

**DETERMINANTS OF POSTNATAL CARE SERVICES UTILIZATION
AMONG WOMEN OF REPRODUCTIVE AGE IN MARIDI COUNTY
SOUTH SUDAN**

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DECLARATION

I, **Aloysious Vuzi Gbali** hereby do declare that, this dissertation is my original work. To the best of my knowledge, it has never been presented to any other university before for the award of diploma or degree. I further affirm that, all the sources consulted have been duly cited and acknowledged in the list of references.

Signature.....

Date.....

Aloysious Vuzi Gbali

2014 MPH-RL-FEB-010

APPROVAL

This dissertation entitled ‘‘Determinants of postnatal care services utilization among women of reproductive age in Maridi County, South Sudan’’, meets the minimum requirements for the award of masters’ degree in public health. I certify that, it was produced under my ardent supervision.

Signature.....

Date.....

Alege John Bosco

Institute of Public Health and Management

DEDICATION

To my lovely daughters Edna, Trisha and Gloria and Madam Stella Roslyn who had to endure my nonappearance during the critical time of this career development when they needed my presence most. For their smiles never ceased to be part of my motivation. I pray that, the Almighty God grant all of you his choicest blessings.

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ACRONYMS

ACOG	American College of Obstetricians and Gynaecologists
ANC	Ante Natal Care
BCG	Bacillus Calmette-Guerin vaccine
BHI	Boma Health Initiative
BPHNS	Basic Package of Health and Nutrition Services
CHD	County Health Department
CI	Confidence Interval
CIP	County Health Implementing Partner
CHW	Community Health Worker
CMMB	Catholic Mission Medical Board
DHIS	District Health Information System
ECS	Episcopal Church of South Sudan and Sudan
FP	Family Planning
HPF	Health Pooled Fund
IMC	International Medical Corps
KIs	Key Informants
LLITNs	Long Lasting Insecticide Treated Bed Nets
MCHW	Child Health Worker
MDGs	Millennium Development Goals
MoEST	Ministry of Education Science and Technology
MoH	Ministry of Health
MoPHS	Ministry of Public Health and Sanitation
n	Number of responses
NBS	National Bureau of Statistics
OR	Odd ratio
OPV	Oral Polio Vaccine
PHCCs	Primary Health Care Centres
PHCUs	Primary Health Care Units
PNC	Postnatal Care
SDGs	Sustainable Development Goals
SMoHE	State Ministry of Health and Environment
SPSS	Statistical Package for Social Scientists
SSP	South Sudanese Pounds
TBAs	Traditional Birth Attendants
TT	Tetanus Toxoid vaccine
UNDP	United Nations Development Program
UNICEF	United Nations Children's Education Fund
USA	United States of America
USD	United States Dollars
WHO	Health Organization

OPERATIONAL DEFINITIONS

For purposes of this research, the following are the operational definitions of the terms used during the course of this study:

Alternative health care services: Unconventional or traditional health promotive and preventive care practices that forms the first or last point of contact for members of the community in case of ill health.

Focused ANC: Personalised and goal oriented care given to pregnant mothers that are directed towards treating and managing health problems arising in pregnancy aimed at

Penta-valent vaccine: Vaccine with a combination of 5 antigens namely; Diphtheria, Pertussis, Tetanus, Hepatitis B and Haemophilus Influenza type B given to children during routine immunization .

Postnatal care service utilization: Series of promotive, preventive and curative care packages designed for a mother and her new-born baby and received from a trained health care service provider either at home or in a health facility starting immediately following childbirth timed at 6 hours, between the 3rd and 6th days, 6 weeks and at 6 months with the critical aim of alleviating any health disparity occurring in the mother or her new-born baby.

Postnatal care services: Promotive and preventive health care practices and assessments with focus on identifying and promptly treating complications arising in the mother and her new-born following child birth up to a period of six months.

Postnatal care: Care given to the mother and the baby immediately after birth and for the period lasting for up to six weeks following birth.

Postnatal period: Also known as post-partum period is the time from immediate delivery of a baby lasting up to six months following childbirth during which rapid physiological adjustment for the mother to the non-pregnant state and for the new-born adapting to life outside the uterus occurs.

Safe motherhood: Ensuring all women receive the care they needed to be safe and healthy throughout pregnancy and childbirth.

Skilled birth attendants: Trained health care professionals e.g. Nurses, Midwives, Clinical Officers or Doctors who are equipped with knowledge and skills to conduct safe and hygienic deliveries and are able to take appropriate decisions in case of emergencies.

Traditional Birth Attendants: Someone in the community usually elderly women with no formal training or certification and, who through experiences have acquired some knowledge and skills of assisting women during delivery in the community.

Traditional healer/herbalist: A practitioner of native medicine in the community treating illnesses using herbs and bones of dead animals or birds.

Unskilled birth attendant: Someone in the community usually not a certified health professional but has learned skills of assisting women during childbirth through previous experiences acquired over time e.g. traditional birth attendants and elderly women.

Women of reproductive age: Females within the age ranges of 15- 49 years who have had live births in the past six months preceding the conduct of the study.

ABSTRACT

Background: Postnatal care programme have remained among the weakest, under-utilized and neglected maternal and child health programs despite its proven evidence in improving the health of mothers and new-borns. Understanding the determinants of postnatal care services utilization in the study area was envisioned to provide baseline data and background for further research, track and document women's experience of access to postnatal care services, provide recommendations for policy makers at all levels to conduct an evaluation on postnatal care service provision in health facilities as well as influence policy decision making on maternal and child health care in the country in line with the Sustainable Development Goals of ensuring good health and well-being of the population in the country

Objectives: The study was set out to assess the determinants of postnatal care services utilization among women of reproductive age in Maridi County. Specifically to; determine the individual factors affecting the utilization of PNC, establish the socio-economic factors influencing utilization of PNC; and, to determine the health system factors influencing the utilization of postnatal care services in the study area.

Methodology: Descriptive cross-sectional study design was used to assess the determinants of PNC. Both quantitative and qualitative data collection techniques were employed. Total of (384) women of reproductive age were the study respondents.

Results: This study established that age (p-value 0.042); levels of education (p-value 0.000) were significant determinants of PNC. An important influence of postnatal care services utilization shown by this study is the number of ANC visits (p-value 0.000); (OR 4.803) made by the mothers during their most recent pregnancies. Work done to earn a living such as; peasant farmer p-value 0.018 and, receiving encouragement and social support from a spouse or family members (p-value 0.000) to attend PNC. The amounts of time taken to receive postnatal care services (p= 0.013). Poor response from health care service providers reported by more than a half of the respondents at the last postnatal care visit (p-value 0.016), care and support received from the health service providers (p-value 0.000). Additionally, provision of information on personal hygiene after childbirth (p-value value 0.001), the provision of information on possible mood changes after child birth (p-value 0.004); provision of counselling on possible danger signs following child birth (p-value 0.030); promotion of warmth in the new born (p-value 0.001); promotion of hygiene and good skin, eye and cord care for new born babies (p-value 0.002); (OR 2.217)provision of counselling on danger signs in new born and home care (p-value 0.022); (OR 0.789) were significantly associated with PNC service utilization among mothers in Maridi County.

Conclusion: This study established that; age, marital status and levels of education, number of ANC visits made by the mothers during their most recent pregnancies and the last place of delivery determined PNC attendance. The occupation of respondents, receiving encouragement and social support from a spouse and family members also determined PNC attendance by the respondents. Provision of transport, provision of funds for PNC services, time taken to access PNC services, receiving care and support expected from the health facility attitude of health workers at PNC service delivery points, the kind of health care provider, rate of attention given to a mother by the health care providers and quality of PNC services provided. There is low utilization of PNC service by women in Maridi County.

Recommendations: This study recommends; MoEST to invest more resources in promoting girl-child education; MoH to adapt and introduce the comprehensive focused PNC strategy to orientate health care service providers on the provision of quality PNC, expand on the coverage of maternity care to PHCUs, integrate TBAs and traditional herbalists into the BHI to regulate their practice, establish formal cost sharing scheme to lessen health inequity and, need for more research to evaluate the quality of PNC services provided.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter describes the overview of the study background, statement of the problem, study objectives, research questions to be addressed by the study, significance of the study and the conceptual framework.

1.1 Background to the study

Postnatal care (PNC) services are preventive care practices and assessments that are designed to identify and treat complications of both the mother and the neonate. According to WHO, (2015), it forms the major elements of continuum of essential obstetric care which includes focused ANC and skilled attendance at delivery required for the reduction of maternal and neonatal morbidity and mortality. Globally, more than 350,000 women and 2.9 million new-borns perish due to delivery related complications with the vast majority of these deaths occurring in developing countries within the immediate postnatal period (Noor & Rahman, 2012; Takai *et al*, 2015; WHO, 2015). And, up to 99% of these deaths are reported in Africa where only 5% of mothers receive PNC services (Takai *et al*, 2015; WHO, 2015). Observations have further shown a considerable number of mothers and their new-borns spend most of the first 6 weeks of their postnatal period at home. According to WHO (2015), this poses a great challenges for planning and implementing PNC for many mothers and new-borns given the fact that, 18 million women in Africa do not give birth in health facilities.

Yet opportunities for timely access to PNC remains one of the key strategies to avert most of the preventable causes of maternal and neonatal morbidity and mortality (Melaku *et al*, 2014; Abeje *et al*, 2014). For the Sub-Saharan Africa to achieve its Sustainable Development Goals (SDGs) 3, strategies for reducing maternal and neonatal morbidity and mortality are needed in place given that, up to 75% causes of maternal deaths occurring predominantly

during the immediate postnatal period cannot be prevented by even the best pre-natal care services (Melaku *et al*, 2014).

Even so, the situation in South Sudan remains particularly worrying. The country has one of the worst maternal mortality rate globally that has remained tragically high at 2054 per 100,000 live births (Rai *et al*, 2012; Rosales *et al*, 2013; CMMB, 2014; WHO, 2014a & IMC, 2015) and under-five mortality rate of 104 per 1,000 live births(UNDP, 2015). Recent studies have indicated that, maternal and neonatal deaths are primarily associated with complications following childbirth and under-utilization of PNC services (Sines *et al*, 2007; Chintembo *et al*, 2013).

However, in spite of the linkages and cost effectiveness of focused PNC interventions in improving the survival chances of mothers and new-borns, most maternal child health care programs in Western Equatoria State have largely overlooked PNC service provision. Instead efforts are concentrated on ANC 4th or more visits and deliveries in health facilities that have correspondingly stagnated at 26.3% and 11.5% respectively (MoH & NBS, 2010). As a result, there exists inadequate data on the provision of PNC at both the national and state levels. Such situations holds back on the efforts envisioned to achieve the SDGs thus, underlining the need to investigate the determinants of PNC services.

In Maridi County, recent DHIS reports obtained from Maridi Hospital reflects that, PNC services have continued to remain one of the most neglected and underutilized areas of the health care delivery system despite offering important opportunity for the provision of interventions aimed at reducing maternal and neonatal deaths. To date, no studies have been conducted to determine some of the factors associated with the neglect of this important

maternal health service delivery component. Therefore, exploring some of the determinants of PNC services utilization among women of reproductive age in the study area remains fundamental.

1.2 Statement of the problem

Despite PNC being an important opportunity for delivering integrated interventions to mothers and new-born babies whose survival chances are inextricably linked, data on PNC services utilization appears to be scarce in South Sudan (Mugo *et al*, 2015). Neglect and lack of appropriate commitment given to address this area of continuum of care in Maridi County do not only contravene the survival chances of mothers and new-borns (WHO, 2014b), but also amounts to a great omission in the promotion of maternal and new-born health.

Comprehensive, targeted and focused PNC package with simple four focused personalised assessments scheduled within six hours, three to six days, six weeks and six months after (6-6-6-6 standard model) approach recommended by WHO remains one of the key strategies in reducing maternal and neonatal morbidity and mortality (Sines *et al*, 2007; MoPHS, 2011; Mohan, *et al*, 2015; Warren, 2015; WHO, 2015). In South Sudan, despite its cost effectiveness in improving the health and well-being of mothers and new-borns, PNC services have persisted to be one of the most neglected and weakest areas of continuum of care even for mothers who deliver in health facilities in the country (CMMB, 2014).

Consequences of low PNC services utilization does not only result into increased maternal and neonatal morbidity and mortality but, also limits the stride towards achieving the SDGs of ensuring good health and well-being for the country (UNDP, 2015). Such instances outlines the need to assess the determinants of postnatal care service utilization in the study area.

1.3 Objectives of the study

1.3.1 Broad objectives

To assess the determinants of postnatal care services utilization among women of reproductive age in Maridi County.

1.3.2 Specific Objectives

- i. To determine the individual factors including the utilization of PNC services in Maridi County.
- ii. To establish the socio-economic factors influencing the utilization of PNC services in Maridi County.
- iii. To determine the health system factors influencing the utilization of PNC services in Maridi County.

1.3.3 Research questions

- i. What are the individual factors are influencing the utilization of PNC services in Maridi County?
- ii. What are the socio-economic factors influencing the utilization of PNC services in Maridi County?
- iii. What are the health system factors influencing the utilization of PNC services in Maridi County?

