has revealed that 65% of ADEPR beliefs did not attend, 57.1% of Anglicans attended the PNC, 100% of Muslims did not attend the PNC services. The table below shows that marital status and religion do not influence the use of PNC.

Table 4.10: Relationship between the PNC attendance vis-à-vis marital status and religion of mothers

Variable	<i>Attendance of PNC service</i>				Pearson chi square	P. value
	Yes	%	No	%		
Marital status						
Married	61	43.0	81	57.0	0.198	0.978
Widowed	3	37.5	5	62.5		
Separated	3	37.5	5	62.5		
Single	4	40.0	6	60.0		
Religion						
ADEPR	14	35.0	26	65.0	9.937	0.269
Adventist of 7th day	14	48.3	15	51.7		
Anglican	4	57.1	3	42.9		
Roman Catholic	28	45.9	33	54.1		
EAR	7	43.8	9	56.3		
EPR	2	28.6	5	71.4		
Islam	0	0.0	6	100.0		
Jehovah's witness	1	100.0	0	0.0		
Maranatha	1	100.0	0	0.0		

4.2.8 PNC attendance and Socio-economic characteristics of mothers

Among the socio-economic characteristics assessed only ubudehe socio class can be said to have an impact on the use of PNC whereby the P-value equals 0.000. As shown in table 4.11, three fourths (75%) of respondents who are employed did not attend the PNC, 57.9% of those who are in private sector like commerce attended the PNC, 58.8% of those who have no occupation except looking after children and take care of house works did not attend the PNC. The same table shows also that 91.7% of those in category 1 and 75.5% of those in category 2 did not attend PNC services, but 53.8% in category 3 and 100% in category 4 attended PNC services. It is also highlighted that 56.5% of those who do not have domestic animals and 58.6% of those owning domestic animals did not attend PNC.

Table 4.11: Relationship between the PNC attendance and socio-economic characteristics of mothers

Variable	<i>Attendance of PNC service</i>				Pearson chi square	P. value
	Yes	%	No	%		
Mother's occupation						
Employee	1	25.0	3	75.0	3.914	0.418
Private sector	11	57.9	8	42.1		
Housewife	7	41.2	10	58.8		
Agriculture	52	41.3	74	58.7		
Other	0	0.0	2	100.0		
Husband's occupation						
Employee	3	37.5	5	62.5	0.486	0.784
Private sector	9	50.0	9	50.0		
Agriculture	49	42.2	67	57.8		
Socio-economic class "Ubudehe category"						
1	1	8.3	11	91.7	19.127	0.000
2	12	24.5	37	75.5		
3	57	53.8	49	46.2		
4	1	100.0	0	0.0		
Ownership of domestic animals						
No	30	43.5	39	56.5	0.071	0.790
Yes	41	41.4	58	58.6		

4.2.9 PNC attendance and person level factors of mothers

4.2.9.1 Gravity and Parity

Half (50%) of women with gravity 1-2, 61.3% of those with gravity 3-4 and 62.5% of those with gravity 5 and more did not attend PNC services; it also reveals that 47.5% of those with parity 1-2, 65.6% with parity 3-4 and 60.5% with parity 5 and more did not attend PNC services, with p-value above 0.05, it means that gravity and parity does not influence the use of PNC.

Table 4.12: Relationship between the PNC attendance vis-à-vis gravity and parity of mother

Variable	<i>Attendance of PNC service</i>				Pearson chi square	P. value
	Yes	%	No	%		
Gravity						
1-2	29	50.0	29	50.0	2.1899	0.335
3-4	24	38.7	38	61.3		
5+	18	37.5	30	62.5		
Parity						
1-2	32	52.5	29	47.5	4.362	0.113
3-4	22	34.4	42	65.6		
5+	17	39.5	26	60.5		
Total	71	42.3	97	57.7		

4.2.9.2 ANC Attendance

Fifty-nine percent of women who attended ANC and 57.4% of women who attended ANC did not attend PNC. It is also revealed from the table 4.13 that the number of ANC visits have an impact on the use of PNC whereby more that 50% of women who attended ANC 3 and 4 times attended PNC whereas 76.5% of those with 2 times of ANC and 68% of those with one time of ANC did not attend PNC services. The

more the mother attends the ANC sessions the more likely to go for PNC (P = 0.016).

Table 4.13: Relationship between the PNC attendance vis-à-vis ANC attendance and number of ANCs made

Variable	Attendance of PNC service				Pearson chi square	P. value
	Yes	%	No	%		
ANC attendance						
No	11	40.74	16	59.26	0.031	0.861
Yes	60	42.55	81	57.45		
Number of ANCs for last pregnancy						
4 times	16	53.33	14	46.67	10.312	0.016
3 times	28	53.85	24	46.15		
2 times	8	23.53	26	76.47		
Once	8	32.00	17	68.00		

4.2.9.3 Place and mode of delivery

Almost three fifths (55.6%) of those delivered in health facilities and 80% of those delivered outside the health facility did not attend PNC services, 52.3% of those with normal delivery and 77.8% of those with abnormal delivery did not attend PNC, 54.9% of those with last born alive did not attend PNC services. The mode of delivery (P = 0.006) plays an impact the use of PNC services, also the fact that the last born of the family is alive (P = 0.017) can influence the use of PNC.

Table 4.14: Relationship between the PNC attendance vis-à-vis place of delivery and mode of delivery

Variable	<i>Attendance of PNC service</i>				Pearson chi square	P. value
	Yes	%	No	%		
Place of delivery						
Health facility	68	44.4	85	55.6	3.345	0.067
Outside health facility	3	20.0	12	80.0		
Mode of delivery						
Normal delivery	63	47.7	69	52.3	7.541	0.006
Abnormal delivery (C-section)	8	22.2	28	77.8		
Last born alive						
No	2	13.3	13	86.7	5.649	0.017
Yes	69	45.1	84	54.9		

4.2.9.4 Appointment and timing of PNC

Four out of five (82.2%) women among those who did not receive an appointment for PNC did not attend PNC and 55.6% of those who have been appointed for PNC went for PNC. It is also shown that 69.2% of those who were asked to go for PNC within 3 days and 55% of those scheduled within 4 to 10 days attended PNC which is not the case for those who received appointment after 10th day where 66.7% of them did not attend the PNC. When a mother get appointment for PNC, she is most likely to come back to PNC sessions (P = 0.000).

Table 4.15: Relationship between the PNC attendance vis-à-vis the appointment for PNC, timing of PNC appointment and experience of postpartum complications

Variable	Attendance of PNC service				Pearson chi square	P. value
	Yes	%	No	%		
Appointment for PNC						
No	8	17.8	37	82.2	18.360	0.000
Yes	60	55.6	48	44.4		
Timing of PNC appointment						
Within 1 - 3 days	9	69.2	4	30.8	2.194	0.334
Within 4-10 days	49	55.1	40	44.9		
Within 11-42 days	2	33.3	4	66.7		
Postpartum complications experience						
No	54	42.2	74	57.8	0.001	0.972
Yes	17	42.5	23	57.5		

4.2.9.5 Information about PNC

Eight in ten women among those who were not informed about PNC did not attend PNC, 70.3% of those who were informed once did attend as well but 60.3% of those oftenly informed attended PNC, 71.2% of the women who judge PNC not necessary did not attend PNC. The table below describes the power of information on the use of PNC services, being informed about PNC (p-value = 0.009) influences the use of PNC, the more the mother is informed (p-value = 0.008) the more is likely to use PNC services, the fact that the mother understands it is PNC is necessary (p-value = 0.004) she is likely to use the service.

Table 4.16: Relationship between the PNC attendance vis-à-vis information about PNC, extent of PNC information and necessity of PNC

Variable	Attendance of PNC service				Pearson chi square	P. value
	Yes	%	No	%		
Information about PNC						
No	4	17.39	19	82.61	6.755	0.009
Yes	67	46.21	78	53.79		
Extent of PNC information						
Once	11	29.73	26	70.27	9.786	0.008
Sometimes	18	40.00	27	60.00		
Often	38	60.32	25	39.68		
PNC necessity						
No	19	28.79	47	71.21	8.088	0.004
Yes	52	50.98	50	49.02		

4.3 Health facility level factors associated with postnatal care utilization among post-delivery women.

4.3.1 Waiting time and customer care at health facility

The waiting time for the women attending PNC is also presented in table 4.17 whereby 43.7% spent more than an hour waiting to be received, 36.6% waited less than 30 minutes; the women judged the customer care while arriving at health facility: 66% said they were received friendly, 12.5% said that the health provider were hurried, 7.1% said that the health provider were rude.

Table 4.17: Waiting time and customer care

Variable	Frequency	%
Time waiting at health facility		
Soon after my arrival to health facility (less than 30 minutes)	26	36.62
Not so long (30 minutes -1 hour)	14	19.72
Very long (more than 1 hour)	31	43.66
Customer care		
Friendly	111	66.07
Hurried	21	12.5
Rude	12	7.14
Slowly	14	8.33
Neutral	10	5.95

4.3.2 Distance to each health facility

It is presented within figure 4.3 the distribution of respondents according the time used to reach the nearest health facility: 47% of them use above 45 minutes to reach the health facility, 26% of them use 30 to 45 minutes, 24% use 15 to 30 minutes.