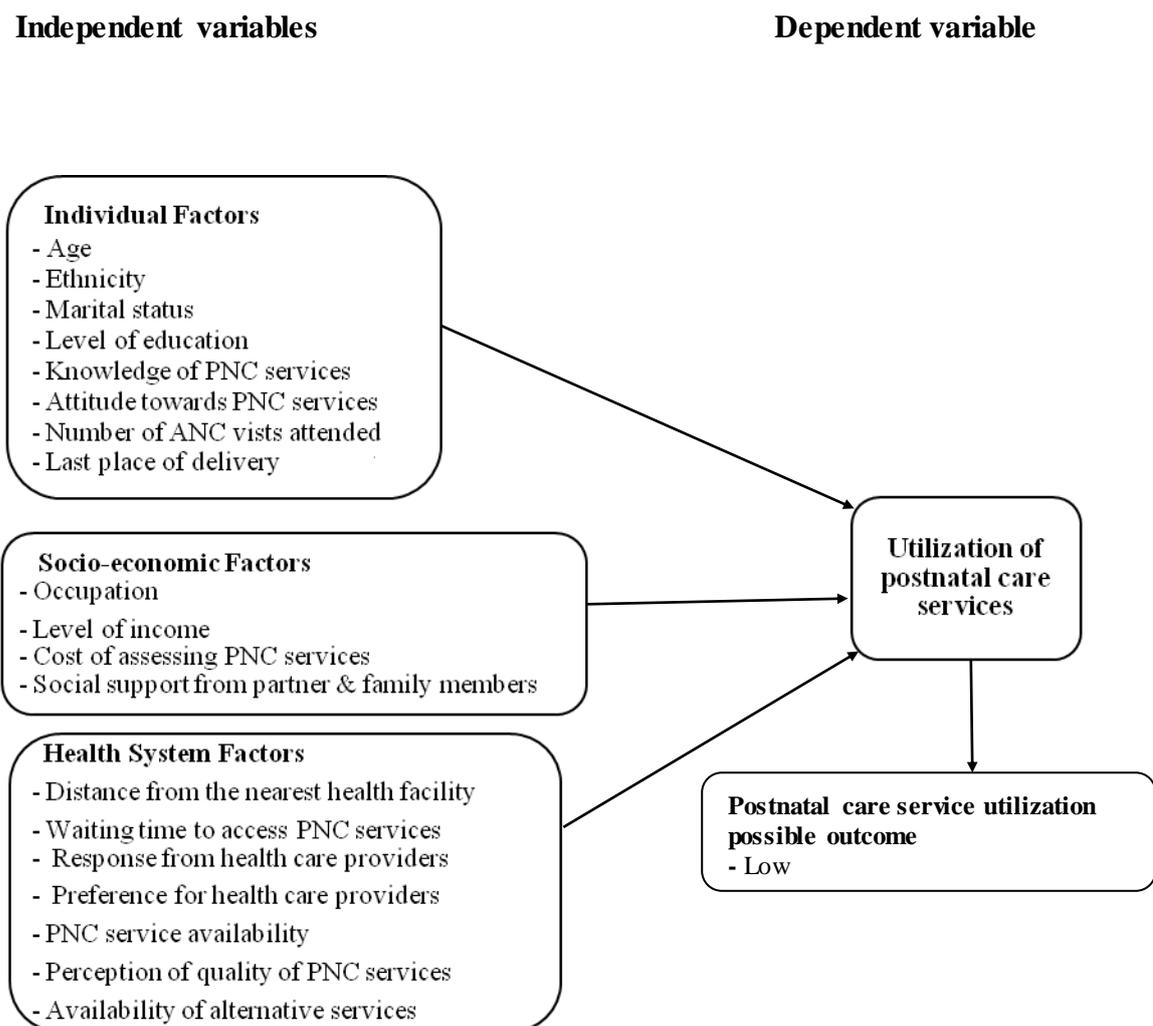
1.4 Significance /Justification of the Study

Postnatal care programs are among the weakest, under-utilized and neglected maternal and child health programs in the study area despite its proven evidence in improving the health of mothers and new-borns. This study is intended to accelerate the promotion of maternal and child health care services for mothers and new-borns as these will outline the possible determinants that contribute for the low utilization of postnatal care services in the study area.

Since no recent studies were conducted on this research problem in the study area, the findings of this study are envisioned to provide baseline data and background for further research by other scholars who would like to conduct a large scale study on similar topic.

The study will track and document women’s experience of access to PNC services. Given the above, recommendations derived from the study can be used by policy makers at all levels to conduct an evaluation on PNC service provision in health facilities. This will further help to influence policy decision making on maternal and child health care in the country in line with the SDGs of ensuring good health and well-being of the population in the country.

1.5 Conceptual Framework



CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter describes the relevant literature related to the problem under study. For consistency, these are discussed and categorized into three sections namely; individual, socio-economic and health system factors in line with the research questions under investigation as discussed in the preceding chapter of this proposal.

2.1 Individual factors influencing PNC services utilization

Level of education:

Studies by Zere *et al* (2010) to measure the socio-economic inequalities in access to maternal health services in Namibia revealed that, the use of PNC among other maternal health services is favored by being most educated and wealth. Women's education status was also found to be closely associated with PNC service utilization in Pakistan (Shalkh, 2015). This denotes how the poor and least educated have worst health status due to minimal access to health preventive and promotive interventions even when offered free of charge (Abeja *et al*, 2014). In Ethiopia, Regassa (2011) cited one of the reasons for use of ANC and PNC to be women's level of education as it does not only enhance their autonomy but, also develop their confidence and ability to make decisions regarding their own health care needs.

Postnatal care following childbirth up to 6 months is important for the reduction of maternal and neonatal morbidity and mortality. Studies conducted by Paudel *et al* (2014) in India to assess the determinants of postnatal maternity care service utilization among mothers in Belgaum have revealed that, mothers who had attained at least a secondary level of education or more made full use of PNC services. Ishwari *et al* (2014) in Nepal also argued that, mothers' level of education improves their understanding, awareness and decision making in

society regarding health care with educated women seeking care compared to their counterparts who have never attended any schooling.

The above findings concurred with studies by Mohan Paudel *et al* (2013) in Nepal on the determinants of PNC service utilization that revealed women who attended secondary levels of education and above were more likely to show up for PNC services compared to their counterparts. Mothers who are educated are probably well informed on the benefits of seeking health care. Nevertheless, it still remains disputable that the mothers' level of education could be one of the deterrents contributing to the utilization of postnatal care services in the study area.

Knowledge of postnatal care services:

Tesfahun *et al* (2014) in their study to assess the knowledge, perception and utilization of PNC mothers in Ethiopia indicated that, even though majority of the women demonstrated knowledge on the existence of PNC and its objectives, those who were informed by community health workers did not have adequate information on when PNC services are provided and for whom. For women who had knowledge on the existence of PNC services, their assumption was that, PNC services only targeted children for immunization and nutrition practices following childbirth. In South Sudan and the study area in particular, these kind of mix-ups can be attributed to the lack of attention given in this area of continuum of care for mothers and new-borns hence, resulting in low uptake of postnatal care services.

According to recent studies in China by Chen *et al* (2014) to establish the coverage, quality of and barriers to postnatal care, out of 991 mothers who did not utilize PNC services within six weeks, 65% indicated lack of knowledge or inexperience about PNC services. This kind of

possibility could affect PNC service utilization if ANC and delivery care services are not linked to the continuum of care following childbirth.

Studies by Sharma *et al* (2014) lessons in India on the utilization of PNC services cited the reasons for under-utilization of PNC services by up to 28.1% of mothers interviewed was lack of awareness related to illiteracy. The level of awareness among mothers at the local level was also found to be key in influencing the use of PNC services at community levels (Ishwari *et al*, 2014). Uneducated mothers may lack adequate understanding of comprehensive PNC package, thus leaving educated mothers to benefit more from PNC services because of their better understanding.

Timilsina and Dhaka (2015) in their studies to explore the knowledge regarding PNC among mothers in Nepal revealed that, much as most of the mothers (94.90%) knew that PNC was important for the restoration of health of the mothers, majority of them stated personal hygiene, rest and exercises to be the main components of PNC. As much as women lack adequate information, continuous motivation and health care facilities continue to inform and provide full package of PNC services, this component will continue to be underutilized.

Attitude towards post-natal care services:

Shalkh (2015) studies on the low utilization of PNC to save mothers and newborn lives in Pakistan revealed underutilization of PNC services. Despite its importance in the continuum of care, only 30% women were found utilizing the services and up to 90% of the women were not interested in the services due to transportation, lack of awareness and cost related to accessing PNC services.

Even though most women were happy and possess positive attitude towards PNC, their distance from the health facilities coupled with added home responsibilities deter them from utilizing PNC services as revealed in studies conducted by Tesfahun *et al* (2014) in Ethiopia to assess the knowledge and perception of mothers on the utilization PNC. Mothers may consider focused PNC services fit only for those who have developed complications following childbirth. For those who develop complications, there may be delays in decision making as there were no previous PNC plans made.

Despite the well-known benefits of PNC, many mothers may be reluctant to make better use of PNC services due to the fact that, they do not experience any life threatening condition following childbirth. A case of this kind in the county may expose many mothers and their new-borns to preventable morbidity and mortality that could have been effectively prevented by attending focused PNC after delivery either at home or in a health facility.

Recent studies in China to establish the coverage, quality of and barriers to PNC services utilization among mothers revealed that, out of 991 mothers who did not attend PNC, 24% understood it was unnecessary (Chen *et al*, 2014). In reference to South Sudan and the study area in particular, this category of mothers who thought PNC services are unnecessary could be those who were not well informed or educated by the health care service providers during focused ANC about the existence and importance of PNC services or those who have not experienced any complications following childbirth.

Number of ANC visits made during the last pregnancy:

In Nepal, women who had fewer children, for instance less than 2 and had received ANC during pregnancy were found more likely to make better use of PNC services (Ishwari *et al*,

2014). These findings were similar to earlier studies conducted by Paudel M. *et al* (2013) on the determinants of PNC services utilization that has depicted women who attended 4 or more ANC visits were more likely to make better use of PNC services than their counterparts who had no or fewer ANC visits.

The aspect of starting PNC during focused ANC is to assist the mother and her partner or family members to have PNC plans (MoPHS, 2011). Such plans can ensure mothers and their family members are always in better positions of identifying danger signs that may arise and the necessary actions to take. In addition, it also becomes easy for the mother and her family members to identify a decision-maker, blood donors and set aside some money to use in case of an emergency.

During focused ANC attendance, many women get the opportunity to be informed and educated about the importance of continuum of care during the postnatal period. The review of the PNC plan during each ANC visit is crucial to ensure those women who happen to deliver at homes are reviewed by trained health care providers as soon as possible within 48 hours following delivery (MoPHS, 2011). On the other hand, mothers with more children may not be in position to benefit from PNC services because of the traditional role of women in tending for the many children in the family while others may feel no need to attend because of previous experiences.

Last place of delivery: Much as many governments promote institutional deliveries, child birth continues to take place both in homes and health facilities. Earlier studies conducted by Paudel M. *et al* (2013) revealed that, mothers who had deliveries assisted by skilled birth attendants in health facilities make better use of postnatal care services than those who

delivered in homes in the hands of unskilled birth attendants. Women who deliver in facilities have improved opportunities of being linked and enlightened on the important benefits of PNC services by skilled birth attendants unlike those who deliver in homes.

Similarly, in India, Paudel *et al* (2014) in their studies on the determinants of postnatal maternity care service utilization demonstrated that, the place of delivery and ANC service utility practices played important role on mothers' use of PNC services. Focused ANC serves as an important service delivery point for awareness creation on the importance of focused PNC services. Nevertheless, regardless of the place of birth either at home or in the health facilities, emphasis should be made to ensure that all mothers and new-born babies are reviewed by trained health care providers as soon as possible in order to reduce the risk of disability and deaths for mothers and new-born babies. Though studies by Oyawale and Mavundla (2015) in India indicated that; access to equitable, affordable and quality health care services is a human right for all citizens and good for the promotion of the health of mothers and new-borns. Singh *et al* (2012) and Sharma *et al* (2014) in their studies revealed limited utilization of PNC services among mothers who gave birth at home compared to those who had facility births. Effective use of focused ANC and institutional delivery care could result in increased use of PNC services. For these reasons, such practices deserve to be promoted if the survival chances of mothers and their new-borns are to be improved.

On the contrary, recent studies conducted by Mohan *et al* (2015) in rural health facilities in Tanzania had indicated that, women who delivered at health facilities including hospitals, dispensaries or health centres were less likely to utilize PNC services compared to those delivering at home. This may signify that, the quality of services may be poor as perceived by those who delivered in the health facilities. It could also mean that, most mothers who

deliver in homes are exposed to complications and therefore, are compelled to seek services for the ill-health that arises during the post-natal period. In view of the irregularities in the health system as above, the previous experiences of the mothers and quality of PNC provided in health facilities need to be examined. This will ensure better understanding of the contributing factor to underutilization of PNC services.

2.2 Socio-economic factors influencing the utilization of PNC services

Occupation and Level of income:

Studies by Rutaremwa *et al* (2015) on determinants of maternal health services utilization in Uganda has shown that, the utilization of maternal health service package is closely related to income levels of mothers. Rutaremwa *et al* (2015) further reiterated that, the low levels of PNC services are related to a woman's or husband's occupation, education status and the level of income. Mothers with higher income levels are more likely to make better use of basic maternal health care services probably because they could afford the services as compared to their counter parts with lower household income status.

Women who engaged in farming or commercial activities make better use of maternal health services compared to those who are housewives (Ayele *et al*, 2014). In Tanzania, better socioeconomic status of women was found to be associated with better use of maternal health services (Exavery *et al*, 2014). Consequently, women whose partners are involved in income generating activities, access to PNC should not be a big problem unless they are not well informed about the importance of these health promotive and preventive services provided during the PNC period. By engaging in business activities, mothers can be in better position to pay for their health care needs than when they do not have any source of income.

In India, however, studies by Kalpalata and Gautam (2014) revealed that, socioeconomic class of mothers affect their utilization of PNC services with only (21%) of women utilizing PNC services coming from the lower socioeconomic class compared to only 3.7% from the middle class unlike the study finding by Ayele *et al* (2014); Exavery *et al* (2014) and Rutaremwa *et al* (2015). The above differences in the determinants of postnatal service utilization by different scholars is evidence that, the factors contributing to the use of postnatal care services differs by geographical location and the different methodologies employed in conducting such studies. Hence, more needs to be done to uncover some of the factors determining the utilization of PNC services in the Maridi County where such services seems to be underutilized by many mothers.

Cost of accessing post-natal care services:

Although a lot of opportunities such as focused ANC, using of peer counsellors and reminders exists for scheduled targeted PNC visits recommended for all mothers, studies in the USA have pointed lower utilization (40%) rates for PNC services provided by skilled health care personel among mothers with limited resources (MoPHS, 2011; ACOG, 2016). This contributes to health disparities among population even though such cost effective strategies for improvement of postpartum care do exist at the primary health care facilities.

Availability of financial resources at the household levels can enable individuals to pay for their health care related needs. On the other hand, limitation of household financial resources to pay for essential drugs and supplies in the public health facilities in addition to costs of transportation to access care could be one of the deterring factors for PNC services utilization among mothers in the county.