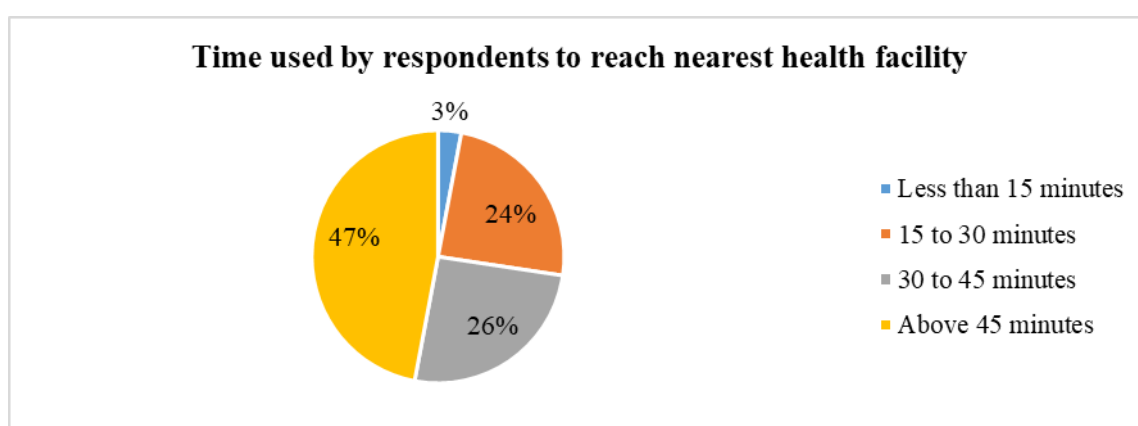


Figure 4.3: Time to nearest health facility

4.3.3 PNC attendance and health facility level factors (distance and customer care)

Time made to reach to health facility and customer care have effect on the use of PNC: time made to reach nearest health facility has an influence on the use of PNC (p-value = 0.02), the more the woman stays nearby the health facility the more the use of PNC is high, this is highlighted in table 4.18 where 80% of those using less than 15 minutes and 56% of those using 30 to 45 minutes attended PNC but 68.3% of those using above 45 minutes did not attend PNC. Also the customer care with a p-value = 0.018 plays a role in the use of PNC because, 91.7% of the woman who said that the health care providers were rude did not attend PNC.

Table 4.18: Effects time made to reach health facility and customer care vis a vis the fact of attending postnatal care service

Variable	Attendance of PNC service				Pearson chi square	P. value
	Yes	%	No	%		
Time made to reach nearest health facility						
Less than 15 minutes	4	80.0	1	20.0	9.849	0.02
15 to 30 minutes	23	56.1	18	43.9		
30 to 45 minutes	19	44.2	24	55.8		
Above 45 minutes	25	31.6	54	68.4		
Customer care						
Friendly	56	50.5	55	49.5	11.967	0.018
Hurried	8	38.1	13	61.9		
Rude	1	8.3	11	91.7		
Slowly	4	28.6	10	71.4		
Neutral	2	20.0	8	80.0		

4.3.4 Characteristics of health facilities

All health centers visited said to offer PNC services, 2/5 offer PNC services 3-5 days. PNC service is not indicated on health center's signing panels in all health centers visited, no PNC activities in annual plans of the 5 health centers, no health center possess national PNC guidelines nor possession of PNC standard registers because they are not provided by MOH, PNC data are available only in one health center and also are analyzed in one health center.

Table 4.19: Characteristics of health facilities, provision of PNC services, possession of PNC tools. (Note: n = 5 which represents a total number of health facilities' representatives who have been interviewed).

Variable	Frequency	%
Health facility status		
Public	4	80
Agree	1	20
Offering PNC package	5	100
Days of PNC		
Once a week	2	40
2 days	1	20
3-5 days	2	40
Possession of designated PNC unit		
No	4	80
Yes	1	20
Possession of PNC standard registers		
No	5	100
Reasons of not possessing PNC standards registers		
Not provided by MOH	5	100
Possession of national PNC guidelines		
No	5	100
PNC activities integrated in Health Center's annual plan		
No	5	100
Availability of PNC data		
No	1	20
Yes	4	80
PNC data analyzed and shared		
No	4	20
Yes	1	80
PNC service indicated on panels in health centre		
No	5	100

4.3.5 PNC influencing factors by heads of health facilities

The influencing factors of PNC use have been stated by representatives of health facilities during this study: where four in five (80%) said that long distance to reach health facility is the main factor, nurses who do not give much importance to PNC and explain to women the importance of PNC.

Table 4.20: Comments of heads of health facilities on the factors influencing low use of PNC.

	Frequency	%
Ignorance of women	1	20
Nurses do not give importance to PNC and do not explain to women its importance	3	60
Women do not give importance to PNC when they have no complications	2	40
Long distance to reach health facility	4	80

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

The objective of this study was to determine factors associated with the use of postnatal care services among post-delivery women in Bugesera District. The findings of this study showed that the uptake of postnatal care is 42.3% and only 16.9% attended the PNC within 3rd day after delivery which correlates with the results from RDHS 2014/15 that showed that first postnatal checkup within 3 days in Bugesera District is 10.8% (NISR, 2016).

5.1.1 Socio –demographic and socio-economic factors

The age of the mother plays an important role in women's utilization of maternal health services. This study revealed that the age of the mother at Pr=0.032 influences her decision to use PNC services: 79.31% of those aged 40 years and above did not attend PNC. The same scenario has been found by Kinuthia in 2014 in a study done in Kenya where it has been shown women aged 30 and above are less likely to use postnatal care services, the same findings were revealed by a study done in Nepal (Khanal et al., 2014), the same finding were revealed by another study also conducted in Kenya (Wanjira et al., 2011). Another study conducted by Bernard in Rwanda also revealed that the age of the mother at delivery ($p<0.001$) is significantly associated with PNC use (Rwabufigiri et al. , 2016).

Though several studies revealed that woman's marital status plays a significant impact on the utilization of postnatal care services which is different from the findings of this study. This study showed that being married or not does not influence the use of PNC services (Pr=0.978). This is totally different from a study conducted in Nigeria by Takai et al that revealed that marital status at $p=0.002$ influence the use of postnatal care services (Takai et al., 2015).

This study revealed that maternal education has a positive impact on the utilization of health care services at $Pr=0.044$: 66.6% of women without studies and 61% with primary studies did attend PNC services. Maternal education is argued to be an effective means of achieving greater autonomy in the family, getting employment, thereby achieving economic independence. It also provides her opportunities to learn about pregnancy and childbirth through exposures to mass media (Acharya et al, 2010). The same finding has been noted in Bangladesh that the higher educated mothers are more conscious than illiterate mother in utilizing the services. Also many others researchers found the same where they said that the higher the educational level of mothers, the more they attend health centres for postpartum services (Nigatu, 2011; Wanjira et al., 2011; Walker et al., 2010; Belemsaga et al., 2015). The influence of mother's education level ($p<0.001$) to PNC use was also confirmed by another study conducted in Rwanda (Rwabufigiri et al., 2016).

This study showed that occupation of the mother at $Pr= 0.418$ and husband's occupation at $Pr= 0.784$ do not influence the use of PNC services. This is to mean that the fact the mother is employed, works in private sector or do not have a specific job cannot push or hinder her to go for PNC services. The same finding was revealed in Rwabufigiri's study that revealed no influence of mother's employment ($p= 0.200$) to the use of PNC (Rwabufigiri et al., 2016). This study revealed that there is not an impact of religion on the use of PNC services: the effect of religion on the use of PNC shower a $Pr= 0.269$; from the results of the study you cannot link the use of PNC and religious beliefs.

This study showed that socio-economic class "ubudehe" at $Pr=0.000$ plays a strong significant impact on the use of PNC services: 91.67% of those in category 1 and 75.5% in category 2 did not attend PNC. The same finding is confirmed by a study done in India which showed that mothers from upper class are more likely to use maternal care compared to mothers from lower class. Household wealth may facilitate the use of maternal care in many ways. Mothers from richer households are generally more educated and have more autonomy compared to mothers from the poorest households (Babalola et al., 2009).

5.1.2 Personal level factors

This study showed that mother's gravidity at $Pr= 0.335$ and parity at $Pr= 0.113$ have no influence on the attendance of PNC services. Though the attendance of ANC at $Pr= 0.861$ does not have an influence on the use of PNC but this study revealed that there is a significant effect of ANC visits ($Pr=0.016$) on postnatal care attendance: 53% of the women with 4 and 3 ANC visits attended PNC whereas 76% with 2 ANC visits and 68% with only one ANC visit did not attend PNC. A study done in Nepal (Khanal et al., 2014) found that the mothers who attended four or more ANC visits as recommended by the WHO (WHO, 2010) were more likely to attend postnatal care. ANC attendance and adequate counselling of mothers has been previously reported to be associated with postnatal care attendance (Khanal et al., 2014). Antenatal care counselling could improve mothers' awareness and knowledge of the importance and the availability of postnatal care services, and motivate them to utilize postnatal care services (Titaley et al., 2009).

This study highlighted that the place of delivery at $Pr= 0.067$ does not have an influence on the use of PNC rather the mode of delivery with $Pr=0.006$ has an influence on the use of PNC : 77.8% of the women with an abnormal delivery did not attend PNC because they were still weak to walk to health facility for PNC. The same situation is confirmed by the study conducted by Dhaher et al which showed that the use of PNC is higher among women who had experienced problems during their delivery, had a cesarean section, or had an instrumental vaginal delivery than among women who had a spontaneous vaginal delivery (Dhaher et al., 2008). This study has shown that the fact that the woman's last born is alive or not ($Pr= 0.017$) plays a negative or positive impact on the PNC utilization: 86.67% of the women whose last is not alive did not attend PNC. The study showed no influence of postpartum complications experience with a $Pr=0.972$ on the use of PNC services.

This study showed that when the women are informed about PNC ($Pr=0.009$) are most likely to use PNC services where 82.6% of the women who were not informed about PNC while staying in health facility did not attend PNC. A study done in Nepal (Dhakal et al., 2007), reported that the main reason for the non-utilization of

postnatal care services is lack of awareness or not perceiving a need for it. The results from these studies concur with the study done in Kenya (Kinuthia, 2014) where 41.3% of the respondents had no knowledge about postnatal services and only 16.3% had good knowledge about postnatal care. According to Titaley et al, lack of exposure to information and lack of health knowledge about pregnancy are significantly associated with non-utilization of postnatal care services (Titaley et al., 2009).

This study has shown that the more the woman is informed the more is likely to attend the PNC service. The extent to what the PNC is shared with a $Pr=0.008$ has an impact on PNC use: 60% of those saying that they were sometimes informed on PNC attended PNC. This study has revealed that the more the woman feels PNC is necessary the more is likely to use it. The necessity of PNC at $Pr=0.004$ has a significant impact on the use of PNC where 71.2% of those saying that PNC is not necessary did not attend PNC and 51% of those saying that PNC is necessary attended PNC as well.

5.1.3 Health facility related factors

This study has shown that when women receive an appointment to come for PNC while at health centre has a positive impact on the use PNC. Appointment for PNC with a $Pr= 0.000$ has an impact on the use of PNC services: 82% of those saying not receiving an appointment did not attend PNC whereas 55.56% of those who were appointed to come back for PNC came.

This study has shown that distance to reach the health facility with a $Pr=0.020$ constitutes a limitation to seek PNC services in Bugesera District. The same situation is confirmed by a study done in Kenya by Kinuthia that showed that 15.3% of the respondents who lived 0-5km from the hospital attended postnatal services whilst no respondents more than 15km from the facility attended postnatal care (Kinuthia, 2014). Also according to Titaley and et al in a study done in Indonesia, long distance to the healthcare facility was identified by mothers as a major problem hindering the use of postnatal care services (Titaley et al., 2009). This can be explained due to the

fact that accessibility and affordability to the health facility was more difficult (Kinuthia, 2014).

The fact that long distance to reach health centre has an influence on the use of PNC has been also stressed by 80% of health centres representatives.

This study has revealed that customer care at $P=0.018$ plays an important role for the use of PNC services: 50% of those saying that they were friendly received at health centre attended PNC whereas 91.7% of those saying that health provider were rude did not attend PNC. A study done in Kenya by Kinuthia showed that providers' response and care in the facility also contributed to poor utilization of postnatal care for instance respondents reported that the health workers were rude and that the waiting time was long. The rude health workers and long waiting time should not be ignored in order to improve utilization of postnatal care services (Kinuthia, 2014).

This study showed that all health centres visited offer PNC service, 40% of them provide this service once a week and 40% offer it 3 to 5 days, only 20% possess a designated unit for PNC service, all health centres visited do not have standardized tools for PNC and said they are not provided by MOH. Also it has been revealed that PNC activities are not integrated into Health centre's plan of actions, PNC data are available at 80% of health centres visited though they are analysed only in 1 health centre. PNC service is not indicated on existing orientation panels in health centres visited.

5.2 Conclusions

Postnatal care utilization is a significant part of maternal and child health care. This study examined the factors associated with the non-utilization of postnatal care among post-delivery mothers in Bugesera District. This study found that less than a half of delivered mothers attended postnatal care in Bugesera District.

The socio-demographic and economic characteristics play an important role in women's decision and utilization of maternal health services. Age of the mother and her level of education show a positive impact on the utilization of health care

services. The social class named “Ubudehe” has a strong significant impact on the use of PNC services.

The study pointed out that individual level factors have significant influence the use of PNC services for delivered mothers. These include times of ANC visits, mode of delivery, the fact that the mother was informed about PNC prior to discharge from health facility, the fact that a mother is given a precise appointment (date) for PNC and the fact that the woman feels PNC is necessary for her life and baby.

The study identified the factors related to health facility influencing either negatively or positively the use of postnatal care services such as distance to reach the health facility, and customer care. The availability of PNC service, its functionality and priority given to PNC service in a health facility have a direct impact on the use of PNC.

5.3 Recommendations

The utilization of postnatal care services is still low compared to national target and all effort must be put in place to increase the use of postnatal care services thus reduce possible post-partum complications to mothers and babies as well. Among other factors, the following would be of great importance:

1. Build health posts in remote areas far away from health centers to facilitate population to seeking health services because the distance to health center has been found to impede the use of PNC services
2. Furthermore, it would be good for all health facilities to improve the customer care: the rude health workers, long waiting time, the availability of PNC service and priority given to this service have a direct direct impact on the use of PNC
3. It would be wise to provide PNC standardized tools, PNC guidelines to health facilities because it has been found that there is a gap in providing such service due to the gap of lacking tools and guidelines

4. The majority of deliveries take place in health facilities, it is highly needed that the mothers are sensitized and educated on the use and importance of PNC services.
5. The more PNC service is given a priority the more its use will be increased. This can be used by a regular use PNC data which will help to identify the gap and look for strategies to fill the gap, once the service will be available all working days the clients will benefit from it at any time they visit the health facility even if they may visit for other reasons.

REFERENCES

- Acharya, D. R., Bell, J. S., Simkhada, P., Teijlingen, E. R. Van, & Regmi, P. R. (2010). Women ' s autonomy in household decision-making: a demographic study in Nepal. *Reproductive Health, 1*, 1–12. <http://www.reproductive-health-journal.com/content/7/1/15>
- APP. (2010). *Maternal Health: Investing in the lifeline of healthy societies and economies*. September. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Maternal+Health+:Investing+in+the+Lifeline+of+Healthy+Societies+&+Economies#0%5Cnhttp://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Maternal+Health:+Investing+in+the+lifeline+of+health>
- Babalola, S., & Fatusi, A. (2009). Determinants of use of maternal health services in Nigeria - Looking beyond individual and household factors. *BMC Pregnancy and Childbirth, 9*, 43. <https://doi.org/10.1186/1471-2393-9-43>
- Belemsaga, D. Y., Kouanda, S., Goujon, A., Kiendrebeogo, J. A., Duysburgh, E., Degomme, O., & Temmerman, M. (2015). A review of factors associated with the utilization of healthcare services and strategies for improving postpartum care in Africa. *Africa Focus, 28*(2), 83–105.
- Bugesera District. (2013). *District Development Plan 2013 -2018*. July, 237. Retrieved from http://www.bugesera.gov.rw/fileadmin/user_upload/Bugesera_District_DDP_2012-17_Final.pdf
- Chimankar, D. A., & Sahoo, H. (2011). Factors influencing the Utilization of Maternal Health Care Services in Uttarakhand. *Ethno Medecine, 5*(3), 209–216.
- Dhafer, E., Mikolajczyk, R. T., Maxwell, A. E., & Krämer, A. (2008). Factors associated with lack of postnatal care among Palestinian women: a cross-sectional study of three clinics in the West Bank. *BMC Pregnancy and*

- Dhakal, S., Chapman, G. N., Simkhada, P. P., van Teijlingen, E. R., Stephens, J., & Raja, A. E. (2007). Utilisation of postnatal care among rural women in Nepal. *BMC Pregnancy and Childbirth*, 7, 19.
- Eliudi, S. E. (2010). *Assessment of maternal postnatal care utilization and associated factors among women with infants aged 2-6 months in Shinyanga rural District, Shinyanga Region, Tanzania* [Muhimbili University of Health and Allied Sciences]. Retrieved from <http://dspace.muhas.ac.tz:8080/xmlui/handle/123456789/1191>
- Fort, A. L., Kothari, M. T., & Abderrahim, N. (2006). *Postpartum care : levels and determinants in Developing Countries*. December. Retrieved from <https://dhsprogram.com/pubs/pdf/CR15/CR15.pdf>
- Gebeyehu, W. Y. (2014). Factors Affecting Utilization of Postnatal Care Service in Amhara Region, Jabitena District, Ethiopia. *Science Journal of Public Health*, 2(3), 169.
- Glenn, I. D. (2013). Determining Sample Size. *University of Florida, IFAS Extension, PE0D6*, 3. <https://doi.org/10.4039/Ent85108-3>
- Ikamari, L. D. E. (2004). Maternal Health care utilisation in Teso District.pdf. *African Journal of Health Sciences*, 11(1 (2004)).
- ISTEEBU. (2012). *Burundi Enquete démographique et de santé 2010*. 1–14. <https://doi.org/10.1787/aeo-2010-19-fr>
- Jamei, E., Chan, M., Chau, H. W., Gaisie, E., & Lättman, K. (2022). Perceived Accessibility and Key Influencing Factors in Transportation. *Sustainability (Switzerland)*, 14(17).
- Jat, T. R., Ng, N., & San Sebastian, M. (2011). Factors affecting the use of maternal health services in Madhya Pradesh state of India: a multilevel analysis.

International Journal for Equity in Health, 10(1), 59.
<https://doi.org/10.1186/1475-9276-10-59>

Khanal, V., Adhikari, M., Karkee, R., & Gavidia, T. (2014). Factors associated with the utilisation of postnatal care services among the mothers of Nepal: analysis of Nepal Demographic and Health Survey 2011. *BMC Women's Health*, 14(1), 19. <https://doi.org/10.1186/1472-6874-14-19>

Kinuthia, P. M. (2014). Factors Affecting Utilization of Postnatal Care Services in Kenya. *South American Journal of Public Health*, 2(3), 499–527. <https://doi.org/10.11648/j.sjph.20140203.15>

KNBS. (2015). *Kenya demographic and health survey 2014*. 1–76. Retrieved from <https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf>

Kulkarni, G. V, Angadi, M. M., & Sorganvi, V. M. (2016). A Study on Socio-Economic Factors Affecting Utilization of Maternal Health Care Services in Urban Community. *Jouranl of Basic And Applied Research*, 2(3), 379–381. https://d1wqtxts1xzle7.cloudfront.net/46735573/jbaar2016256-libre.pdf?1466696400=&response-content-disposition=inline%3B+filename%3DA_Study_on_Socio_Economic_Factors_Affect.pdf&Expires=1680118478&Signature=MhfJ~LdEnUwub0xJ2xiCRENjZj5s5Gcq7guZRqTIBGoN~kV5f

Langlois, É. V, Miskurka, M., Zunzunegui, V., & Ghaffar, A. (2015). Inequities in postnatal care in low- and middle-income countries : a systematic review and meta-analysis. *Bulletin of the World Health Organization*, 93, 259–270.