Social support from partner and family members:

Social support from the spouse or partner and other family members cannot be underestimated because given the financial limitations; most mothers depend on their husbands and family member for economic support. Nakajubi (2016) pointed out that, many Ugandan women received little or no support from their spouse/partners during the critical times of the postnatal period. In South Sudan where the health system is still recovering following decades of conflict, such situations exposes most mothers to psychologically and physically exhaustion explaining the underutilization of PNC services because of lack of needed support from their family members. The engagement of male partners in planning and decision making right from the pre-natal, ANC and delivery period can improve PNC service utilization by mothers following childbirth.

2.3 Health system factors influencing the utilization of PNC services

Distance from the nearest health facility:

Mohan *et al* (2015), studies on PNC use revealed that, distance was not associated with the use of PNC services unlike in other studies because of better availability of health facilities within a distance 5 kilometres. In South Sudan and Maridi County in particular, accessing health promotive and preventive services may be upsetting for most mothers due distance and inadequate health infrastructure within their vicinities. Consequently, this may leave few mothers who reside closer to the health facilities to gain the most benefit of PNC services provided than their counterparts residing in remote locations.

Waiting time to access post-natal care services:

Women in many communities have the traditional role of attending to the basic needs of homes including daily home household chores such as food preparation, child care and cultivation (Tesfahun *et al*, 2014). Subsequently, any delays in receiving PNC services at

health facilities gives them conflicting priorities of either to attend to their routine household chores or attend PNC services. This may explain the underutilization of PNC services following delivery by most mothers with more responsibilities to attend to in homes.

Response from health care service providers:

A community and facility based studies by Kruk *et al* (2014) in Tanzania on disrespectful and abusive treatment during facility delivery revealed up to 28% of mothers interviewed immediately postpartum experienced disrespectful and/or abusive treatment from health care service providers during facility delivery. The most common responses noted were being ignored when they needed support and care; shouting, scolding, slapping/pinching and negative comments were also reported while receiving care from the health facilities.

Similarly in Tanzania, qualitative studies by McMahon *et al* (2014) involving both women and men on the experiences and responses to disrespectful maternity care and abuse during childbirth, upon probing mothers interviewed after childbirth recounted events that are described as abusive in maternal health literature in line with the findings of Krut *et al* (2014) even though they initially described their encounters with health care providers as neutral or satisfactorily light.

In Maridi County, mothers trapped in such situations of disrespect and abuse by health care service providers may respond differently. Shunning away from utilizing PNC services, seeking for cheap alternative health care services or resort to payment of bribes to win the favours of health care service providers could be the response of some women who encountered disrespectful and abusive attitude from health care service providers. Such health system crisis necessitates urgent attention to ensure women's right to dignity in health care is

improved. Similarly, improving effective utilization of PNC services will avert maternal and new-born morbidity and mortality.

Preferences for health care providers:

Postnatal care requires health personnel who are adequately trained and equipped. In India, recent studies by Sharma *et al* (2014) on the utilization of PNC services had shown that, mothers who were assisted by skilled birth attendants during delivery were 11.4 times more likely to utilize PNC services than their fellows who are assisted by unskilled birth attendants. This implies that many mothers who chose to have their births attended by unskilled birth attendants such as TBAs have lower rates of PNC services utilization than those who chose to make use of skilled birth attendants.

On the other hand, the availability of trained health care service providers in Nepal was found to influence women's use of PNC services as seen in studies conducted to assess PNC services utilization among mothers (Ishwari *et al*, 2014). Nevertheless, despite policy recommendations and many governments encouraging women to make use of health facilities so as to get the most needed support from skilled health care providers, the preference for health care providers and health facility in Maridi County remains the duty of women and their family members.

Post-natal care service availability:

Many women's use of PNC services in remote areas was found to be inadequate due to limited availability of health services such as lack of drugs, vaccines and equipment (Tesfahun *et al*, 2014). With such similar insufficiencies still existing in health facilities within Maridi County, one cannot expect mothers to make satisfactory use of PNC services

even though they are well informed about the importance and existence PNC services. Such situations can be made worse with the frequent absence of health care providers who are expected to provide comprehensive, quality package of PNC services. The availability of medicines and health facilities within 30 minutes' walk was also found to influence PNC services utilization for up to 77.9% mothers in a study conducted in Nepal by Ishwari *et al* (2014). This study does signify that, women who resides more than 30 minutes' walk may not fully exploit the benefits of comprehensive PNC package.

Despite the existence of health facilities in Maridi County, it is not yet known whether, the availability of PNC services remains one of the factors contributing to the underutilization of this important continuum of maternal and child health care often ignored by many programs. There has not been any recent study conducted to further understand the health disparity in Maridi County. Thus, an assessment of the determinants of PNC services would be in order to affirm this proposition.

Perception of quality of PNC services provided:

In Ethiopia, studies by Ayele *et al* (2014) on factors affecting the utilization of maternal health care services in indicated that, in addition to a woman's age and education status, the perception of mothers to the quality of maternal health care services provided were important predictors of women's use of maternal health care services. Similar studies in Ethiopia within the same period by Tesfahun *et al* (2014) to assess the knowledge and perception of mothers on the utilization of PNC indicated that 74.27% of the women who had positive perception towards PNC had encouraged others to utilize PNC because of its benefits to both mothers and their children. It is unlikely for many women to make better use PNC services if they are

not well informed of the important benefits of PNC services to mothers and new-borns at any available opportunity they may have during their contact with health care providers.

On the contrary, it is also possible for mothers to be deterred from utilizing PNC services even after being well informed about the importance of the services when the health system is lacking competent health care personnel, drugs and/ or when health care providers are perceived to be unfriendly to women. Even with adequate awareness, some women may not feel the need to attend PNC services unless their children or they themselves were sick following childbirth (Tesfahun *et al*, 2014). This kind of perception exposes many women and their children to suffer from preventable causes of illnesses during the postnatal period.

Similarly, Sharma *et al* (2014) in their study to assess the utilization of PNC in India revealed that, one of the main reasons for underutilization of PNC services by women was not perceiving the need for it even when they were fully informed that PNC services are important for the maintenance and promotion of health of women and new-born babies. Most mothers may perceive that, all is fine with them as long as there are no danger signs of any emerging complications. The fact that, women may be occupied with traditional role of tendering to other children and other household core can make it impossible for some mothers to attend PNC services.

Qualitative studies in China by Chen *et al* (2014) on the coverage, quality of and barriers to PNC among mothers revealed that, apart from inadequate inservice training on PNC and supportive supervisions, shortages of staffs and inconvenience transportation continued to be the major limiting factors to PNC service utilization for mothers. With the current trend of technology and innovations, health care service providers requires regular updating of skills

and knowledge if they are to provide quality PNC services. Health care personnel whose skills and knowledge are updated are likely to be motivated and dedicated while executing their duties thus, mothers and babies stand a chance of benefiting from quality services both before, during and after delivery.

Availability of alternative PNC services in the community:

Local, traditional and cultural influence and understanding of health preventive and promotive services contributes either positively or negatively on the utilization of health care services (Bohren *et al*, 2014). The utilization of PNC may be limited in situations when illnesses arising during the postnatal period are viewed as being spiritual rather than physical.

South Sudan is a home to more than 60 ethnic groups and for this reason, the health seeking behaviour in general is said to remain inadequately understood (Mugo *et al*, 2015) even though the main objective of the health sector development plan is to improve access to, and the delivery of, quality primary health care services through mobilizing the community. The fact that, more than 47% of the households do not have access to a health care facility forces many people in South Sudan to seek the care of traditional healers (Mugo *et al*, 2015). The help of traditional healers are often sought due to personal beliefs or because there are no other means of health care available or accessible within the vicinity.

The well-known fact that, modern medicine does not treat all disease conditions makes it possible for people to explore other available options within their reach. In the absence of skilled health care providers, women of reproductive age may turn to traditional healers or herbalists because they offer many positive solutions to their health care needs as these services are always readily available within the vicinity. For the formal health care system, it

is thus important to take advantage of these alternatives services already in existence. Nevertheless, the fact that alternative health care services available are viewed as the first and last point of contact by most women may result into life threatening complications for mothers and their new-born babies. This may partly explain the underutilization of PNC services in the study area where alternative traditional medicine practices are not linked to the formal health sector.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter describes the approaches that were used in conducting the study. It is divided into various sections viz., study design, sources of data, study setting, study population, sample size and sample determination, sampling procedures, variables of the study, data collection techniques, plans for data analysis, ethical considerations, data quality control, anticipated limitations including the strategies to overcome them and plans for dissemination of results.

3.1 Study design

Descriptive cross-sectional study design was used to assess the determinants of PNC service utilization. This study design enabled the gathering of information from different sources that further facilitated the identification of patterns in responses.

Both quantitative and qualitative data collection approaches were employed. Structured questionnaires were administered to mothers who were still in their postpartum period to obtain qualitative data. Additionally, KI interviews were devised and administered to health care service providers involved in the delivery of maternal and new-born care from the 7 selected health facilities to obtain the qualitative data.

3.2 Sources of data

Primary data were obtained from respondents which comprised of mothers who were within 6 months following childbirth using structured questionnaires formulated in line with the study objectives. Key Informant Interviews were conducted to obtain additional primary data from health care workers engaged in the delivery of maternal and new-born care in health facilities.

While, relevant secondary data were obtained globally and locally through literature search from journal articles, newspapers, text books and reports from internet searches. Reports from Maridi County Hospital were also sought to add on to the available secondary data.

3.3 Study population

Women of reproductive age (15-49 years) who gave birth six months preceding the study formed the study population from which the required sample size was selected. Additionally, up 18 health care service providers working in the 7 selected health facilities formed part of the study population as key informants.

3.4 Inclusion and exclusion criteria

3.4.1 Inclusion criteria

Efforts were exerted to confirm that, all the respondents selected for interviews met the eligibility criteria of being between the age group of 15-49 years and, gave voluntary consent to participate in the study. Similarly, all those who were found physically and mentally fit and were within 6 months following childbirth were included to participate in the study.

3.4.2 Exclusion Criteria

Successively, to ensure data quality, certain categories of women were excluded from participation in the study. These included; those who residing and/or coming from outside the study area, those found critically ill or mental unsound, those who declined to participate and, those found outside 6 weeks following childbirth.

3.5 Sample size calculation

The Kish and Leslie formula (Leslie Kish, 1965) for cross-sectional studies was used to determine a sample size of 384 women of reproductive age from the study population.

$$n = \frac{Z^2 P (1 - P)}{e^2}$$

Where;

n = required sample size for the study,

$Z = 1.96$ i.e. the area under the standard normal table for the desired confidence level is 95%,

e = acceptable minimal error or the desired level of precision assumed to be 0.05 and,

P = the estimated proportion of PNC services taken to be 0.5 as there is no previous estimate of PNC coverage. By substitution in the above formula:

$$\begin{aligned} n &= \frac{1.96 \times 1.96 \times 0.5 (1-0.5)}{0.05 \times 0.05} \\ &= 384.16 \end{aligned}$$

Thus, the required sample size = n for this study is 384 respondents.

3.6 Sampling procedure

Both probability and non-probability sampling techniques were used. Non-probability-purposive sampling technique was used to select the 7 health facilities in Maridi County that were providing skilled maternal and child health care. These comprised of Maridi County Hospital, Bethsaida ECS, Don Bosco, Woko, Ngamunde, Olo and Dukudu Olo PHCCs. Conversely, simple random sampling technique was devised to select the eligible respondents in accordance with the eligibility criteria for the study. Random numbers were allocated to all the eligible mothers who turned up to seek health care either for themselves or their children in the selected health facilities. Consecutively, mothers with even numbers were selected and invited individually to participate in the face-to-face interviews. This was done with courtesy while ensuring confidentiality in a private setting free from disruptions.

3.7 Study variables

The dependant variable of the study was the utilization of postnatal care services by women of child reproductive age. However, the independent variables investigated were categorized according to the specific objectives of the study as described herein below.

Individual factors: Age, ethnicity, marital status, level of education, knowledge of PNC services, attitude towards PNC services, number of focused ANC visits made during the last pregnancy and last place of delivery.

Socioeconomic factors: Occupation, level of income, cost of accessing postnatal care services and social support from spouse/partner and family members.

Health system factors: Waiting time to access PNC services, response from health care service providers, preferences for health care providers, PNC service availability, perception of quality of PNC services provided and availability of alternative services in the community.

3.8 Data collection techniques

Structured questionnaires were used to gather primary sources of data for the study. In order to elicit appropriate responses to the problem under investigation, nine (9) trained research assistants were engaged to facilitate the data collection process. In order to elicit appropriate responses, the questionnaires were translated into the appropriate native languages of the respondents during the course of the data collection by the research assistants.

Correspondingly, other primary data were gathered through key informant interviews individually conducted with health care providers working in the selected 7 health facilities. The methods used included recording of responses in a notebook complemented by voice tape recording that were later decoded to generate the required data. Considering the large sample size, actual data collection took a period of six and a half weeks in the months of August and September 2016.

3.9 Data collection tools

Structured questionnaires containing closed-ended questions adapted from standardized and published research addressing the specific objectives of the study were used and these ensured reliability of information gathered. The closed-ended questions gave respondents multiple

choices to select from. Similarly, key informant interview guides were used to gather other primary sources of data for analysis of the problem under investigation.

3.10 Data analysis

Data collected were immediately cleaned besides checking for completeness, consistency and code numbered prior to analysis by using SPSS version 16.0. Accordingly, univariate, bivariate and multivariate analysis were used to ascertain factors associated with utilization of postnatal care services.

At bivariate analysis, chi-square tests of association were performed to observe the relationship amongst the utilization of postnatal care services of each of the independent variables. While at multivariate analysis, binary logistic regressions were used to examine the strength of the relationship between the dependant and independent variables. This made it possible to identify those variables that had statistically significant association with the dependent variable. Consequently, results generated from the analysis were presented using frequency tables for interpretation from which conclusions were drawn.

3.11 Quality Control Issues

To guarantee reliability of the study, the draft questionnaire was pre-tested on 10% of the sample population at Madebe PHCC in the neighbouring Ibba County which has nearly similar socio-demographic characteristics with the women of reproductive age in the study area. This was followed by a three days intensive training and orientation to the 9 research assistants on the use of the data collection tools prior to the commencement of actual data collection procedure.

Accordingly, in order to ensure good comprehension of the study concept, interpretations of the questionnaires from English into the appropriate local languages spoken by the respondents were done well in advance by the research assistants hence, facilitating the data

primary collection process. In addition, efforts were put forth to minimize possible physical disruptions during the face-to-face interviews with the respondents.