Lawn, J. E. (2009). 4 Million Neonatal Deaths: an Analysis of Available Cause-of-Death Data and Systematic Country Estimates With a Focus on “Birth Asphyxia. *Unpublished Work*, 1, 1–202. Retrieved from <http://eprints.ucl.ac.uk/19027/>

- Matijasevich, A., Santos, I. S., Silveira, M. F., Domingues, M. R., Barros, A. J. D., Marco, P. L., & Barros, F. C. (2009). Inequities in maternal postnatal visits among public and private patients: 2004 Pelotas cohort study. *BMC Public Health*, 9, 335. <https://doi.org/10.1186/1471-2458-9-335>
- MOH. (2010). *Rwanda national health insurance policy*. Retrieved from https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/rwanda/insurance_policy1.pdf
- Muchabaiwa Lazarus, Mazambani D, Chigusiwa Lloyd, Bindu Samuel, M. V. (2012). Determinants of Maternal Healthcare Utilization in Zimbabwe. *International Journal of Economic Sciences and Applied Research*, 5(2), 145–162. Retrieved from <https://papers.ssrn.com/sol3/papers.cfm>
- Nankwanga, A. (2004). *Factors influencing utilisation of postnatal services in Mulago and Mengo hospitals, Kampala, Uganda* (Issue November) [University of the Western Cape]. Retrieved from https://etd.uwc.ac.za/bitstream/handle/11394/237/Nankwanga_MSC_2004.pdf?sequence=1&isAllowed=y
- Nigatu, R. (2011). Antenatal and postnatal care service utilization in Southern Ethiopia: A population-based study. *African Health Sciences*, 11(3), 390–397. Retrieved from <http://www.ajol.info/index.php/ahs/article/viewFile/73402/62322%5Cnhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013002918>
- NISR. (2012). *Rwanda Demographic and Health Survey 2010*. Retrieved from <https://www.statistics.gov.rw/publication/demographic-and-health-survey-2010-final-report>
- NISR. (2016). *Rwanda Demographic Health Survey 2014/2015*. Retrieved from <https://www.statistics.gov.rw/publication/demographic-and-health-survey-20142015-final-report>

- Nyamata Hospital. (2015). *Bugesera Annual Health Management Information System Report*. Retrieved from <https://aggregate.moh.gov.rw/hmis/dhis-web-data-visualizer/index.html#/xEVVcLs5d1t>
- Ochako, R., Fotso, J., Ikamari, L., & Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya : Insights from the Kenya Demographic and Health Survey , 2003. *BMC Pregnancy and Childbirth*, 1–9. Retrieved from <https://www.biomedcentral.com/1471-2393-11-1>
- Rahman, M. M., Haque, S. E., & Zahan, M. S. (2011). Factors affecting the utilisation of postpartum care among young mothers in Bangladesh. *Health & Social Care in the Community*, 19(2), 138–147. <https://doi.org/10.1111/j.1365-2524.2010.00953.x>
- Ronsmans, C., & Graham, W. (2006). Maternal mortality: who, when, where, and why. *Lancet*, 368(9542), 1189–1200. [https://doi.org/10.1016/S0140-6736\(06\)69380-X](https://doi.org/10.1016/S0140-6736(06)69380-X)
- Rwabufigiri, B. N., Mukamurigo, J., Thomson, D. R., Hedt-gautier, B. L., & Semasaka, J. P. S. (2016). Factors associated with postnatal care utilisation in Rwanda : A secondary analysis of 2010 Demographic and Health Survey data. *BMC Pregnancy and Childbirth*, 1–8. <https://doi.org/10.1186/s12884-016-0913-0>
- Sharma, A., Thakur, P., Kasar, P., Tiwari, R., & Sharma, R. (2014). Utilization of post natal care in tribal area of Madhya Pradesh, India: A community based cross-sectional study. *International Journal of Medical Science and Public Health*, 3(10), 1266.
- Sines, B. E., Syed, U., Wall, S., & Worley, H. (2007). Postnatal Care : A Critical Opportunity to save mothers and newborns. In *Policy Perspective on Newborn Health*. https://www.healthynewbornnetwork.org/hnn-content/uploads/Postnatal-Care-a-critical-opportunity-works_0.pdf

- Somefun, O. D., & Ibisomi, L. (2016). Determinants of postnatal care non-utilization among women in Nigeria. *BMC Research Notes*, 9, 21. <https://doi.org/10.1186/s13104-015-1823-3>
- Stephenson, R., Baschieri, A., Clements, S., Hennink, M., & Madise, N. (2006). Contextual Influences on the Use of Health Facilities for Childbirth in Africa. *American Journal of Public Health*, 96(1), 84–93. <https://doi.org/10.2105/AJPH.2004.057422>
- Takai, I., Dlakwa, H., Bukar, M., Audu, B., & Kwayabura, A. (2015). Factors responsible for under-utilization of postnatal care services in Maiduguri, north-eastern Nigeria. *Sahel Medical Journal*, 18(3), 109. <https://doi.org/10.4103/1118-8561.169282>
- Titaley, C. R., Dibley, M. J., & Roberts, C. L. (2009). Factors associated with non-utilisation of postnatal care services in Indonesia. *Journal of Epidemiology and Community Health*, 63(10), 827–831. <https://doi.org/10.1136/jech.2008.081604>
- UBOS. (2012). *Demographic and Health Survey 2011*. 1–461. Retrieved from <https://dhsprogram.com/pubs/pdf/FR264/FR264.pdf>
- Walker, O., Zere, E., Tumusiime, P., Kirigia, J., Mwikisa, C., & Mbeeli, T. (2010). Inequities in utilization of maternal health interventions in Namibia: implications for progress towards MDG 5 targets. *International Journal for Equity in Health*, 9(i), 16. <https://doi.org/10.1186/1475-9276-9-16>
- Wanjira, C., Mwangi, M., Mathenge, E., Mbugua, G., & Ng'ang'a, Z. (2011). Delivery practices and associated factors among mothers seeking child welfare services in selected health facilities in Nyandarua South District, Kenya. *BMC Public Health*, 11, 360. <https://doi.org/10.1186/1471-2458-11-360>
- Warren, Charlotte, Pat Daly, Lalla Toure, and P. M. (2006). Opportunities for Africa

' s Newborns. In *Opportunities for Africa's Newborns*. The Partnership for Maternal, Newborn & Child Health. Retrieved from <https://reliefweb.int/report/world/opportunities-africas-newborns>

WHO. (2010). *WHO Technical Consultation on Postpartum and Postnatal Care*. http://whqlibdoc.who.int/hq/2010/WHO_MPS_10.03_eng.pdf

WHO. (2015). *Trends in maternal mortality 1990 to 2015. Estimates developed by WHO, UNICEF, UNFPA and The World Bank*. 80. Retrieved from [http://datatopics.worldbank.org/hnp/files/Trends in Maternal Mortality 1990 to 2015 full report.PDF](http://datatopics.worldbank.org/hnp/files/Trends%20in%20Maternal%20Mortality%201990%20to%202015%20full%20report.PDF)

APPENDICES

Appendix I: Questionnaire / Structured Interview

Section I: Socio demographic and socio economic characteristics of mothers

0 Health center

.

1 Age: How old are you?

.

2 What is your marital status? 1= Married 2=Widowed 3=Separated 4=

. Single

3 Educational status of the mother (What is your educational status?) 1= Not

. attended school 2= Attended primary school 3= Secondary 4=Tertiary education

4 Educational status of your husband? 1= Not attended school 2= Attended

. primary school 3= Secondary 4=Tertiary education

5 What religion do you belong to?

.

6 What is your occupation? 1= Employee (Government /Non-Government)

. 2= Private sector (Merchant...) 3= Housewife 4= Agriculture

5= Other (Specify)

7 Occupation of the partner? 1= Employee (Government /Non-Government)

. 2= Private sector (Merchant...) 3= Housewife 4= Agriculture

5= Other (Specify)

8 In which Ubudehe category do you belong in?

.

9 Does the family own domestic animals (cattles, goats, sheeps, chickens, ...) ?

. 1=No 2= Yes

1 If yes, how many? 1= 1-2 2= 3-4 3= 5and plus Cattles

0

Goats Sheeps Porcs Chickens Other

.
Section II: Person level factors

1 How many pregnancies did you have (Gravidity)? 1= 1-2 2= 3-4 3= 5 and
1 plus

.
1 How many living children to you have (Parity)? 1= 1-2 2= 3-4 3= 5 and
2 plus

.
1 Have you attended ANC? 1= No 2= Yes
3

.
1 (If Q13 is no, then jump to Q15) How many times did you go for ANC for your
4 last pregnancy? 1= 4 times 2= 3 times 3= 2 times 4= Once

.
1 Where did you give birth to your last child? 1= Health facility (Hospital/Health
5 center/ Clinic) 2= Outside health facility (Home / On route)

.
1 If you delivered at health facility, did you receive an appointment for PNC
6 before discharge? 1= No 2= Yes

.
1 If yes, when was your appointment? 1= within 1 – 3 days after delivery 2=
7 within 4-10 days after delivery 3= within 11 – 42 days after delivery

.
1 How did you deliver your last child? 1= Normal delivery 2= Abnormal
8 delivery (C-section)

.
1 Was your last born alive? 1= No 2= Yes
9

.
2 Did you experience post-partum complications (hemorrhage,)? 1= No 2=
0 Yes

2 Have you ever attended postnatal clinic after the births of your baby/babies?

1 1= No 2= Yes

2 If yes, what are the reasons why you attended postnatal care?

2

.

.....

.....

.....

.....

2 If no, what are the reasons why you did not attend postnatal care? (give all that
3 apply)? 1= Was not advised 2= No time to go because of the work 3= Felt
4 well no need to attend 4= Forgot the date 5= No one to look after other
5 children 6= Other possible reasons

.....

.....

.....

.....

2 Did you make your first PNC visit after how many days of delivery? 1=

4 Between 1st -3rd day 2= Between 4th -10th day 3= Between 11th - 42nd day

2 How many times did you go for PNC after your last delivery? 1= 3 times 2= 2

5 times 3= 1 time only

2 If you attended, how long did you wait before being served by the health

6 provider? 1= Soon after my arrival to health facility (less than 30 minutes)

. 2= Not so long (30 minutes -1 hour) 3= Very long (more than 1 hour)

2 How long does it take you to walk to your nearest health facility (in minutes)?

7 1= Less than 15 minutes 2= 15 to 30 minutes 3= 30 to 45 minutes 4= Above

. 45 minutes

2 Have you ever been informed (told) for postnatal care?

8 1= No 2= Yes

.

2 If yes, to what extent were you informed to attend postnatal care? 1= Once

9 2= Sometimes 3= Often

.

3 Who did inform you to attend postnatal care service? 1= Nurse / Doctor 2=

0 CHW 3= Family member 4=Neighbor 5=None

.

3 How were you received at the health facility? 1= Friendly 2= Hurried 3=

1 Rude 4= Slowly 5= Neutral

.

3 What was done during your post-natal care visit (more than one answer is

2 possible)? 1= Physical examination 2= Laboratory investigations 3=

. Advice on danger signs (for mother and the baby) 4= Advice on Family

planning 5= Advice on Immunization for the infant 6= Advice on

Immunization for yourself 7= advice on breastfeeding 8= advice on

nutrition

3 In your opinion is postnatal care necessary for a woman's health? 1= No

3 2= Yes

.

3 If Yes or No, explain?

4

.....
.....
.....
.....

Thank you!

Appendix II: Checklist (interview guide) for health facility

- 1 Health center name: (1= Mayange, 2= Ruhuha, 3= Mareba, 4= Juru, 5=
. Shyara)
- 2 Health center status: 1= Public 2= Agree
.
- 3 Does your health facility offer PNC package? 1= No 2=Yes
.
- 4 If yes, how many days per week does the facility provide PNC service?
. 1= once a week 2= 2 days 3= 3- 5 days
(The researcher requests to see the timetable of PNC service, when there isn't it means that the service does not exist)
- 5 Does the health facility possess a designated postnatal care unit (room
. of service)? Researcher's observation. 1= No 2= Yes
(The researcher requests the access to PNC unit)
- 6 Does the health facility possess standard register? *(The researcher
. requests the permission to see the register before answering the question)* 1= No 2=Yes
- 7 If not, what are the reasons? 1= Not provided by MOH, 2= Stock out 3= Other
. reasons
.....
.....
.....
.....
- 8 Does the health center has national PNC guidelines? *(The researcher
. requests permission to see the PNC guidelines before answering the question)*1= No 2= Yes
- 9 How many nurses and midwives does the health facility have?
.
- 1 How many of them are trained on focalized PNC?

0

.

1 How many staff affected in PNC service?

.

1 Does the health center's annual plan integrate any intervention or
2 activity for PNC? (By researcher's observation) (*The researcher*
. *requests the health facility's annual action plan to check if there are*
PNC interventions or activities into it) 1= No (check through the plan)
2=Yes

1 Are data for PNC available at health center? (*The researcher requests*
3 *the PNC report*) 1= No 2=Yes

.

1 Are data for PNC analyzed and shared to users (other staff of the health
4 facility)? (*The researcher requests the analysis reports to see if PNC*
. *data are analysed*) 1= No 2= Yes (check the analysis and minutes)

1 Is PNC service indicated on health center panels indicating areas and
5 services? (*The researcher observes on health centre's direction panels*
. *if PNC service in mentioned*). 1= No 2=Yes

1 According to your experience, what are the factors that can influence the use of
6 PNC service in your catchment are?

.

.....
.....
.....

Thank you!

Appendix III: Informed consent

Researcher

Good morning /afternoon Madam,

I am NDARUHUTSE Victor, a student in Public health from Jomo Kenyatta University of Agriculture and Technology/ Kigali Campus. I am conducting a study on factors associated with postnatal care use among post-delivery women in Bugesera District and collecting the information which will assist the health sector to design appropriate interventions so as to improve maternal and child health services in Bugesera District.

I request you to participate in the study by answering the questions in this questionnaire. The interview will take few minutes and there are no risks to participation. All the information obtained from you will be treated with utmost confidentiality during and after the study. Your names will not be included on the form and the information you give will not be shared with other people except academic staff if need be. You are free to accept or deny to answer these questions at any stage during questioning.

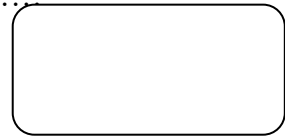
Thank you for your kind participation.

Respondent

I having been adequately informed about the purpose, procedures, potential risks and benefits of this study. I have had the opportunity to ask questions and any questions I have asked have been answered to my satisfaction. I know that I can refuse to participate in this study without any loss or benefit to which I would have otherwise been entitled. Having gone through the consent form thoroughly I hereby give my personal consent to participate in the research project titled titled “factors associated with postnatal care use among post-delivery women in Bugesera District”.

Name of respondent.....

Signature or Right thumb print.....



Date:

Appendix IV: Recommendation for ethical clearance from JKUAT



**JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY**

KIGALI CAMPUS

OFFICE OF THE DIRECTOR

P.O.BOX 3373, KIGALI, RWANDA. Email: director.kigalicampus@jkuat.ac.ke

04th /05/2016

RECOMMENDATION FOR ETHICAL CLEARANCE

SUBJECT: TM310-CO10-1223/2015 NDARUHUTSE VICTOR

This is to confirm that **NDARUHUTSE VICTOR** registration number **TM310-CO10-1223/2015** is a bona fide student pursuing master's degree in Public health at our institution. He has completed course work and has presented his proposal to institution research review panel with a **PASS**. This is therefore to request your organization to let him pass through the ethical board and be certified to proceed with data collection.

Any assistance accorded to him shall be highly appreciated.

Yours Faithfully

**DR.CHERUIYOT W.K, PhD
DIRECTOR**



JKUAT is ISO 9001:2008 and ISO 14001:2004 Certified
Setting Trends in Higher Education, Research and Innovation

Appendix V: Approval from Rwanda Ministry of Education

REPUBLIC OF RWANDA

Kigali, 02/08/2016
N° ASSA/12.00/2016



MINISTRY OF EDUCATION
P.O.BOX 622 KIGALI

The Head of Rwanda National Ethics Committee
Kigali.

Dear Sir/Madam,

RE: Research Project Proposal for Review

I wish to introduce **Mr. Ndaruhutse Victor** to you. He is seeking Research Clearance Certificate to carry out research in Rwanda. The Title of her research project is "**Factors Associated with Post Natal Care Use among Post-delivery Women in Bugesera District, Eastern Province, Rwanda, 2015**". As it is required by the research regulations, the project proposal should be reviewed by the Rwanda National Ethics Committee.

It is in this regard that I am requesting that this project be considered on your review schedule.

I take this opportunity to thank you for your continued collaboration.

Yours sincerely,

MINISTRE DE L'EDUCATION
GASINGIRWA Marie-Christine, Ph.D
Director General of Science
Technology and Research



Marie-Christine GASINGIRWA, Ph.D
Director General of Science Technology and Research

Cc.

- Hon. Minister of Education
- Hon Minister of State in charge of Primary and Secondary Education
- Permanent Secretary, Ministry of Education

Appendix VI: Collaboration to conduct a study from RBC



A Healthy People. A Wealthy Nation

Kigali, 14.07./2016
Ref: N° 050.../RBC/DG/2016

Director General's Office

Mr NDARUHUTSE Victor
Tel: +250788755295
Email: viendar@gmail.com

Dear Victor,

RE: Collaboration to conduct a study

Reference is made to your letter dated May, the 9th2016 requesting the collaboration to conduct study entitled” **Factors associated with Post Natal Care (PNC) use among post-delivery women in Bugesera District, Eastern Province, Rwanda, 2015”**.

I'm pleased to inform you that the requested collaboration is guaranteed. However, you are requested to take into consideration the inputs provided by MCCH Heard of division, before the submission of the Protocol for approval by Medical Research Committee.

You are also requested to inform the same division the progress of the steps of the study up to the dissemination of results.

Sincerely,



Jeanine U. CONDO, MD, PhD
Associate Professor of Public Health
Director General of RBC

CC:
- Head of Institute of HIV, Disease, Prevention and Control
- Maternal, Child and Community Health Division Manager

Appendix VII: Scientific Review Approval Notice



National Health Research Committee
Ref: NHRC/2016/PROT/021

To: **Ndaruhutse Victor**
Principle Investigator

Scientific Review Approval Notice

With reference to your request for approval of the Research Protocol entitled; **“Factors associated with postnatal care use among post delivery women in Bugesera District, Eastern Province, Rwanda , 2015”**; We are pleased to inform you that, following a thorough review and critical analysis of your proposal (NHRC/2016/PROT/021), your Research Protocol has been approved by National Health Research Committee.
However,

- 1) Changes amendments on approach and methodology must be submitted to the NHRC for review and approval to validate the changes.
- 2) A submission of quarterly progress report is mandatory
- 3) Submission to NHRC of final results before publication is mandatory
- 4) Failure to fulfill the above requirements will result in termination of study

Once again National Health Research Committee appreciates your interest in research and requests you to submit this proposal to the National Ethics Committee or IRB and then share a copy of the approval letter from them.