3.12 Plans for dissemination of results

The findings and recommendations derived from this study shall be disseminated through a wide network of stakeholders. These include; the CIP, Maridi CHD, the SMOHE and other agencies involved in the promotion of safe motherhood. This is anticipated to facilitate the development of policy briefs on maternal and child health care service provision and as well, help in conducting in-depth evaluations on the provision of postnatal care services in health facilities within the county. A copy of the dissertation was submitted to International Health Sciences University Institute of Public Health and Management in partial fulfilment for the award of master's degree in public health and for publication to enrich knowledge of other scholars who may want to pursue similar studies on a large scale.

3.13 Ethical considerations of the study

Ethical clearance and institutional approval to proceed with the research was obtained from the International Health Sciences University Research and Ethics Committee. This further facilitated the approval to conduct the inquiry on the selected topic in the study area from the SMOHE in Maridi prior to the start of the data collection.

Informed consent was sought from each respondent before the interview as an approval to participate. Respondents were assured of their right to withdraw from participation and the right to refuse after obtaining consent without penalty.

In addition, the anonymity of each respondent was set as assurances with all the information obtained kept confidential and used exclusively for the purpose of the study.

Accordingly, efforts were also made to observe and respect the dignity of each respondent during the conduct of the study.

3.14 Limitations of the study

Despite the success of this study, a number of limitations were encountered. The below description spelt out the limitations encountered and how some were overcome:

Security crisis limited access to some potential respondents in the selected health facilities; hence this delayed the data collection process. However, 9 research assistants were employed and trained to access some of the selected health facilities that were relatively safe to reach during the crisis. This ensured that data was collected within the limits of time allocated.

The study involved retrospective collection of information from respondents and this could have resulted into recall bias and/ or unwillingness of respondents to share all what they knew as regards the topic with the researcher. These constraints were mitigated by clearly explaining the purpose of the study. This ensured proper understanding of the topic by each respondent, followed by signing consent as proof of their understanding prior to the administration of the questionnaires.

This study was conducted in one county and one state among the 28 States in South Sudan. Whereas, the sample size was big enough (384), findings from this study may not be generalized to the entire country. Nevertheless, the findings still portray the true picture of PNC services in South Sudan.

CHAPTER FOUR: RESULTS

4.1 Introduction

The study registered 99% response rate with 1% non-response rate during the data collection and therefore, results presented are for 382 respondents. In this chapter, the study findings are presented in three parts. The first part presents data findings in descriptive terms followed by results of bivariate analysis and lastly the effect of a combination of various selected variables on the dependent variable obtained using binary logistic regression analysis.

4.2.1 Univariate analysis of the individual factors influencing PNC services in Maridi

The study revealed that 311(81.4%) of the respondents obtained postnatal care support from their spouses compared to only 71(18.6%) who had to support themselves. The table 1 below reveals that 115(30.1%) of mothers were in the age group of 21-26 years compared to 111(29.1%) who were below 20years old. With regards to children ever born, 120(31.4%) of the respondents had at least one child compared to 101(26.4%) who had more than three children. More than half of the mothers 208(54.5%) had attained only basic education compared to 91(23.8%) who never went to school.

A considerable number of the respondents were married 264(69.1%) compared to 89(23.3%) who were single. The predominant ethnic groups in the areas includes the Baka 91(23.8%), Moru 79(20.7%), Zande 76(19.9%) and the Avokaya 59(15.4%) with other ethnic groups that form 77(20.2) of the study population. During their most recent pregnancies, 118(30.9%) of the respondents had visited ANC clinics at least three times compared to only 37(9.7%) who had once.

More than half of the mothers interviewed 198(51.8%) had delivered their most recent babies at the health facility compared to 174 (45.5) whose deliveries occurred at homes as presented in table 1b below.

Table 1a: Univariate analysis of individual factors of the respondents

Variables	Frequency	Percent (%)
Age		
15-20yrs	111	29.1
21-26yrs	115	30.1
27-32yrs	83	21.7
33-38yrs	56	14.7
39-44yrs	17	4.5
Total	382	100.0
Number of children ever born		
One	120	31.4
Two	79	20.7
Three	82	21.5
≥ Three	101	26.4
Total	382	100.0
Marital status		
Single	89	23.3
Married	264	69.1
Divorced	29	7.6
Total	382	100.0
Ethnicity		
Zande	76	19.9
Baka	91	23.8
Moru	79	20.7
Avokaya	59	15.4
Others	77	20.2
Total	382	100.0
Level of education		
Never been to school	91	23.8
Primary	208	54.5
Secondary	67	17.5
Tertiary	16	4.2
Total	382	100.0
Number of ANC visits		
Once	37	9.7
Twice	40	10.5
Thrice	118	30.9
More than 4 times	187	49.0
Total	382	100.0

Source: Primary data 2016.

Of those who delivered their babies at home care facility 35(20.1%) accessed postnatal care services within 24 hours, 26(14.9%) accessed PNC services within 48 hours, 46(26.4%) accessed PNC services after one month and 67(38.5%) after 6 weeks of delivering their baby.

Of those who delivered their babies at health care facility 113(57.1%) accessed PNC services within 24 hours, 43(21.7%) accessed postnatal care services within 48 hours, 30(15.1%) accessed PNC services after one month and 12(6.1%) after 6 weeks of delivering their babies.

Table 1b: Univariate analysis of Individual factors of the respondents

Variables	Frequency	Percent (%)
Delivery of the last child		
Home	174	45.5
Health facility	198	51.8
Others	10	2.6
Total	382	100.0
Basic understanding of PNC Service		
Care and support given to mothers & new-borne up to 6 weeks after birth	254	66.5
Care and support given to mothers only following child birth	64	16.8
Care and support given to new-borne	21	5.5
Don't know	43	11.3
Total	382	100.0
PNC Check-ups after home delivery		
Within 24 hours	35	20.1
After 48 hours	26	14.9
After 1 months	46	26.5
After six weeks	67	38.5
Total	174	100.0
PNC Check-ups after health facility delivery		
Within 24 hours	113	57.1
After 48 hours	43	21.7
After 1 months	30	15.1
After six weeks	12	6.1
Total	198	100.0
Thought of the role of PNC services		
Care given to mothers and their new-born after delivery	304	79.6
Care given to mother after delivery of a child	237	62.0
Care given to new born babies	188	49.2
Health care education	224	58.6
Others	102	26.7
PNC service provided		
Screening for complications	250	65.4
Health education	315	82.5
Family planning	249	65.2
Promotion of hygiene	287	75.1
Immunization	311	81.4
Others	99	25.9
Thoughts of the quality of PNC services		
Very good	69	18.1
Good	92	24.1
Not good	70	18.3
Don't know	78	20.4
Others	73	19.1
Total	382	100.0

Source: Primary data 2016

Analysis of the qualitative data indicates that, all the health workers were knowledgeable on what PNC care services entails as illustrated in the following statement: “*Postnatal care services refers to the care given after delivering the new born baby to the child and the mother up to six weeks after birth.*” (Medical Officer, Maridi County Hospital). The above

analysis indicates that the health care workers in Maridi County are promoting maternal and child health through offering PNC services to the mothers and their babies. Our analysis concurs with the finding of quantitative data were 254(66.6%) of the mothers were able to identify that it was care and support given to mothers and new born up to 6 weeks after birth.

The key informants further informed the researcher on the essential routine PNC services for all mothers provided at the health facility, as the following quotation demonstrates:

“We advise the mother on breast feeding, Administer oxytocin to stop bleeding, counselling, vaccination is given to babies, daily wound dressing to postnatal mothers, cord care”(Medical Officer, Maridi County Hospital).

“We provide information on family planning, teach new mothers on how to keep the baby warm, give guidance on how to identify danger signs, administer antibiotics to prevent infections to mothers, examine/assess mothers for abnormal bleeding, do assessment for anaemia, and advice on nutrition (balanced diet) using the locally available foods.” (Clinical Officers, Nurses and Midwives from Maridi Hospital and PHCCs in Maridi County).

4.2.2 Bivariate analysis of individual factors influencing PNC in Maridi

The individual factors were analysed to assess their association with utilization of PNC services in South Sudan. The study findings revealed that age (9.890 p 0.42)), level of education (19.839 p 0.000), number of ANC visits (32.155, p 0.000), place where the last child was delivered (X^2 31.294 p<0.000) and PNC service offered at the respective health facilities (X^2 57.535 p<0.05) were significant determinants of PNC service utilization in Maridi County, South Sudan.

Table 2: Bivariate analysis of individual factors influencing PNC in Maridi

Variables	PNC service utilization		x²	P-Value
Age	Yes	No		
15-20yrs	93(29.9)	18(25.4)	9.890	0.042*
21-26yrs	96(30.9)	19(26.8)		
27-32yrs	67(21.5)	16(22.5)		
33-38yrs	46(14.8)	10(14.1)		
≥39yrs	9(2.9)	8(11.3)		
Total	311	71		
Number of children ever born				
One	98(31.5)	22(31.0)	1.901	0.593
Two	67(21.5)	12(16.9)		
Three	68(21.9)	14(19.7)		
More than three	78(25.1)	23(32.4)		
Total	311	71		
Marital status				
Single	72(23.3)	17(23.9)	1.804	0.406
Married	218(70.1)	46(64.8)		
Divorced	21(6.8)	8(11.3)		
Total	311	71		
Ethnic group				
Zande	58(18.6)	49(21.9)	2.302	0.680
Baka	76(24.4)	133(59.4)		
Moru	67(21.5)	16(7.1)		
Avokaya	47(7.8)	26(11.6)		
Others	63(20.3)	224		
Total	311	71		
Level of Education				
Never	60(19.3)	31(43.7)	19.839	0.000*
Primary level	177(56.9)	31(43.7)		
Secondary	59(19.0)	8(11.3)		
Tertiary	15(4.8)	1(1.4)		
Total	311	71		

Number of ANC visits made in last pregnancy				
Once	18(5.8)	19(26.8)	32.155	0.000*
Twice	30(9.6)	10(14.1)		
Thrice	103(33.1)	15(21.1)		
Four times & more	160(51.4)	27(38.0)		
Total	311	71		
Last place of delivery				
Home care facility	127(40.8)	47(66.2)	31.294	0.000*
Health care facility	180(57.9)	18(25.4)		
Others	4(1.3)	6(8.5)		
Total	311	71		
Knowledge of PNC services				
Care and support given to mothers	228(73.3)	26(36.6)	57.535	0.000*
Care & support given mothers	49(15.8)	15(21.1)		
Care & support	16(5.1)	5(7.0)		
Don't know	18(5.8)	25(35.2)		
Total	311	71		
PNC check-ups after home delivery				
Within 24 hours	99(54.7)	14(82.3)	5.71	
After 48 hours	42(23.2)	1(5.9)		
After 1 months	29(16.0)	1(5.9)		
After six weeks	11(6.1)	1(5.9)		
Total	181	17		
PNC Check-ups after health facility delivery				
Within 24 hours	23(17.8)	12(26.7)	3.871	
After 48 hours	22(17.1)	4(8.9)		
After 1 months	36(27.9)	10(22.2)		
After six weeks	48(37.2)	19(42.2)		
Total	129	45		
Thought of the role of PNC services				
Care given to mothers and their new-born after delivery	269(86.5)	35(49.30)	49.225	0.000*
Care given to mother after delivery of a child	203(65.3)	34(47.9)	7.419	0.006*
Care given to new born babies	159(51.1)	29(40.8)	2.444	0.118

Health care education	198(63.7)	26(36.6)	17.433	0.000*
Others	76(24.4)	26(36.6)	4.383	0.036*
Total	636	115		
PNC services provided in health facility				
Screening for complications	220(70.7)	30(42.3)	20.741	0.000*
Health education	269(86.5)	46(64.8)	18.831	0.000*
Family planning	212(68.2)	37(52.1)	6.565	0.010*
Promotion of hygiene	243(78.1)	44(62.0)	8.082	0.004*
Immunization	257(82.6)	54(76.1)	1.654	0.198
Others	83(26.7)	16(22.5)	0.519	0.471
Total	1,284	227		
Thoughts of the quality of PNC services				
Very good	57(18.3)	12(16.9)	7.243	0.124
Good	75(24.1)	17(23.9)		
Not good	63(20.3)	7(9.9)		
Don't know	63(20.3)	15(21.1)		
Others	53(17.0)	20(28.2)		
Total	311	71		

Source: Primary data 2016

Interview with key informants revealed the following essential routine PNC services being provided for all new born provided at the various health facilities: *“The health facilities provide immunization of child BCG, LLTNs & OPV, cord care, early diagnosis and treatment of neonatal diseases.”* (Medical Officer, Maridi County Hospital) *“We examine babies for abnormalities, assess the Apgar score, weigh the babies, help the mothers to bath the baby, ensure the cord is clean and dry, and initiate breast feeding.”* (Clinical Officers, Nurses and Midwives from Maridi County Hospital and PHCCs in Maridi County).

In their various opinions towards the kind of support mothers actually obtain from their partners (spouses), the KIs elaborated the following thoughts: *“I believe husbands provide balance diet, moral, financial and emotional support for the breastfeeding mothers”* (Medical

Officer, Maridi County Hospital). *“The men should accompany their wives to the health facility, provide financial support to buy missing drugs and medical supplies, provide the transport to enable the mother reach the health facility”* (Clinical Officers from Maridi County Hospital and PHCCs in Maridi County).

When asked about the kind of advice the various health care personnel normally provide to mothers at discharge following delivery concerning their own health, the below results were demonstrated: *“We normally advice the mothers on cord care, breast feeding, vaccination of infants and Growth monitoring, nutrition especially eating a balanced diet and general personal hygiene”*(Medical Officer, Maridi County Hospital). *“We also provide advice on sexual intercourse after child birth, advise mothers to return to the health facility even when not ill and nutritional status”* (Clinical Officers from Maridi County Hospital).

While advice given to mothers at discharge concerning health of the new born baby, includes: *“The mothers are taught how to identify danger signs in a new-born, vaccination, exclusive breast feeding and how to care for the baby’s cord, advise on danger signs especially fever, vomiting and diarrhoea, keeping the baby warm by applying kangaroo care”* (Nurses and Midwives, Maridi County).