Your final approval reference number is **NHRC/2016/PROT/021**.

Sincerely,



Dr. Paffat UWALIRAYE
Chairperson of NHRC

Date: 2/10/16

Appendix VIII: Publication

International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2017): 7.296

Factors Associated with Post-Natal Care Use among Post-Delivery Women in Bugesera District, Eastern Province, Rwanda, 2015

Victor NDARUHUTSE¹, Mercy NWANKWO², Kenneth NGURE³

^{1,2,3}School of Public Health, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya

Abstract: Maternal mortality is unacceptably high, approximately 30–40% of direct maternal deaths in Africa are due to hemorrhage, mostly in the postpartum period. Such problems can be detected and treated through proper follow up visits for women during the postpartum period. This study aimed to identify the factors associated with postnatal care services utilization in Bugesera District. This was a cross-sectional study, consisted of 168 women who gave birth from July to December 2015 and 5 heads of health centers in Bugesera District. Data was collected using questionnaires and key informants interview. Study subjects were selected per health center was determined proportionate to number of deliveries each of the facilities had conducted. The selected mothers were reached in their respective villages. Analysis was conducted using stata, bivariate and multivariate logistic regression analysis were computed to determine statistical association between the outcome variable and independent variables using Odds Ratio; significant of statistical association were tested using 95% confidence interval (CI) and p value (< 0.05). The findings of this study showed that the utilization of postnatal care is 42.26%. It highlighted also that factors associated with the use of postnatal care services are age, educations, socio economic class “ubudehe” category, ANC visits, mode of delivery, the fact that last born is alive or not, being informed about PNC and understanding the necessity of the PNC. The study also revealed that it is necessary to build health posts in remote areas far away from health centers to facilitate population to seeking PNC services and to enhance the sensitization of mothers on the use of PNC service.

Keywords: Postnatal care, maternal mortality, post-delivery women

1. Introduction

Maternal mortality is unacceptably high, approximately 30–40% of direct maternal deaths in Africa are due to hemorrhage, mostly in the postpartum period. Such problems can be detected and treated through proper follow up visits for women during the postpartum period. About 75% of maternal deaths occur during the process of childbirth or in the first week thereafter.¹ Approximately, each year an estimated 303,000 women die worldwide from complications related to pregnancy, childbirth or the postnatal period,² 90% of the deaths occurring in the developing countries³ and up to two-thirds of all maternal deaths occur in the Sub-Saharan Africa,⁴ an estimate of 201,000 women die each year in Sub-Saharan Africa.²

The postnatal period is the ideal time for special interventions in order to improve the health outcome and survival of both the newborn and the mother after delivery because many maternal deaths occur in this time period. It is very important to note that failure to attend for routine postnatal care leads to mortality, morbidity and unplanned early pregnancy after delivery. Postnatal care is essential and much helpful in maintaining and promoting the health of the woman and the newborn baby.³ In low-income countries, almost 40% of women experience complications after delivery and an estimated 15% develop potentially life-threatening problems.⁵ Moreover, postnatal care allows for the provision of postnatal vitamin A and iron supplementation to the mother and immunization of newborns to provide them with optimal start to life.⁶ Though it is a period that poses substantial health risks for both mother and newborn infant, yet it receives less attention from health care providers than pregnancy and childbirth.⁷ Lack of care in this time period may result in death or

disability as well as missed opportunities to promote healthy behaviors. Hemorrhage, sepsis and infections are the leading causes of maternal death and the majority of deaths occur virtually during the postnatal period.⁸

Sub-Saharan Africa has the highest rates of neonatal and maternal mortality in the world and has shown the slowest progress in reducing newborn deaths, especially deaths in the first week of life. Each year, at least 1.16 million African babies die in the first 28 days of life, at least 125,000 women and 870,000 newborns die in the first week after birth, yet this is when coverage and programs are at their lowest along the continuum of care. Asphyxia and infections claim many babies during the first day, and the majority of deaths were due to preterm birth occur during the first week.⁹ Postnatal care (PNC) program has the lowest rate of all reproductive and child health programs. Impediments to the effective delivery of PNC imply all the factors that, directly or indirectly, hinder its utilization and these include geographical, economical, socio-cultural barriers and the characteristics of health services such as well as the quality of care in influencing the decision of seeking care. According to different readings from different authors, the following factors contribute to perceived low use of PNC services: the fact that women do not feel sick pushes them to think that they do not need postnatal care: the use of PNC is higher among women who had experienced problems during their delivery, had a cesarean section, or had an instrumental vaginal delivery than among women who had a spontaneous vaginal delivery.⁹ Lack of advices from healthcare providers to women in post-natal care: women not having been told by their doctor /nurse to come back for postnatal care do not attend PNC service after delivery.⁹ There is a need for health care providers to sensitize community on the importance of postnatal care services and on complications that may arise

Volume 7 Issue 10, October 2018

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

Paper ID: ART2019998

DOI: 10.21275/ART2019998

30

during postnatal period. Geographical inaccessibility to health facility; this may be measured by distance, travel time, means of transportation and any other physical barriers that could hinder the client from receiving PNC services. Long distances to health services often impact health service utilization.¹⁰ DHS 2010 reported that 26.1% of women said a long distance to reach the health facility is among the constraints in accessing healthcare including postnatal care.¹¹ The education of the mother is an important social variable that has a positive effect on the utilization of maternal and child health services. The other socioeconomic factors usually found to be important are place of residence, religion and standard of living of the household.¹² DHS 2010 revealed that slightly more than half of women (53%) reported that lack of money constitutes a primary barrier.¹¹

Ensuring appropriate postnatal care is critical for maternal and newborn health. Unfortunately, although Rwandan policies have rightly emphasized on components such as skilled birth attendance and antenatal care, they have overlooked the need to strengthen postnatal care within the reproductive health services.

2. Objective of the Study

The study aimed determine factors associated with postnatal care services utilization among post-delivery women in Bugesera District.

3. Materials and Methods

This study was a descriptive cross-sectional study consisting of 168 mothers delivered from July to December 2015 who were visited in their respective villages and 5 heads of health centers. The mothers were selected from 5 public health centers. The study was conducted in Bugesera District. It is conceptualized that independent variables such as the social demographic and economic factors (such as mothers' age, marital status, education, occupation, place of delivery, religion and economic social class) and external factors to mothers like accessibility and availability of PNC all influence the dependent variable, which is utilization of PNC services. Questionnaires and in-depth guide checklist were used in data collection. The utmost confidentiality was each time ensured to participant. Completed data were processed using Stata version 11.7. Descriptive statistics such as frequency distributions and percentages were used to describe various variables under study. Furthermore, bivariate and multivariate logistic regression analysis were computed to determine statistical association between the outcome variable and independent variables; significant of statistical association were tested using 95% confidence interval (CI) and p value (< 0.05). Ethical clearance and permission to carry out the study were obtained from Rwanda National Ethics Committee after the review of the research proposal.

4. Results

A total of 168 women and 5 heads of the health facilities met the inclusion criteria and were reached to their respective

Table 1: Effect of socio demographic and economic characteristics of mothers and the use of postnatal care services

villages for interview. Out of 168 women: 78 (46.4%) were aged 21 to 30 years, 142 (84.5%) were married, 95% were Christians, 62.5% of women interviewed attended primary school, 75% were farmers, 36.31% belonged in ubudehe category 1 and 2, 36.9% got pregnant three to four times, 38.1% delivered a live birth three to four times, 83.93% attended ANC, among them 21.28% completed ANC visits, 58.16% attended ANC 3-4 times, 91.07% delivered in health facilities, 78.57% had a normal delivery, 91.07% delivered alive baby last time they gave birth, 23.81% experienced post-partum complications, only 71(42%) of respondents attended the postnatal care services.

Among the reasons to attend PNC: 50.7% of those who attended postnatal care went just to check for post-delivery health status for both mother and baby, more than 20% went because they had health problems such as abdominal pain, postpartum hemorrhage, unknown severe pain. For those who did not go for PNC, 34% said they did not need to go there because they felt well, 32.99% said they were not advised, 12.4% said no time to go because of the work and forgot the date. Concerning time period to attend the PNC: only 16.9% came back within 3rd day after delivery, more than half of them (66.2%) came for PNC between fourth and tenth day after delivery, 49.3% attended PNC once only, 61% of mothers judge PNC attendance as necessary. PNC is necessary because they check for safety of mother and baby in addition identified problem is treated. On the other hand, among those who said that PNC is not necessary, 40.91% said that PNC is highly necessary just in case of sickness during postnatal period, 24.24% said it is needful to seek for PNC in case of postpartum complications like hemorrhage. The package offered during PNC matters a lot in terms of utilization of this service, it has been shown that more than 70% were advised on family planning, danger signs for both mother and baby, immunization of the baby, 63.38% were physically examined also were advised on breastfeeding, 66.20% were advised on nutrition.

Socio-demographic and economic characteristics of mothers and attendance of postnatal care service

As it is shown in table 1: 57.74% (97/168) did not attend PNC, 79.31% (23/29) of women aged 40+ did not attend PNC services, 66.67% (18/27) of women without schools did not attend PNC, 60.95% of women with primary school did not go for PNC services. It is also shown that mother's age and education can influence the use of PNC services with a P-value of under 0.05. Being married or not (P-value > 0.05) does not influence the PNC attendance. It has been revealed also that religion (P-value > 0.05) does not have an impact on PNC use. Among the socio-economic characteristics, the study showed that only ubudehe socio class has an impact on the use of PNC whereby the P-value equals 0.000: as shown in table 1, 91.67% (11/12) of those in category 1 and 75.51% (37/49) of those in category 2 did not attend PNC services, but 53.77% (57/106) in category 3 and 100% (1/1) in category 4 attended PNC services. It is also highlighted that 56.52% (39/69) of those who do not have domestic animals and 58.59% of those owning domestic animals did not attend PNC.