4.2.3 Univariate analysis of socio-economic factors influencing PNC in Maridi

Table 3 below points out that, majority of the respondents live within a distance of 3 kilometres from the nearest health facility in their locality compared to 34(8.9%) who resides outside 4 kilometres range. Similarly, analysis of the respondents occupation reveals that, more than a half of the mothers 205(53.7%) were engaged in petty trade, 87(22.8%) were housewives, 76(19.9%) were peasants, 87(22.8%) were house wives and only 14(3.7%) reported being in formal employment.

Majority of respondents 250(65.4%) had an average monthly income of less than 200 SSP, 54(14.1%) had 200 SSP and 78(20.4%) had more than 200 SSP. While 335(87.7%) of the participants were given PNC services free of charge compared to 47(12.3%) who urged that the postnatal care services were not free of charge. Most of the respondents 301(78.8%) acknowledged being supported and encouraged by their partners and family members to attend PNC services compared to 81(21.2%) who admitted having received no support.

Table 3: Univariate analysis of socio-economic factors influencing PNC in Maridi

Variable	Frequency	Percentage (%)
Distance from a health care facility		
Half a kilometre	81	21.2
1km	79	20.7
2km	131	34.3
3km	57	14.9
> 4km	34	8.9
Total	382	100.0
Work done to earn a living		
Peasant farmer	76	19.9
House wife	87	22.8
Petty trade	205	53.7
Formal Employment	14	3.7
Total	382	100.0
Average level of family income		
Less than 200SSP	250	65.4
200SSP	54	14.1
More than 200 SSP	78	20.4
Total	382	100.0
PNC services given Free charged		
Yes	335	87.7
No	47	12.3
Total	382	100.0
Given encouragement and support by partner		
Yes	301	78.8
No	81	21.2
Total	382	100.0
Given encouragement to attend PNC services		
Yes	252	66.0
No	130	34.0
Total	382	100.0

Source: Primary data 2016

However, when key informants were asked whether all mothers who attend ANC services return for PNC following delivery, the results showed the following: “No, some don’t turn up.” (Almost all the KIs at Maridi County Hospital and PHCCs in Maridi County) indicating

disparities in accessing PNC services. Some of the reasons established by the key informants as to why most mothers do not utilize PNC services at the health facility were illustrated as below: *“Most new mothers do not access postnatal service because they are illiterate, long distance from the health facility to their homes, inadequate human resources for health, fear of being attacked on the way due to insecurity, mothers report that the health workers are harsh, illegal charges by some health workers, culturally when a woman delivers safely at home its believed there is no need to visit the health facility, advised by relatives not to visit e.g. by TBAs and CHWS, lack of drugs and supplies”* (Medical Officer, Clinical Officers, Nurses and Midwives, Maridi County).

The health care service providers in health facilities also held their counterparts in the community responsible for the utilization of PNC services and women’s none attendance by the following statements: *“TBAs, home health promoters, elderly women who provide herbal remedies and traditional healers are responsible for checking on mothers and babies at homes and be permitted to do so.”*(Clinical Officer, Maridi County Hospital) indicating lack of collaboration among the health service providers. In addition, the key informants rated the quality of PNC services provided at the health facility in their own perspectives, by the following quotations; *“The PNC services are fair because some basic medical items are in short supply”* (Medical Officer, Maridi County Hospital) contrary to the reports of Clinical Officers, Nurses and Midwives from PHCCs who noted that, *“it is just very good due to low turn up of mothers”*.

Table 4: Bivariate analysis of socio-economic factors influencing PNC in Maridi

Variable	PNC Service Utilization		χ^2	P-Value
	Yes	No		
Distance from nearest health care facility				
Half a kilometre	66(21.2)	15(21.1)	5.288	0.259
1km	61(19.6)	18(25.4)		
2km	111(35.7)	20(28.4)		
3km	49(15.8)	8(11.3)		
> 4km	24(7.7)	10(14.1)		
Total	311	71		
Work done to earn a living				
Peasant farmer	54(17.4)	22(31.0)	10.048	0.018*
Housewife	68(21.9)	19(26.8)		
Petty trade	178(57.8)	27(38.0)		
Others (Employees)	11(3.5)	3(4.2)		
Total	311	71		
Average level of family income				
Less than 200SSP	207(66.6)	43(60.6)	3.522	0.172
200SSP	39(12.5)	15(21.1)		
More than 200 SSP	65(20.9)	13(18.3)		
Total	311	71		
PNC services given free of charge				
Yes	276(88.7)	59(83.1%)	1.709	0.191
No	35(11.3%)	12(16.9%)		
Total	311	71		
Given encouragement and support by partner				
Yes	256(82.3)	45(63.4)	12.404	0.000*
No	55(17.7)	26(36.6)		
Total	311	71		
Given encouragement to attend PNC				
Yes	220(70.7)	39(54.9)	16.965	0.000*
No	91(29.3)	32(45.1)		
Total	311	71		

Source: Primary data 2016

<0.05 statistically significant

Table 4 reveals the socio-economic determinants of PNC service utilization among mothers in Maridi County. This includes; type of work done for a living, receiving encouragement and support from a spouse and family members by a mother to attend PNC service. Therefore type of work done by the respondents was found to significantly influence utilization of PNC services among mothers living in Maridi County ($X^2= 10.048$, p-value 0.018). Having encouragement from a spouse was significantly associated utilization of PNC services among mothers living Maridi County ($X^2= 12.404$, p-value 0.000). Finally and a mother being encouraged to attend PNC service was found to significantly influence utilization of postnatal care services among mothers in Maridi County ($X^2= 16.965$, p-value 0.000).

4.2.5 Univariate analysis of health system factors influencing PNC services in Maridi

The health system determinants of PNC service utilization among mothers in Maridi County were: provision of transport, provision of funds for PNC services, time taken to access PNC services, receiving care and support expected from the health facility attitude of health workers at PNC outlets, the kind of health care provider, rate of attention given to a mother by the health care provider.

Table 5: Univariate analysis of health system factors influencing PNC in Maridi County

Variable	Frequency	Percentage
Timely provision of PNC services		
Yes	131	34.3
No	122	31.9
Don't know	109	33.8
Total	311	100.0
Average time taken to receive PNC services		
Half an hour	65	17.0
1 hour	259	67.8
More than 1 hour	58	15.2
Total	382	100.0
Attitude of the health workers		
Poor	241	63.1
Good	129	33.8
Don't know	10	2.6
Others	2	.5
Total	382	100.0
Received expected care & support		
Yes	263	68.8
No	119	31.2

Total	382	100.0
Kind of care and support received		
Assessment of complications following child birth	256	67.0
Support for breast feeding	237	62.0
Management of anaemia, nutritional promotion, LLITN use, Vitamin A supplementation	299	78.3
Promotion of immunization(TT, BCG, OPV, Penta valent)	247	64.7
Counselling on a range of family planning options	172	45.0
Counselling on danger signs & home care	151	39.5
Referral for management of complications	117	30.6
Health care provider relayed on		
Mid wife	281	73.6
Clinical officer	56	14.7
Doctor	31	8.1
Others (herbalist & TBA)	14	3.7
Total	382	100.0
Rate of attention given to mothers		
Not satisfactory	44	11.5
Satisfactory	222	58.1
Very satisfactory	49	12.8
Don't know	67	17.5
Total	382	100.0
Information received concerning mother's health care		
Personal hygiene after child birth	350	91.6
Any possible mood changes after child birth	131	34.3
Options of child spacing	252	66.0
Any possible danger signs following child birth	158	41.4
Others	68	17.8
Information and guidance on child care		
Early initiation & promotion of exclusive breast feeding	324	84.8
Promotion of warmth in new born babies	299	78.3
Promotion of hygiene & good skin, eye and cord care	295	77.2
Counsel on danger signs in new born and home care	208	54.5
Promotion of child immunization	319	83.5
Promotion of child growth monitoring	202	52.9
Persons responsible for providing alternative PNC services		
TBA	216	56.5
Maternal child health worker	171	44.8
Community health worker	159	41.6
Traditional healer/herbalist	114	29.8
Others	48	12.6
Reason for not accessing PNC services in Maridi		
Long waiting time to receive services	211	55.2
Poor response from health provider	112	29.3
Refusal by partner(spouse)	144	37.7
Occupation at home with extra responsibilities	199	52.1
Poor quality of post-natal care services provided	81	21.2
Others	95	24.9
How can PNC services be improved		
Ensure availability of drugs & equipment	292	76.4
Ensure availability of qualified health care service providers	267	69.9
Increase on the number of health care service personnel	286	74.9
Others	75	19.6

Source: Primary data 2016

Table 6 below reveals a significant relation between the amount of time a mother takes to receive PNC service and its utilization ($X^2= 8.676$, p-value 0.013). Among the mothers it was established that the attitude of a health worker at the last PNC visit was significantly associated with service utilization ($X^2= 10.320$, p-value 0.016). A mother receiving care and support from the health facility was found to be significantly associated with PNC service utilization in Maridi ($X^2=17.865$, p-value 0.000).

In Maridi County, ensuring availability of qualified health care providers was significantly associated with PNC service utilization among mothers ($X^2= 4.781$, p-value 0.029). Use of TBAs was found to be significantly associated with PNC service utilization in Maridi County ($X^2=66.416$, p-value 0.010).

In regard to information about maternal health during the post-natal period, the provision of information on personal hygiene after child was found to be significantly associated with PNC service utilization among mothers in Maridi County ($X^2= 11.210$, p-value 0.001). The provision of information on possible mood changes after child birth was found to be significantly associated with PNC service utilization among mothers in Maridi County ($X^2= 8.222$, p-value 0.004). The provision of counselling on possible danger signs following child birth was significantly associated with PNC service utilization among mothers in Maridi County ($X^2= 4.734$, p-value 0.030).

In regard to information and guidance about child care during the post-natal period, the promotion of warmth in the new born was significantly associated with PNC service utilization among mothers in Maridi County ($X^2= 11.372$, p-value 0.001). The promotion of hygiene and good skin, eye and cord care for new born babies was significantly associated with PNC service utilization among mothers in Maridi County ($X^2= 9.504$, p-value 0.002). The provision of counselling on danger signs in new born and home care was significantly

associated with PNC service utilization among mothers in Maridi County ($X^2= 5.231$, p-value 0.022).

Finally in Maridi mothers who felt comfortable with health care providers were found to utilize PNC services ($X^2= 30.853$, p-value 0.000). the level of attention given by health care providers was found to significantly influence utilization of PNC services by mothers in Maridi County ($X^2= 24.933$, p-value 0.000).

The KIs when asked on how the coverage of PNC services for mothers and their babies could be improved, they highlighted the following recommendations: *“The government should increase sensitization in the community, capacity building for health workers, and increase access by strengthening lower facilities to provide PNC services”* (Medical Officer Maridi County Hospital). While the Clinical Officers, Nurses and Midwives from PHCCs within Maridi County informed that, *“...increase the number of midwives to ease workload, train more health care workers, ensure availability of drugs, provide incentives for mothers during delivery and after to encourage them to attend PNC services ”*. The Clinical Officers from PHCCs in Maridi further reported that, *“...should involve religious leaders and Payam administrators in mobilizing the community for PNC services because communities have more trust in them than the health workers and as well involve husbands during pregnancy to get more support because some women say their husbands are very harsh towards their health care needs.”*

The above study findings typically signify some of the reasons for low utilization of PNC services if not improve would have great consequences on the health and well-being of the population. The Medical Officer from Maridi County Hospital gave additional suggestion on alternative health care services that can be provided to mothers and their new born babies in the community, *“I think home care visits to monitor the health of mothers and new-born*

babies done by some TBAs, student nurses and midwives should be encouraged to improve on PNC coverage”.

Table 6: Bivariate analysis on health system factors influencing PNC in Maridi

Variable	Ever attended PNC		χ^2	P-Value
Timely provision of PNC services	Yes	No		
Yes	81(63.3)	77(34.4)	28.937	0.000*
No	11(8.6)	22(9.8)		
Total	311	71		
Average time taken to receive PNC services				
Half an hour	45(14.5)	20(28.2)	8.676	0.013*
1 hour	220(70.7)	39(54.9)		
More than 1 hour	46(14.8)	12(16.9)		
Total	311	71		
Attitude of the health workers at last PNC visit				
Poor	204(65.6)	90(40.2)	10.320	0.016*
Good	101(32.5)	20(8.9)		
Don't know	5(1.6)	5(7.0)		
Others	1(0.3)	1(1.4)		
Total	311	71		
Received expected care & support				
Yes	229(73.6)	34(47.9)	17.865	0.000*
No	82(26.4)	37(52.1)		
Total	311	71		
Assessment of complications following child birth	222(71.4)	34(47.9)	14.436	0.000*
Support for breast feeding	204(65.6)	33(46.5)	8.969	0.003*
Management of anaemia, promote nutrition, LLITN use, Vitamin A supplementation	256(82.3)	43(60.6)	16.081	0.000*
Promotion of immunization(TT, BCG, OPV, Penta valent)	209(67.2)	38(53.5)	4.735	0.030*
Counselling on a range of family planning options	149(47.9)	23(32.4)	5.622	0.018*
Counselling on danger signs & home care	132(42.4)	19(26.8)	5.948	0.015*
Referral for management of complications	100(32.2)	17(23.9)	1.834	0.176
Health care provider relayed on				
Midwife	237(76.2)	44(62.0)	22.002	0.000*
Clinical officer	46(14.8)	10(14.1)		
Doctor	23(7.4)	8(11.3)		
Others (herbalist & TBA)	5(1.6)	9(12.7)		
Total	311	71		
Rate of attention given to mothers during PNC visit				
Not satisfactory	35(11.3)	9(12.7)	18.596	0.000*
Satisfactory	194(62.4)	28(39.4)		
Very satisfactory	39(12.5)	10(14.1)		

Don't know	43(13.8)	24(33.8)		
Total	311	71		
Information received concerning mother's health care				
Personal hygiene after child birth	292(93.9)	58(81.7)	11.210	0.001*
Any possible mood changes after child birth	117(37.6)	14(19.7)	8.222	0.004*
Options of child spacing	213(68.5)	39(54.9)	4.734	0.030*
Any possible danger signs following child birth	133(42.8)	25(35.4)	1.360	0.244
Information and guidance on child care				
Early initiation & promotion of exclusive breast feeding	266(85.5)	58(81.7)	0.662	0.416
Promotion of warmth in new born babies	254(81.7)	45(63.4)	11.372	0.001*
Promotion of hygiene & good skin, eye and cord care	250(80.4)	45(63.4)	9.504	0.002*
Counsel on danger signs in new born and home care	178(57.2)	30(42.3)	5.231	0.022*
Promotion of child immunization	263(84.6)	56(78.9)	1.360	0.244
Promotion of child growth monitoring				
Persons responsible for provision of alternative PNC services				
TBAs	174(55.9)	42(59.2)	0.242	0.623
Maternal child health workers	146(46.9)	25(35.2)	3.219	0.073*
Community health workers	138(44.4)	21(29.6)	5.208	0.022*
Traditional healers/herbalists	84(27.0)	30(42.3)	6.416	0.011*
Others (Grandmothers/ elderly women)	32(10.3)	16(22.5)	7.890	0.005*
Reason for not accessing PNC services				
Long waiting time to receive services	166(53.4)	45(63.4)	2.340	0.126
Poor response from health provider	93(29.9)	19(26.8)	0.276	0.600
Refusal by partner(spouse)	122(39.2)	22(31.0)	1.672	0.196
Occupation at home with extra responsibilities	164(52.7)	35(49.3)	0.274	0.601
Poor quality of post-natal care services provided	63(20.3)	18(25.4)	0.898	0.343
Others	81(26.0)	14(19.7)	1.238	0.266
How can PNC services be improved				
Ensure availability of drugs & equipment	242(77.8)	50(70.4)	1.753	0.185
Ensure availability of qualified health care service providers	225(72.3)	42(59.2)	4.781	0.029*
Increase on the number of HC personnel	231(74.3)	55(77.5)	0.312	0.576
Others	64(23.4)	11(20.0)	0.322	0.570

Source: Primary data 2016

significance level <0.05*

4.3 Multivariate analysis of factors influencing PNC services in Maridi

Factors in regard to respondents' individual, socio-economic and health system influences were subjected to multivariate analysis to determine their effect on mothers' ability to utilize PNC services in study area.

Multivariate analysis of factors determining utilization of PNC services among women of reproductive age in Maridi County with binary logistics regression revealed; education level of mothers, None (OR 7.750, 95%, CI .978-61.426), Primary (OR 2.627, 95% .335 20.610), secondary (OR 2.034, 95% CI .236 17.543), ANC visits once (OR 4.803, 95% CI 1.807), accessing PNC services after home birth of a child within 24 hours (OR 5.1.292, 95% CI 1.292-20.442) and after 48 hours (OR 2.658, 95% CI .886-7.972), accessing PNC services after birth of a child at health facility within 24hours (OR 4.566, 95% CI .576-36.267) and, role of PNC services (OR 3.959, 95% CI 1.863-8.4115), PNC service provision (OR 3.003, 95% CI 1.346-6.700); information and guidance on child care (OR 2.253, 95%CI .931-5.451) were the factors that influenced PNC service utilization among mothers in Maridi County.

Table 2: Results of multivariate logistic regression analysis

Variables	Odds Ratio	95% CI	
		Lower	Upper
Level of education			
None	7.750	0.978	61.426
Primary	2.627	0.335	20.610
Secondary	2.034	0.236	17.543
Tertiary	Ref.		
Number of ANC visits made in last pregnancy			
One	4.803	1.807	12.763
Two	1.236	0.466	3.283
Three	.680	0.308	1.502
Four or more	Ref.		
Seeking PNC services after home delivery			
Within 24 hours	5.140	1.292	20.442
After 48 hours	2.658	0.886	7.972
After one month	.531	0.129	2.182
After 6 weeks	Ref.		
Seeking PNC services after health facility delivery			
Within 24 hours	4.569	0.576	36.267
After 48 hors	1.556	0.186	12.989
After one month	.262	0.015	4.529

After 6 weeks	Ref.		
Role of PNC services			
Care given to mothers & their new born after delivery	3.959	1.863	8.415
Care given to mothers after delivery of a child	1.304	0.632	2.689
Care given to new born	1.139	0.507	2.562
Health education	2.287	1.039	5.033
Others	Ref.		
PNC services provided to mothers & babies			
Screening for complications	3.003	1.346	6.700
Promotion of hygiene	1.584	0.725	3.461
Quality of PNC services			
Very good	1.460	0.497	4.289
Others	Ref.		
Given encouragement & support	1.841	0.798	4.246
Information about maternal health			
Personal hygiene after child birth	1.247	0.323	4.811
Any possible danger signs following child birth	3.267	1.311	8.137
Options of birth spacing	1.506	0.672	3.372
Others	Ref.		
Information & guidance on child care			
Promotion of warmth in the new born	2.253	0.931	5.451
Promotion of hygiene & good skin, eye & cord care	2.217	0.908	5.408
Counsel on danger signs	.789	0.351	1.772
Others	Ref.		
Persons responsible for providing PNC service			
Maternal child health worker	1.347	0.545	3.327
Community health workers	1.633	0.694	3.841
Others	Ref.		
Reasons for not access PNC services			
Poor response from health services providers	1.296	0.510	3.293
Refusal by partner	1.834	0.815	4.127
Occupation	1.450	0.698	3.014

Source: Primary data 2016

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This study was aimed at establishing the individual, socio-economic and, health system factors contributing to the utilization of PNC services among women of reproductive age in Maridi County, South Sudan. Significant similarities and differences that exists with the current study findings and relevant literature from previous studies are also pointed out.

5.1 Individual factors influencing PNC services utilization in Maridi County

The study findings revealed that, the age (p-value 0.042) and levels of education (p-value 0.000); none (OR 7.750), primary (OR 2.627), secondary (OR 2.034) to be the significant determinants of PNC services utilization among women of reproductive age in Maridi County. These results concurs with findings of previous studies conducted by Paudel *et al* (2014) in India and Ishwari *et al* (2014) in Nepal which has shown that, women who had attained at least secondary level of education or more make good use of PNC services. Studies by Abeja *et al* (2014) in Ethiopia further confirms increased risks of worst health status among mothers and new-born babies due to low levels of education of most women.

The evidence that, many of the women in Maridi County have never been to school in their lifetime (p-value 0.000) with a great majority having attained only basic primary level of education limits access and utilization of focused PNC aimed at reducing maternal and neonatal morbidity and mortality even when offered free of charge. These study findings therefore, implies that, the limited access to quality education by most women which could have improved understanding, awareness and decision making in society regarding their own health care and that of their babies still poses great challenges in the promotion of maternal and child health care services in Maridi County.

Number of ANC visits (p-value 0.000); (OR 4.803) made by the mothers during their most recent pregnancies was found to have an association with PNC. These study findings are consistent with the points of view of the MoPHS (2011) in Kenya; Paudel Mohan *et al* (2013) and Ishwari *et al* (2014) in Nepal, which reaffirmed that, the reviews of postnatal care plans places women and their family members in better positions to easily identify danger signs that may arise during the postpartum period and takes necessary actions. In a community based studies conducted by Melaku *et al* (2014) in Ethiopia, it was found that up to 75% causes of maternal and infant mortality occurring predominantly during the immediate postnatal period cannot be prevented even by the best pre-natal care. Such situations in South Sudan poses great challenges in improving maternal and new-born health while limiting the strides towards reducing the high maternal and under five mortality rates Rai *et al*, (2012); Rosales *et al*, (2013); CMMB, (2014); (WHO, 2014a & IMC, 2015) and UNDP (2015).

Thus, poor ANC attendance denies women not only the chance of managing preventable causes of maternal and neonatal morbidity and mortality arising during pregnancy but, also limits their opportunity of being well informed and educated on the importance of continuum of care during the critical postnatal period.

The place of last delivery (p-value 0.000) of the last child emerged as a significant determinant of PNC utilization among the respondents, up to 45.5% reporting to have given birth at homes under the care of TBAs and elderly women. This study findings are consistent with recent findings of a study conducted in India by Paudel *et al* (2014) on the determinants of postnatal maternity care service utilization which pointed out that, the place of last delivery played important role on mothers' use of PNC services. Further observations have shown that, a considerable number of mothers and their new-borns spend most of the first 6 weeks of

their postnatal period at home. This poses a great challenges for planning and implementing PNC for women and new-borns given the fact that, 18 million women in Africa do not give birth in health facilities (WHO, 2015).

Given that, this study was conducted in post-conflict and conflict affected areas, the disparities in the last place of delivery can be explained by various associated factors notable of which are: the collapse of the health system infrastructure, internal displacement of the population, lack of skilled health personnel and conducive privacy in PHCUs. The implication of this identified factor is important in strengthening the formal health system structures and implementing the government policy on the Boma Health Initiative (BHI) with the available informal health system resources already in existence such as the TBAs and traditional herbalists.

The majority of the mothers 228(73.3%) appeared to have a better understanding of the meaning of PNC services(p-value 0.000) as the care and support given to mothers and their new-born babies up to 6 weeks following childbirth and; essential PNC services such as screening for complications (p-value 0.000), health education (p-value 0.000), family planning (p-value 0.010) and promotion of hygiene (p-value 0.004) offered at the respective health facilities when interviewed. In line with previous studies in Ethiopia by Tesfahun *et al* (2014) and in China by Chen *et al* (2014), the assumption that PNC services targets only children for immunization and nutrition services indicates not only lack of knowledge and awareness but, also inexperience about PNC services among mothers.

However, the reality that many mothers in Maridi County appear to have a better understanding of the meaning of PNC does not result into effective utilization of PNC

services by most women in the study area for the reasons of; inadequate information, the conviction by several women that PNC services targets only mothers and infants who are sick and the unwillingness of some women to utilize PNC services. This study evidence is further supported by remarks from almost all the KIs (health care service providers) that, not all mothers who attend ANC services return for PNC under skilled care is suggestive of under-utilization of PNC services by women of reproductive age in the study area.

This study also unveiled the aspects of the thought of the role of PNC services such as; care and support given mothers and their new-borns after delivery (p-value 0.00), care and support given to mother after child birth (p-value 0.006), health education (p-value 0.000), others (p-value 0.036); availability of PNC services offered (p-value 0.050) and; the essential components of PNC services provided such as; screening for complications (p-value 0.000), health education (p-value 0.000), counselling on family planning options (p-value 0.010) and promotion of hygiene (p-value 0.004) to have significance influence on PNC services utilization among women in Maridi County. The variation on thought of role of PNC services among the mothers is suggestive of lack of attention and inadequate knowledge among women and health care providers inclusive regarding PNC since other essential services such as continuation of maternal immunization with TT were hardly revealed.

5.2 Socio-economic factors influencing PNC services utilization in Maridi County

This study has revealed the type of work done to earn a living such as peasant farmer (p-value 0.018) and, receiving encouragement and social support from a spouse or family members (p-value 0.000) to attend PNC to have significant influence on the utilization of PNC services among the majority of women of reproductive age in Maridi County. However, these findings are contrary to the report in Uganda by Nakajubi (2016), who cited that many Ugandan

women receive inadequate or no support from their spouses during the critical times of the postnatal period.

Nevertheless, in South Sudan and in Maridi County in particular, even though mothers reported having obtained the needed encouragement and social support from their family members, access to comprehensive and focused PNC services remains limited for many women. This is confirmed by remarks during from almost all the KIs that, not all mothers who attend ANC access PNC services following childbirth. This can partly be attributed to informal fees charged at some PNC service delivery points in Maridi County. “ *We are normally charged 300 SSP for a baby boy and 400 SSP for a baby girl delivered in the hospital*” remarked one of the mothers when asked whether there was a cost involved in accessing PNC services at health facilities within their catchment area. Such state of affairs are not only very unfortunate but, indicates health inequity for women in Maridi County thus forcing many of them to win favours of some health care providers involved in such vices by paying informal fees.

Among the socio-economic factors investigated, distance (p-value 0.259) was found not to be one of the hindering factors for PNC services utilization. These study findings confirms recent studies in Tanzania by Mohan *et al* (2015) who pointed out that, distance was not associated with the utilization of PNC services because of the availability of health facilities within a 5 kilometre range. This is probably because most of the respondents interviewed reported their residences from the nearest health facilities to be within a range of 3 kilometres. Nevertheless, findings from this study implies that, only majority of the women who live within the vicinity of the health facilities have access to postnatal care services unlike their counter parts residing in the distant locations.

5.3 Health system factors influencing PNC services utilization in Maridi County

This study determined a significant association between the amounts of time taken to receive PNC services (p-value 0.013). Similarly, in Ethiopia study findings by Tesfahun *et al* (2014) cited subsequent delays in receiving PNC services at health facilities give women conflicting priorities either to attend to their routine household chores or attend PNC services. The fact that most women in Maridi County are occupied as housewives and peasants to earn for the basic needs of their families coupled with shortage of skilled health care personnel gives mothers limited time to attend PNC services.

The poor response from health care service providers reported by more than a half of the respondents at the last PNC visit (p-value 0.016), care and support received from the health service providers (p-value 0.000), the kind of health care service providers, the rate of attention given to mothers at the last PNC visit were also found to influence the utilization of PNC services among study respondents. Recent community and facility based studies in Tanzania by Kruk *et al* (2014) and McMahan *et al* (2014) on disrespectful maternity care have concurred that mothers who experienced disrespectful and abusive treatment were deterred from utilizing maternity care services.

However, in the study area poor encounters experienced by women noted by the respondents at hospital setting also included such acts of being disregarded and negative comments from health care providers attributed partly due to lack of close relationships between the two parties. This does not only worsens the current health system crisis but, also explains some of the reasons why women shun away from utilizing PNC services from the main hospital or make use available and culturally friendly informal health care practitioners such as TBAs and traditional herbalists in their localities. In addition, many mothers may be forced to pay

bribes to attract positive attention of the health care service providers. Such situations deterring utilization of PNC services requires urgent attention to ensure the right to dignity in health care are improved for women and children.

Preference and ensuring availability of qualified health care providers (p-value 0.029) and use of TBAs (p-value 0.010) were found to be significantly associated with PNC service utilization in Maridi County. This study findings strongly differs with earlier observations made from studies conducted to assess the utilization of PNC services among mothers in India Sharma *et al* (2014) and in Nepal Ishwari *et al* (2014) which noted ensuring the availability of only trained health care providers to positively influence women's use of PNC services.