Variable	Have you ever attended postnatal clinic after the births of your baby/babies?						Pr.
	Mothers who did not attend PNC		Mothers who attended PNC		Total		
	No.	%	No.	%	No.	%	
Age							
21-30	36	55.38	29	44.62	65	100.00	0.032
31-40	38	51.35	36	48.65	74	100.00	
40 +	23	79.31	6	20.69	29	100.00	
Mother's education							
No school	18	66.67	9	33.33	27	100.00	0.044
Primary school	64	60.95	41	39.05	105	100.00	
Secondary school	13	38.24	21	61.76	34	100.00	
Tertiary school	2	100.00	0	0.00	2	100.00	
Marital status							
Married	81	57.04	61	42.96	142	100.00	0.978
Widowed	5	62.50	3	37.50	8	100.00	
Separated	5	62.50	3	37.50	8	100.00	
Single	6	60.00	4	40.00	10	100.00	
Religion							
ADEPR	26	65.00	14	35.00	40	100.00	0.269
Adventist of 7th day	15	51.72	14	48.28	29	100.00	
Anglican	3	42.86	4	57.14	7	100.00	
Roman Catholic	33	54.10	28	45.90	61	100.00	
EAR	9	56.25	7	43.75	16	100.00	
EPR	5	71.43	2	28.57	7	100.00	
Islam	6	100.00	0	0.00	6	100.00	
Jehovah's witness	0	0.00	1	100.00	1	100.00	
Maranatha	0	0.00	1	100.00	1	100.00	
Mother's occupation							
Employee	3	75.00	1	25.00	4	100.00	0.418
Private sector	8	42.11	11	57.89	19	100.00	
Housewife	10	58.82	7	41.18	17	100.00	
Agriculture	74	58.73	52	41.27	126	100.00	
Other	2	100.00	0	0.00	2	100.00	
Socio-economic class "Ubudehe category"							
1	11	91.67	1	8.33	12	100.00	0.000
2	37	75.51	12	24.49	49	100.00	
3	49	46.23	57	53.77	106	100.00	
4	0	0.00	1	100.00	1	100.00	
Ownership of domestic animals							
No	39	56.52	30	43.48	69	100.00	0.790
Yes	58	58.59	41	41.41	99	100.00	
Total	97	57.74	71	42.26	168	100.00	

Person level factors associated with postnatal care services

The study showed that there is not a statistical significance of gravidity (P-value=0.335), parity (P-value=0.113), ANC attendance (P-value=0.861), place of delivery (P-value=0.067), experience of postpartum complications (P-value=0.972) to PNC attendance (table 2). The study revealed that more a pregnant woman makes visits to ANC clinic (P-value=0.016) the more she is likely to further attend PNC: 50% of women who attended ANC 3 and 4 times attended PNC. Though the place of delivery does not have a significant impact of the use of PNC but the mode of delivery (P-value=0.006) has an influence on PNC: 52.27%

of those with normal delivery and 77.78% of those with abnormal delivery did not attend PNC. 54.90% of those with last born alive did not attend PNC services. The also highlights that the effect of receiving an appointment for PNC on the use of PNC whereby 82.2% of those who did not receive an appointment for PNC did not attend PNC and 55.56% of those who have been appointed for PNC went for PNC. 82.6% of the women who were not informed about PNC did not attend PNC, 70.3% of those who were informed once did attend as well but 60.3% of those often informed attended PNC, 71.2% of the women who judge PNC not necessary did not attend PNC.

Table 2: Effect of person level factors of mothers and the use of postnatal care services

Variable	Have you ever attended postnatal clinic after the births of your baby/babies?						Pr.
	Mothers who did not attend PNC		Mothers who attended PNC		Total		
	No.	%	No.	%	No.	%	
Gravidity							
2-Jan	29	50	29	50	58	100	0.335
4-Mar	38	61.29	24	38.71	62	100	
5+	30	62.5	18	37.5	48	100	
Parity							

2-Jan	29	47.54	32	52.46	61	100	0.113
4-Mar	42	65.63	22	34.38	64	100	
5+	26	60.47	17	39.53	43	100	
ANC attendance							
No	16	59.26	11	40.74	27	100	0.861
Yes	81	57.45	60	42.55	141	100	
Number of ANCs for last pregnancy							
4 times	14	46.67	16	53.33	30	100	0.016
3 times	24	46.15	28	53.85	52	100	
2 times	26	76.47	8	23.53	34	100	
Once	17	68	8	32	25	100	
Place of delivery							
Health facility	85	55.56	68	44.44	153	100	0.067
Outside health facility	12	80	3	20	15	100	
Mode of delivery							
Normal delivery	69	52.27	63	47.73	132	100	0.006
Abnormal delivery (C-section)	28	77.78	8	22.22	36	100	
Last born alive							
No	13	86.67	2	13.33	15	100	0.017
Yes	84	54.9	69	45.1	153	100	
Appointment for PNC							
No	37	82.22	8	17.78	45	100	0
Yes	48	44.44	60	55.56	108	100	
Information about PNC							
No	19	82.61	4	17.39	23	100	0.009
Yes	78	53.79	67	46.21	145	100	
Extent of PNC information							
Once	26	70.27	11	29.73	37	100	0.008
Sometimes	27	60	18	40	45	100	
Often	25	39.68	38	60.32	63	100	
PNC necessity							
No	47	71.21	19	28.79	66	100	0.004
Yes	50	49.02	52	50.98	102	100	
Total	97	57.74	71	42.26	168	100	

Health facility level factors associated with postnatal care utilization among post-delivery women.

The study showed that there is a statistical significance between time made to reach the nearest health facility with a Pr = 0.020, the quality of customer care with a Pr = 0.018 and the use of PNC. 79/168 (47%) of the respondents use above 45 minutes to reach the health facility, 43/168 (26%) of them use 30 to 45 minutes, 24% use 15 to 30 minutes. The women judged the customer care at health facility: 111/168 (66.07%) said they were received friendly, 21/168

(12.5%) said that the health provider were hurried, 12 (7.14%) said that the health provider were rude. As shown in table 3, the more the woman stays nearby the health facility the more the use of PNC is high: 80% of those using less than 15 minutes and 56% of those using 30 to 45 minutes attended PNC but 68.35% of those using above 45 minutes did not attend PNC. Also the customer care plays a role in the use of PNC because, 91.67% of the woman who said that the health care providers were rude did not attend PNC.

Table 3: Effects health facility level factors vis a vis the fact of attending postnatal care service

Variable	Have you ever attended postnatal clinic after the births of your baby/babies?						Pr.
	Mothers who did not attend PNC		Mothers who attended PNC		Total		
	No.	%	No.	%	No.	%	
Time made to reach nearest health facility							
Less than 15 minutes	1	20.00	4	80.00	5	100.00	0.020
15 to 30 minutes	18	43.90	23	56.10	41	100.00	
30 to 45 minutes	24	55.81	19	44.19	43	100.00	
Above 45 minutes	54	68.35	25	31.65	79	100.00	
Customer care							
Friendly	55	49.55	56	50.45	111	100.00	0.018
Hurried	13	61.90	8	38.10	21	100.00	
Rude	11	91.67	1	8.33	12	100.00	
Slowly	10	71.43	4	28.57	14	100.00	
Neutral	8	80.00	2	20.00	10	100.00	
Total	97	57.74	71	42.26	168	100.00	

The PNC services are offered in all 5 health centers visited, 2/5 offer PNC services 3-5 days. PNC service is not indicated on health center's signing panels in all health

centers visited, no PNC activities in annual plans of the 5 health centers, no health center possess national PNC guidelines nor possession of PNC standard registers because

they are not provided by MOH, PNC data are available only in one health center and also are analyzed in one health center. The heads of health centers interviewed said that among influencing factors of PNC use are: long distance to reach health facility is the main factor, nurses who do not give much importance to PNC and explain to women the importance of PNC, mothers do not give importance to PNC when they have no complications and lastly the ignorance of women.