However, for Maridi County in spite of government policy recommendations for women to be reviewed by skilled health care personnel regardless of the place of delivery, the preference for type of health care personnel remains debatable for many women and their families. The reality that modern medicine does not treat and cure all diseases conditions makes it possible for many women in the study area to always explore cheap, available and cultural friendly health care opportunities within their reach. This is attributed to the fact that, women in Maridi County still continue to seek the services of TBAs, traditional herbalists and elderly women as the first or last point of contact for PNC services. Such situations can consequently discourage other women from being reviewed by skilled health care personnel and can as well, result into life threatening complications for mothers and their new-born babies during the critical time of delivery and the immediate PNC period.

In regard to information about maternal health during the postnatal period, the provision of information on personal hygiene after childbirth (p-value 0.001);(OR 1.247) the provision of

information on possible mood changes after child birth (p-value 0.004), information on options of birth spacing (OR 1.506) and the provision of counselling on possible danger signs following child birth (p-value 0.030); (OR 3.267) were found to be significantly associated with PNC service utilization among mothers in the study area. The discrepancy of these study findings with results of others findings from studies conducted in Ethiopia by Tesfahun *et al* (2014) cited availability of health services such as drugs, vaccines and equipment. However, in Maridi County, inadequate knowledge on PNC among women and the little attention given to this continuum of care during the postnatal period by maternal child health improvement programs illustrates under-utilization of PNC services. This is supported by remarks from the KIs that; “ *Not all mothers who attend ANC do return to the health facilities for PNC services*” showing low utilization of PNC services among women of reproductive age in Maridi County.

In addition, information and guidance about child care provided during the postnatal period includes; the promotion of warmth in the new born (p-value 0.001); (OR 2.253) promotion of hygiene and good skin, eye and cord care for new born babies (p-value 0.002); (OR 2.217) provision of counselling on danger signs in new born and home care (p-value 0.022); (OR 0.789) were significantly associated with PNC service utilization among mothers in Maridi County. Recent studies in Ethiopia by Tesfahun *et al* (2014) revealed up to 74.27% women who attended PNC services had positive view as regards the quality of PNC services and as well, encouraged others who were not well informed to attend. The study findings therefore, reveals that, not all women and health care personnel were well-informed on the essential services provided during PNC visits.

Finally in Maridi mothers who felt comfortable with health care providers (p-value 0.000) and unsatisfactory level of attention given by health care providers (p-value 0.000) were found to significantly influence utilization of PNC services among women in Maridi County. These study findings are consistent with the results of qualitative community and facility based studies conducted in Tanzania by Kruk *et al* (2014) and McMahon *et al* (2014) that recounted events women described as abusive in maternal health literature even though they initially described their encounters with health care providers as neutral or satisfactory. In the study area even though majority 237(76.2%) of the respondents indicated preference and comfort of being assisted by midwives probably because they are trained to attend to mothers; the attitude and rate of attention towards mothers by other skilled birth attendants, mothers' previous experiences with TBAs and, sporadic shortage of basic medical supplies that came out through the KIs remains the major obstacles to women's use of PNC services.

On how the quality and coverage of PNC services could be improved, most mothers recommended ensuring the availability of qualified health care service providers (p-value 0.029). On the other hand, interviews results from KIs also suggested “*....increasing the number of midwives to ease workloads, training of more health care workers, ensuring availability of drugs, providing incentives for mothers during delivery and after to encourage them to attend PNC services* ”. In addition, the Clinical Officers from PHCCs in Maridi County further suggested the engagement of; husbands, religious leaders, and Payam administrators in mobilizing the community for PNC services. This is partly attributed to the fact that, communities have more trust and confidence in the local stakeholders and governance they have chosen than the health workers care who were just recruited and posted to manage PHCCs.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter describes conclusions drawn from the study. In addition, possible policy recommendations to overcome key challenges identified in the utilization of PNC services among women of reproductive age in Maridi County are also presented.

6.1 Conclusions

A number of conclusions are drawn from this study some of which include those indicated herein below:

- There is low utilization of PNC services among women of reproductive age in Maridi County evidenced by the fact that many pregnant mothers who attend ANC do not return for PNC services provided by skilled health care personnel at health facilities following childbirth. This limits efforts in the promotion of maternal and neonatal health whose survival chances are indivisible linked.
- Individual factors of PNC services utilization among women of reproductive age in Maridi County includes; age, level of education, number of ANC visits, the last place of delivery and thought of the role of PNC services determined PNC attendance. Level of education remains significant social contributing factor of age while influencing health seeking behaviour of women of reproductive age in Maridi County.
- The socio-economic determinants of PNC services utilization among women of reproductive age are: occupation of respondents, receiving encouragement and social support from a spouse and family members, determined PNC services utility utilization among women of reproductive age.
- The health system determinants of PNC services utilization includes: the provision of transport; provision of funds for PNC services; time taken to access PNC services;

receiving care and support expected from the health facility; attitude of health workers at PNC service delivery points; the kind of health care provider; rate of attention given to a mother by the health care providers and quality of PNC services provided determined utilization of PNC services.

- The kind and preference for health care providers such as TBAs and traditional herbalist in the community who are always consulted for care by many women before turning to the formal health sector is one of the critical determining factors of PNC service utilization in Maridi County as linkages between the formal and informal health system structures remains weak.
- Additionally, informal fees paid after delivery in the hospital causes health inequity, thus deterring many women from receiving lifesaving PNC services.
- On the other hand, ethnicity, marital status, distance from the nearest health facility and average level of family income were found not to have significant influence on the utilization of PNC services in Maridi County.

6.2 Recommendations

Given the above conclusions from this study, the following recommendations are drawn:

- The MoEST should invest more resources in promoting girl-child education, since education is a social determinant of health seeking behaviour such as attending PNC.
- The National MoH should adapt and introduce the comprehensive focused PNC strategy to orientate health care service providers on the provision of quality PNC.
- The National MoH in collaboration with SMOHE and CHD should expand on the coverage of maternity care to PHCUs within the county. These efforts should include training, recruitment of skilled health care providers, and provision of equipment and establishment of necessary health facility infrastructure to deliver quality and comprehensive package of PNC services.

- The National MoH should work on possible modalities of integrating the already existing community health structures such as TBAs and traditional herbalists with its invention of BHI as they still remain the first or last point of contact for many people even with life threatening conditions. This is anticipated to help in regulating the health practices within the county and the country at large.
- The SMOHE in collaboration with Maridi Hospital Board and Administration should work on modalities of establishing a formal health financing or cost sharing scheme in Maridi State Hospital. This will not only help to mitigate payment of costly informal fees to receive basic health care services but, also motivate and provide incentives for health care providers involved in creating health care inequity within the health facility.
- More research should be conducted to evaluate the quality of PNC services provided at the health facilities within the country.

LIST OF REFERENCES

- ABEJA G., *et al.*, 2014. Factors associated with Institutional delivery service utilization among mothers in Bahir Dar City administration, Amhara region: a community based cross sectional study. *Reproductive Health Journal*, 11(22), pp. 1-2.
- ACOG, 2016. *Optimizing Postpartum Care: Committee Opinion No. 666*, Washington DC: American College of Obstetricians and Gynecologists.
- AYELE D.Z., *et al.*, 2014. Factors affecting the Utilization of Maternal Health Care Services in Kombolcha District, Eastern Hararghe Zone, Oromia Regional State, Eastern Ethiopia. *International Scholarly Research Notices*, 2014(10), pp. 1-5.
- BOHREN M.A.,*et al.*, 2014. Facilitators and barrier to facility-based delivery in low-and middle-income countries: a qualitative evidence synthesis. *Reproductive Health Journal*, 11(17), pp. 1-5.
- CHEN *et al.*, 2014. Coverage, quality of and barriers to postnatal care in rural Hebei, China: a mixed method study. *Biomed Central*, 14(31), pp. 1-9.
- CHEN *et al.*, 2014. Coverage, quality of and barriers to postnatal care in rural Hebei, China: a mixed method study. *Biomed Central*, 14(31), pp. 1-9.
- CHIMTEMBO L.K.,*et al.*, 2013. Assessment of quality of postnatal care services offered to mothers in Dedza district, Malawi. *Open Journal of Nursing*, August, 3(343-350), pp. 343-346.
- CMMB, 2014. *Catholic Medical Mission Board in South Sudan*. [Online] Available at: <http://www.cmmb.org/our-approach/where-we-work/south-sudan/> [Accessed 27 February 2016].
- CULLEN, J., 2014. *Improving maternal mortality in South Sudan*. [Online] Available at: http://www.southampton.ac.uk/healthsciences/business_partneship/services/southsudan.page [Accessed 27 February 2016].
- EXAVERY A.,*et al.*, 2014. Access to institutional delivery care and reasons for home delivery in three districts of Tanzania. *International Journal for Equity in Health*, 13(48), pp. 1-2.
- FEYISSA T.R., GENEMO G.A., 2014. Determinants of Institutional Delivery among Childbearing Age Women in Western Ethiopia, 2013: Unmatched Case Control Study. *Plos One*, 9(5), pp. 1-2. TSEGAY Y., *et al.*, 2013. Determinants of antenatal care and delivery care utilization in Tigray region, Ethiopia: a cross-sectional study. *International Journal of Equity in Health*, 12(30), pp. 1-2.
- IMC, 2015. *South Sudan: Maternal and Child Health*. [Online] Available at: <http://www.internationalmedicalcorps.org/page.aspx?pid=1737> [Accessed 27 February 2016].
- ISHWARI S. P., *et al.*, 2014. Postnatal Care Service Utilization among Mothers in Eastern Region of Nepal. *Journal of Nobel Medical College*, 2(4), pp. 65-66.
- KALPALATA A. B., GAUTAM M. K., 2014. Study of utilization of postnatal care services in Tribal Area, Maharashtra. *International Journal of Medical Sciences and Public Health*, 3(12), pp. 1-3.

- KRUK E.M., *et al.*, 2014. *Disrespectful and abusive treatment during facility delivery in Tanzania: a facility and community survey*, New York: Oxford University Press in association with London School of Hygiene and Tropical Medicine.
- McMAHON A.S., *et al.*, 2014. Experiences of and responses to disrespectful maternity care and abuse during childbirth; a qualitative study with women and men in Morogoro Region, Tanzania. *BioMed Central Pregnancy and Childbirth*, 14(268), pp. 1-7.
- MELAKU. Y.A., *et al.*, 2014. Poor linkages in maternal health care services evidence on antenatal care and institutional delivery from a community-based longitudinal study in Tigray region, Ethiopia. *BMC Pregnancy and Childbirth*, 14(418), pp. 2-6.
- MoH & NBS, 2010. *South Sudan Household Health Survey: Final Report*, Juba: Ministry of Health and National Bureau of Statistics.
- MOHAN D., *et al.*, 2015. Determinants of postnatal care use at health facilities in rural Tanzania : Multilevel Analysis of household survey. *BioMed Central Pregnancy and Childbirth*, 15(282), pp. 1-2.
- MoPHS, 2011. *National Orientation Package for Targeted Postnatal Care*. Nairobi, Ministry of Public Health and Sanitation.
- MUGO N., ZWI A.B., BOTFIELD J.R., & STEINER C., 2015. Maternal and Child Health in South Sudan: Priorities for the Post-2015 Agenda. *SAGE Open*, 1(14), pp. 4-10.
- NAKAJUBI G., 2016. Where are the men in maternal health issues?. *The New Vision*, 8 March, 31(48), pp. 22-23.
- NOOR F.R., RAHMAN M., 2012. *Utilization of postnatal care services among rural women in Bangladesh*. Jakarta, Population Council.
- PAUDEL D.P., NILGAR B., BHANDANKAR M., 2014. Determinants of postnatal maternity care service utilization in rural Belgaum of Karnataka, India: A community based cross-sectional study. *International Journal of Medicine and Public Health*, 4(1), pp. 97-98.
- PAUDEL M., KHANAL V., ACHARYA B & ADHIKARI M., 2013. Determinants of postnatal service utilization in Western District of Nepal: Community Based Cross Sectional Study. *Journal of Women's Health Care*, 2(3), pp. 3-7.
- RAI R.K., RAMMADHAN A.A., TULCHINSKY T.H., 2012. Prioritizing maternal and child health in independent South Sudan. *PuMed*, 6(16), p. 1.
- REGASSA, N., 2011. Antenatal and postnatal care services utilization in Southern Ethiopia: a population based study. *African Health Sciences*, 11(3), pp. 395-396.
- ROSALES A. *et al.*, 2013. *The Southern Sudan Maternal and Child Health Transformation (MaCHT) Project*, Juba: World Vision International South Sudan.
- RUTAREMWA *et al.*, 2015. Determinants of maternal health services utilization in Uganda. *BioMed Central Health Services Research*, 15(271), pp. 1-4.
- SHALKH. S., 2015. *Low utilization of postnatal care: searching the window of opportunity to save mothers and newborns lives in Islamabad Capital Territory, Pakistan*, Islamabad: BioMed Central.

- SHARMA A., et al., 2014. Utilization of Postnatal Care In Tribal Area of Madhya Pradesh: A Community Based Cross-Sectional Study. *International Journal of Medical Sciences and Public Health*, 3(10), pp. 1-5.
- SINES E., SYED U., WALL S., & WORLEY H, 2007. *Postnatal Care: A Critical Opportunity to Save Mothers and Newborns*, Washington DC: Population Reference Bureau.
- SINGH A., et al., 2012. Socio-Economic Inequalities in the Use of Postnatal Care in India. *PLOS One*, 30 April, 7(5), pp. 5-9.
- TAJUDEEN O. OYAWALE, THANDISIZWE R. MAVUNDLA, 2015. *Socio-economic factors contributing to exclusion of women from maternal health benefit in Abuja, Nigeria*, Johannesburg: University of South Africa.
- TAKAI I.U., et al., 2015. Factors responsible for under-utilization of postnatal care services in Maiduguri, North-Eastern Nigeria). *Sahel Medical Journal*, 18(108), pp. 1-4.
- TESFAHUN F. et al., 2014. Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study. *Maternal Child Health Journal*, 18(2341), pp. 3-5.
- TIMILSINA, S. & DHAKA, R., 2015. Knowledge on Postnatal Care Among Postnatal Mothers. *Saudi Journal of Medical and Pharmaceutical Sciences*, December, 1(4), pp. 87-91.
- UNDP, 2015. *United Nations Sustainable Development Summit*. New York, United Nations Development Program.
- UNICEF, 2014. *Maternal Mortality, a big challenge for the world's newest nation*. [Online] Available at: http://www.unicef.org/southsudan/reallives_13025.html [Accessed 27 February 2016].
- WARREN C. E., et al., 2015. Opportunities for Africa's Newborns. In: s.l.s.n., pp. 80-90.
- WHO, 2014a. *Country Cooperation Strategy at a glance*, Juba: World Health Organization.
- WHO, 2014b. *WHO Recommendations on Postnatal care of the mother and newborn*, Geneva: World Health Organization.
- WHO, 2015. Postnatal care. *Bulletin of the World Health Organization*, 11 May, pp. 1-2.
- ZERE E., et al., 2010. Utilization of maternal health interventions in Namibia: Implications for progress towards MDG 5 targets. *International Journal for Equity in Health* 2010, 9(16), pp. 9-16.

APPENDICES

Appendix I: Budget

S/No	Core Research Activities	Items/ Participants	Cost in SSP
1	Development of research instruments	Printing & photocopying of questionnaires @ 5 SSP x 38 copies	190
2	Induction & training of research assistants	Transport for 1 researcher & 9 research assistants @ 100 SSP x 3 days x 10 persons	3,000
3	Pre-testing of research instruments	Transport for 1 researcher & 9 research assistants 100 SSP x 1 day x 10 persons	1,000
4	Review of research instruments, printing & photocopying	Printing 384 copies x 5 SSP	1,920
5	Main field data collection (6 weeks)	Travel , accommodation and subsistence for researcher and 9 research assistants	12,400
6	Data entry, analysis and interpretation	Data entry, analysis and interpretation	15,500
7	Printing of draft dissertation & binding	3 copies x 1,400 SSP	5,000
8	Printing and binding of final dissertation	4 copies x1,582 SSP	6,326
9	Contingency 10%		4,534
	Grand Total		49,870

Note: 1USD =19.7 SSP

Appendix II: Work plan and time frame

Time Frame	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Week 1	Presentation & approval of research topic	Research proposal development	Research proposal development	Research proposal development	Development of data collection tools	Pre-testing of data collection tools	Main field data collection	Data entry	Proof reading, printing & binding of final dissertation
Week 2		Research proposal development	Research proposal development	Research proposal development	Development of data collection tools	Main field data collection	Main field data collection	Data interpretation & analysis	Final submission of dissertation
Week 3	Research proposal development	Research proposal development	Research proposal development	Research proposal presentation	Research proposal presentation	Main field data collection	Main field data collection	Printing, binding and submission of draft dissertation	
Week 4	Research proposal development	Research proposal development	Research proposal development	Research proposal presentation	Induction & training of research assistants	Main field data collection	Main field data collection	Dissertation defence	

Appendix III: Questionnaire

Questionnaire Code: Date:

Dear Respondent,

My name is **Aloysious Vuzi Gbali**, a student of International Health Sciences University. I'm conducting a research on "THE DETERMINANTS OF POSTNATAL CARE SERVICES UTILIZATION AMONG WOMEN OF REPRODUCTIVE AGE IN MARIDI COUNTY, SOUTH SUDAN" leading to the award of Master's Degree of Public Health.

The purpose of this research is to make known the contributing factors to postnatal care service utilization. This will further help to inform policy in accelerating the promotion of maternal and child health care services for mothers and new-borns. All the information obtained from you during the course of this research will be kept confidential and used only for the purpose of the study as no names are required.

Your voluntary participation in this research is therefore being requested for. You are free to withdraw your participating in this research at any time without penalty or denial of benefits you are entitled to. Should you be happy and willing to participate in this research, you are highly welcomed. By signing below, you confirm your understanding and participation in the study after all the relevant information concerning this research have been explained to your satisfaction. And thank you for your consent.

Signature/Right hand thumb print of respondent: Date:

Section I: Individual Factors

1. How old are you?
 - i. 15-20 years
 - ii. 21-26 years
 - iii. 27-32 years
 - iv. 33-38 years
 - v. 39-44 years
 - vi. 45-49 years
2. How many children have you delivered to date?
 - i. One
 - ii. Two
 - iii. Three
 - iv. More than three
3. What is your current marital status?
 - i. Single
 - ii. Married
 - iii. Divorced
4. Which ethnic group do you belong to?
 - i. Zande
 - ii. Baka
 - iii. Moru
 - iv. Avokaya
 - v. Others (Specify).....
5. What level of education have you attained?
 - i. Never been to school
 - ii. Primary level
 - iii. Secondary level
 - iv. Tertiary and above

6. How many antenatal care (ANC) visits did you make during your most recent pregnancy?

- i. Once
- ii. Twice
- iii. Three times
- iv. Four times and more

7. Where did you deliver your last born child at?

- i. At home care facility
- ii. At health care facility
- iii. Others (specify).....

8. What do you understand by postnatal care (PNC) services?

- i. Care and support given to mothers and new-borns up to 6 weeks after birth
- ii. Care and support given to mothers only following childbirth
- iii. Care and support given to new-borns only
- iv. Don't know
- v. Others (specify).....

9. Did you get any PNC support from a health care provider after your last delivery?

- i. Yes
- ii. No

10. If the birth of the last child occurred at home, how long after delivery did the first PNC check-up take place? (*applies if birth of last child occurred at home*)

- i. Within 24 hours
- ii. After 48 hours
- iii. After 1 month
- iv. After 6 weeks

11. If the birth of your last child occurred in a health facility, how long after delivery did the first check-up take place? (*Applies if birth of last child occurred in a health facility*).

- i. Within 24 hours
- ii. After 48 hours
- iii. After 1 month
- iv. After 6 weeks

12. What do you think is the role of PNC services? (*multiple responses possible*).

- i. Care given to mothers and their new-borns after delivery
- ii. Care given to mother after delivery of a child
- iii. Care given to new-borns
- iv. Health education given to mothers following delivery
- v. Others (Specify).....

13. What postnatal care services are normally provided to mothers and their new-born babies from delivery up to six weeks in the health facilities within your area? (*multiple responses possible*)

- i. Screening for complications
- ii. Health education
- iii. Family planning
- iv. Promotion of hygiene
- v. Immunization
- vi. Others (Specify).....

14. What do you think about the quality of PNC services provided within your area?

- i. Very good
- ii. Good
- iii. Not good
- iv. Don't know
- v. Others (specify).....

Section II: Socio-economic factors

15. How far is the nearest health facility from your home?
- i. Half a kilometre
 - ii. 1 kilometre
 - iii. 2 kilometres
 - iv. 3 kilometres
 - v. 4 kilometres and more
16. What work do you do to earn a living?
- i. Peasant farmer
 - ii. House Wife
 - iii. Petty Trade/Business
 - iv. Others (Specify).....
17. What is the average level of your family income on monthly basis in terms of South Sudanese Pounds (SSP)?
- i. Less than 200 SSP
 - ii. 200 SSP
 - iii. More than 200 SSP
18. Are postnatal care services in your area provided free of charge?
- i. Yes
 - ii. No
19. Does your family member or partner give you encouragement and support to attend postnatal care services?
- i. Yes
 - ii. No
20. If Yes, to question 19 above, what kind of support does your family members or partner give to attend PNC services?(multiple responses possible)
- i. Encouragement to attend
 - ii. Provision of transport
 - iii. Provision of funds to facilitate attendance
 - iv. Accompanying to health facility for PNC services
 - v. Others (Specify).....

Section III: Health system factors

21. Are mothers always provided PNC services timely once at the health facility?
- i. Yes
 - ii. No
22. If Yes, to question 21 above, how long on average does it take to receive PNC services?
- i. Half an hour (30 minutes)
 - ii. 1 hour
 - iii. More than 1 hour
23. In your opinion, what is the attitude of the health care workers during your last PNC visits?

- i. Poor
 - ii. Good
 - iii. Don't know (uncertain)
 - iv. Others (specify).....
24. Did you receive the kind of care / support you expected from the health facility during your last PNC visit?
- i. Yes
 - ii. No
25. If Yes, to question 24 above, kindly mention the kind of care / support you received from the health facility (*multiple responses possible*)
- i. Assessment for complications following childbirth
 - ii. Support for breast feeding/Check breasts to prevent infections
 - iii. Management of anaemia, promote nutrition, LLITN use, Vitamin A
 - iv. Promotion of immunization (TT, BCG, OPV, Penta valent)
 - v. Counselling on range of family planning options
 - vi. Counselling on danger signs and home care
 - vii. Referral for management of complications
 - viii. Others (specify)
26. What kind of health care provider would you feel more comfortable to consult for PNC services?(*multiple responses possible*)
- i. Midwife
 - ii. Clinical officer
 - iii. Doctor
 - iv. Traditional birth attendant
 - v. Herbalist
 - vi. Others (specify).....
27. How do you rate the attention given to you by the health care providers during your last PNC visits at the health facility?
- i. Not Satisfactory
 - ii. Satisfactory
 - iii. Very satisfactory
 - iv. Don't know / uncertain
28. In regard to information about maternal health during the postnatal period, what information did you receive concerning your own health care? (*multiple response possible*)
- i. Personal hygiene after child birth
 - ii. Any possible mood changes after childbirth
 - iii. Options of birth spacing
 - iv. Any possible danger signs following child birth
 - v. Others (specify).....
29. In regard to information and guidance about child care during the postnatal period, what information did you receive concerning your child's health care?(*multiple responses possible*)
- i. Early initiation and promotion of exclusive breastfeeding
 - ii. Promotion of warmth in the new born
 - iii. Promotion of hygiene and good skin, eye and cord care
 - iv. Counsel on danger signs in new born and home care
 - v. Promotion of child immunization
 - vi. Promotion of child growth monitoring
 - vii. Don't know

30. Kindly point out the persons responsible for providing health care services to women and new-born babies who are not able to turn up for PNC service provided at health facilities in your community.(multiple responses possible)

- i. Traditional Birth Attendant
- ii. Maternal Child Health Worker
- iii. Community Health Worker
- iv. Traditional Healer /Herbalist
- v. Others (Specify).....

31. In your own opinion, what do you think are the reasons why most women in your area do not access PNC services?(multiple responses possible)

- i. Long waiting time to receive services
- ii. Poor response from health service providers
- iii. Refusal by partner (spouse)
- iv. Occupation at home with extra responsibilities
- v. Poor quality of postnatal care services provided
- vi. Others (Specify).....

32. What do you think can be done to improve on the quality of PNC services provided in the health facilities in your area?(multiple responses possible)

- i. Ensure availability of drugs and equipment
- ii. Ensure availability of qualified health care service providers
- iii. Increase on the number of health care personnel
- iv. Others (specify).....

Thank you once more for your time and participation

Appendix IV: Key Informant Interview Guide

Determinants of postnatal care services utilization among women of reproductive age in Maridi County, South Sudan

Code Number:Date:

Cadre of health personnel:Health facility Type: PHCC /Hospital

Instructions: Kindly answer the below questions as honestly as possible. Thank you!

1. What do you understand by the term postnatal care (PNC) service?
2. What are the essential routine PNC services for all mothers provided at your facility? (*List all you know*)
3. What are the essential routine PNC services for all new-borns provided in your health facility?
4. What advise do you give to mothers at discharge following delivery concerning their own health?
5. What advise do you normally give to mothers at discharge following delivery concerning the health of the new-born baby?
6. Explain / rate the quality of postnatal care services provided in your health facility?
7. In your opinion, what kind of support do mothers get from their partners (spouses) during postnatal care visits?
8. Do all the mothers who attended antenatal care (ANC) services return for postnatal care following delivery?
9. In your opinion, what do you think are some of the possible reasons why most mothers in your area do not utilize PNC services in your health facility?
10. In your opinion, what do you think are the alternative health care services providers for mothers and their new-born babies in your community?
11. In your opinion, what do you think can be done to improve on the coverage of PNC services for mothers and their new-born babies in your health facility?

Thank you once more for your time and participation

Appendix V: Introduction Letter



making a difference to health care

Dean's Office-Institute of Public Health and Management

Kampala, 5th August 2016

To
THE DIRECTOR GENERAL
STATE MINISTRY OF
HEALTH AND ENVIRONMENT
MARIDI STATE

Approval is given
for the activity to go
ahead



Dear Sir/Madam,

RE: ASSISTANCE FOR RESEARCH

Greetings from International Health Sciences University.

This is to introduce to you **Aloysious Vuzi Gbali** Reg. No. 2014-MPH-RI-FEB-010 who is a student of our University. As part of the requirements for the award of a Masters Degree of Public Health, the student is required to carry out field research for the submission of a Research Dissertation

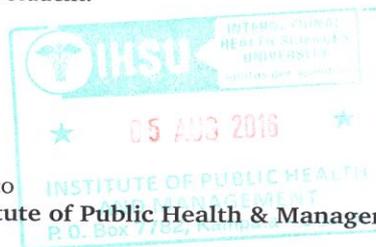
Aloysious would like to carry out research on issues related to: **Determinants of Postnatal Care Services Utilization Among Women of Reproductive Age in Maridi County, South Sudan.**

I therefore request you to render the student such assistance as may be necessary for his research.

I, and indeed the entire University are thanking you in anticipation for the assistance you will render to the student.

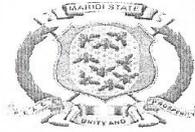
Sincerely Yours,

Alege John Bosco
Ag. Dean, Institute of Public Health & Management



The International Health Sciences University
P.O. Box 7782 Kampala - Uganda
(+256) 0312 307400 email: deaniphm@ihsu.ac.ug
web: www.ihsu.ac.ug

Appendix VI: Correspondence



MARIDI STATE
REPUBLIC OF SOUTH SUDAN
Ministry of Health & Environment
Director General's Office

Date: 16th August 2016

Ref:SMoH&E

TO:

The Ag. Dean,
Institute of Public Health & Management,
International Health Sciences University,
P.O. Box 7782 Kampala-Uganda.

Dear Sir/Madam,

RE: APPROVAL TO CARRY OUT FIELD RESEARCH IN MARIDI COUNTY

This serves to bring to your attention that approval has been granted for your student **Aloysious Vuzi Gbali** Reg. No. **2014-MPH-RL-FEB-010** to go ahead with the conduct of the field research in the field he has identified.

As stakeholders, we are very optimistic that, this activity is a step forward in informing policy decisions as far as the promotion of maternal and child health is concerned in which a lot of resources have continued to be invested.

Yours sincerely,

Daniel Lohure Alfonse
Director General, State Ministry of Health & Environment
Maridi State



cc. County Health Director, Maridi County Health Department

cc. File