5. Discussion

The findings of this study showed that the uptake of postnatal care is 42.26% which falls in line with RDHS 2014/2015 that showed that first postnatal checkup is only 43%.¹³ The age of the mother plays an important role in women's utilization of maternal health services. This study revealed that the age of the mother at Pr=0.032 influences her decision to use PNC services: 79.31% of those aged 40 years and above did not attend PNC. The same scenario has been found by Kinuthia in 2014 in a study done in Kenya where it has been shown women aged 30 and above are less likely to use postnatal care services, the same findings were revealed by a study done in Nepal,¹⁴ the same finding were revealed by another also conducted in Kenya.¹⁵ Another study conducted by Bernard in Rwanda also revealed that the age of the mother at delivery ($p < 0.001$) is significantly associated with PNC use.¹⁶ This study revealed that maternal education has a positive impact on the utilization of health care services at Pr=0.044: 66.6% of women without studies and 61% with primary studies did attend PNC services. Maternal education is argued to be an effective means of achieving greater autonomy in the family, getting employment, thereby achieving economic independence.¹⁷ The same finding has been noted in Bangladesh that the higher educated mothers are more conscious than illiterate mother in utilizing the services. Also many others researchers found the same where they said that the higher the educational level of mothers, the more they attend health centres for postpartum services.^{18,15,19,20} The influence of mother's education level ($p < 0.001$) to PNC use was also confirmed by another study conducted in Rwanda.¹⁶ The socio-economic class "ubudehe" at Pr=0.000 plays a strong significant impact on the use of PNC services: 91.67% of those in category 1 and 75.5% in category 2 did not attend PNC. The same finding is confirmed by a study done in India which showed that mothers from upper class are more likely to use maternal care compared to mothers from lower class. Household wealth may facilitate the use of maternal care in many ways. Mothers from richer households are generally more educated and have more autonomy compared to mothers from the poorest households.²¹

This study showed that mother's gravidity at Pr= 0.335 and parity at Pr= 0.113 have no influence on the attendance of PNC services. Though the attendance of ANC at Pr= 0.861 does not have an influence on the use of PNC but this study revealed that there is a significant effect of ANC visits (Pr=0.016) on postnatal care attendance: 53% of the women with 4 and 3 ANC visits attended PNC whereas 76% with 2 ANC visits and 68% with only one ANC visit did not attend PNC. A study done in Nepal¹⁴ found that the mothers who attended four or more ANC visits as recommended by the

WHO⁷ were more likely to attend postnatal care. This study highlighted that the place of delivery at Pr= 0.067 does not have an influence on the use of PNC rather the mode of delivery with Pr=0.006 has an influence on the use of PNC: 77.8% of the women with an abnormal delivery did not attend PNC because they were still weak to walk to health facility for PNC. The same situation is confirmed by the study conducted by Dhaler et al which showed that the use of PNC is higher among women who had experienced problems during their delivery, had a cesarean section, or had an instrumental vaginal delivery than among women who had a spontaneous vaginal delivery.⁹ This study has shown that the fact that the woman's last born is alive or not (Pr= 0.017) plays a negative or positive impact on the PNC utilization: 86.67% of the women whose last is not alive did not attend PNC. This study showed that when the women are informed about PNC (Pr=0.009) are most likely to use PNC services where 826% of the women who were not informed about PNC while staying in health facility did not attend PNC. A study done in Nepal²², reported that the main reason for the non-utilization of postnatal care services is lack of awareness or not perceiving a need for it. The results from these studies concur with the study done in Kenya where 41.3% of the respondents had no knowledge about postnatal services and only 16.3% had good knowledge about postnatal care.²³ According to Titalley et al, lack of exposure to information and lack of health knowledge about pregnancy are significantly associated with non-utilization of postnatal care services.²⁴ This study has shown that the more the woman is informed the more is likely to attend the PNC service. The extent to what the PNC is shared with a Pr=0.008 has an impact on PNC use: 60% of those saying that they were sometimes informed on PNC attended PNC. This study has revealed that the more the woman feels PNC is necessary the more is likely to use it. The necessity of PNC at Pr=0.004 has a significant impact on the use of PNC where 71.2% of those saying that PNC is not necessary did not attend PNC and 51% of those saying that PNC is necessary attended PNC as well.

This study has shown that when women receive an appointment to come for PNC at health centre has a positive impact on the use of PNC. Appointment for PNC with a Pr= 0.000 has an impact on the use of PNC services: 82% of those saying not receiving an appointment did not attend PNC whereas 55.56% of those who were appointed to come back for PNC came. This study has shown that distance to reach the health facility with a Pr=0.020 constitutes a limitation to seek PNC services. The previous studies done in Kenya and Indonesia also revealed that long distance to the healthcare facility constitutes a barrier hindering the use of postnatal care services.^{23,24} The fact that long distance to reach health centre has an influence on the use of PNC has been also stressed by 80% of health centres representatives. This study has revealed that customer care at Pr= 0.018 plays an important role for the use of PNC services: 50% of those saying that they were friendly received at health centre attended PNC whereas 91.7% of those saying that health provider were rude did not attend PNC. A study done in Kenya by Kinuthia showed that providers' response and care in the facility also contributed to poor utilization of postnatal care for instance respondents reported that the health workers were rude and that the waiting time was long. The

rude health workers and long waiting time should not be ignored in order to improve utilization of postnatal care services.²³

6. Conclusions

Postnatal care utilization is a significant part of maternal and child health care. It is connected with the physical, nutritional and emotional wellbeing of mothers and new born. This study examined the factors associated with the non-utilization of postnatal care among post-delivery mothers in Bugesera District. The socio-demographic and economic characteristics play an important role in women's decision and utilization of maternal health services. Age of the mother, her level of education show a positive impact on the utilization of health care services. The social class named "Ubudehe" has a strong significant impact (Pr=0.000) on the use of PNC services. Household wealth may facilitate the use of maternal care in many ways. Mothers from richer households are generally more educated and have more autonomy compared to mothers from the poorest households.²¹The majority of the mothers attended ANC and PNC, but this study revealed that there is a significant effect of ANC visits (Pr=0.016) on postnatal care attendance, mode of delivery with Pr=0.006 has an influence on the use of PNC, the more the woman is informed the more is likely to attend PNC, the extent to what the PNC is shared with a Pr=0.008 has an impact on PNC use. Again more the woman feels PNC is necessary the more is likely to use it, the necessity of PNC at Pr=0.004 has a significant impact on the use of PNC. The distance to reach the health facility constitutes a limitation to seek PNC services. Customer care plays an important role for the use of PNC services. The rude health workers and long waiting time should not be ignored in order to improve utilization of postnatal care services²³. The availability of PNC service, its functionality and priority given to PNC service in a health facility have a direct impact on the use of PNC.

References

- Gebeyehu WY. Factors Affecting Utilization of Postnatal Care Service in Amhara Region, Jabitena District, Ethiopia. *Sci J Public Heal*. 2014;2(3):169.
- WHO, UNICEF, UNFPA WBG and UNPD. Trends in Maternal Mortality: 1990 to 2015. 2015;
- Sharma A, Thakur P, Kasar P, Tiwari R, Sharma R. Utilization of post natal care in tribal area of Madhya Pradesh, India: A community based cross-sectional study. *Int J Med Sci Public Heal*. 2014;3(10):1266.
- Ronsmans C, Graham W. Maternal mortality: who, when, where, and why. *Lancet*. 2006 Sep;368(9542):1189–200.
- Langlois É V, Miszkurka M, Zunzunegui V, Ghaffar A. Inequities in postnatal care in low- and middle-income countries: a systematic review and meta-analysis. *Bull World Health Organ*. 2015;93(January):259–70.
- Matijasevich A, Santos IS, Silveira MF, Domingues MR, Barros AJD, Marco PL, et al. Inequities in maternal postnatal visits among public and private patients: 2004 Pelotas cohort study. *BMC Public Health*. 2009 Jan;9:335.
- WHO. WHO Technical Consultation on Postpartum and Postnatal Care. 2010.
- Warren C, Pat D, Lalla T, Pyande M. Opportunities for Africa's Newborns. 2006;79–90.
- Dhaheer E, Mikolajczyk RT, Maxwell AE, Krämer A. Factors associated with lack of postnatal care among Palestinian women: a cross-sectional study of three clinics in the West Bank. *BMC Pregnancy Childbirth*. 2008 Jan;8.
- Ikamari LDE. Maternal Health care utilisation in Teso District.pdf. *Afr J Health Sci*. 2004;
- NISR. Rwanda Demographic and Health Survey 2010. 2012.
- Chimankar DA, Sahoo H. Factors influencing the Utilization of Maternal Health Care Services in Uttarakhand. 2011;5(3):209–16.
- NISR. Rwanda Demographic Health Survey 2014/2015. 2015.
- Khanal V, Adhikari M, Karkee R, Gavidia T. Factors associated with the utilisation of postnatal care services among the mothers of Nepal: analysis of Nepal Demographic and Health Survey 2011. *BMC Womens Health*. 2014;14(1):19.
- Wanjira C, Mwangi M, Mathenge E, Mbugua G, Ng'ang'a Z. Delivery practices and associated factors among mothers seeking child welfare services in selected health facilities in Nyandarua South District, Kenya. *BMC Public Health*. 2011;11:360.
- Rwabufigiri BN, Mukamurigo J, Thomson DR, Hédégautier BL, Semasaka JPS. Factors associated with postnatal care utilisation in Rwanda: A secondary analysis of 2010 Demographic and Health Survey data. *BMC Pregnancy Childbirth*. 2016;1–8.
- Acharya DR, Bell JS, Simkhada P, Teijlingen ER Van, Regmi PR. Women's autonomy in household decision-making: a demographic study in Nepal. 2010;(1):1–12.
- Nigatu R. Antenatal and postnatal care service utilization in Southern Ethiopia: A population-based study. *Afr Health Sci*. 2011;11(3):390–7.
- Walker O, Zere E, Tunusiime P, Kirigia J, Mwikisa C, Mbeeli T. Inequities in utilization of maternal health interventions in Namibia: implications for progress towards MDG 5 targets. *Int J Equity Health*. 2010;9(i):16.
- Belemsaga DY, Kouanda S, Goujon A, Kiendrebeogo JA, Duysburgh E, Degomme O, et al. A review of factors associated with the utilization of healthcare services and strategies for improving postpartum care in Africa. 2015;28(2):83–105.
- Babalola S, Fatusi A. BMC Pregnancy and Childbirth beyond individual and household factors. 2009;13:1–13.
- Dhakal S, Chapman GN, Simkhada PP, van Teijlingen ER, Stephens J, Raja AE. Utilisation of postnatal care among rural women in Nepal. *BMC Pregnancy Childbirth*. 2007 Jan;7:19.
- Kinuthia PM. Factors Affecting Utilization of Postnatal Care Services in Kenya. *South Am J Public Heal*. 2014;2(3):499–527.
- Titaley CR, Dibley MJ, Roberts CL. Factors associated with non-utilisation of postnatal care services in Indonesia. *J Epidemiol Community Health*. 2009 Oct;63(10):827–31.