ASSESSMENT OF MATERNAL POSTNATAL CARE UTILIZATION AND ASSOCIATED FACTORS AMONG WOMEN WITH INFANTS AGED 2-6 MONTHS IN SHINYANGA RURAL DISTRICT, SHINYANGA REGION

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By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences

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October, 2010

CERTIFICATION

The undersigned certify that she has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled "**Assessment of maternal postnatal care utilization and associated factors among women with infants aged 2-6 months in Shinyanga Rural District, Shinyanga Region**", in partial fulfillment of the requirements for the degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences.

.....

Dr. Leyna, G.H. (MD, PhD)

(Supervisor)

Date.....07/10/2010.....

DECLARATION AND COPYRIGHT

I **Eliudi Saria Eliakimu,** declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other college or university for a similar or any other degree award.

Candidate's signature..... Date..07/10/2010

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DEDICATION

This dissertation is dedicated to my father, the late Eliakimu Iwaku Saria (Mzee Mbeseu), who passed away during the last week of module one of the Master of Public Health Course; and my mother Mangowi for her encouragement and prayers during the difficult times of loosing my father amidst studies. May the Almighty God rest the soul of my Father in Eternal Peace: Amen.

ABSTRACT

Maternal postnatal care (PNC) is an essential intervention towards reduction of maternal mortality. About 61 percent of maternal deaths occur in the postpartum period. Despite its importance, utilisation of maternal PNC has remained low.

A descriptive cross-sectional study was conducted to assess utilisation of maternal PNC among women with infants aged 2-6 months in Shinyanga Rural District, Shinyanga Region. The study was carried out in June 2010 and involved a sample of 386 women from 36 hamlets of 12 randomly selected villages (three hamlets per village). Face-to-face structured interviews were conducted to collect data on socio-demographic characteristics, elements of PNC provided, method of delivery, mother's awareness of PNC, postpartum morbidity symptoms, perceived health system factors and cultural belief.

The results revealed that the overall utilisation of maternal PNC services was 34.7%. Utilisation of PNC at day 7, 28 and 42 post-delivery was 31.6%, 11.7% and 3.6% respectively. Number of previous pregnancies; education level of mother and husband, were significantly associated with utilisation of maternal PNC at day 7 and 28 combined with 42. Only husband's education was significantly associated with overall PNC utilisation within 42 days post-delivery. In the multivariable logistic regression (LR) model, women with husbands with primary education and above were 2.4 times more likely to utilise maternal PNC within 42 days post-delivery compared to women with husbands without education (OR =2.4, 95% CI= 1.1-5.6).

About 14.8% and 15.6% of mothers received all the recommended PNC elements at day 7 and combined day 28 and 42 respectively. Awareness that maternal PNC is important was associated with utilisation within 42 days post-delivery. About 17.4% of mothers reported postpartum morbidity symptoms. Mothers who reported seclusion period of 15-30 days, were 0.4 times less likely to utilise maternal PNC compared to seven or less days (OR = 0.4, 95% CI = 0.1 - 0.9). The study concludes that utilisation of maternal PNC is low; and it is associated with husband's education and mother awareness on its importance. This study recommends creating awareness on importance of maternal PNC to both mothers and husbands through use of IEC materials; and sensitization of health care workers on the need for consistent provision of recommended maternal PNC service elements to all mothers.

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ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
ANC	-	Ante Natal Care
CI	-	Confidence Interval
DED	-	District Executive Director
DHS	-	Demographic and Health Survey
DMO	-	District Medical Officer
D-RCHCo	-	District Reproductive and Child Health Coordinator
FBO	-	Faith Based Organisation
FCI	-	Family Care International
FP	-	Family Planning
HCWs	-	Health Care Workers
HF	-	Health Facility
HIV	-	Human Immunodeficiency Virus
ICE	-	Information Education and Communication
ITNs	-	Insecticide Treated bed-Nets
MAQI	-	Maximizing Access and Quality Initiative
MDGs	-	Millennium Development Goals
MO$^{I}/_{C}$	-	Medical Officer In-charge
MoH	-	Ministry of Health
MoHSW	-	Ministry of Health and Social Welfare

MPH	-	Master of Public Health
MUHAS	-	Muhimbili University of Health and Allied Sciences
PI	-	Principal Investigator
PNC	-	Postnatal Care
PPC	-	Postpartum Care
PPH	-	Postpartum Haemorrhage
RAs	-	Research Assistants
RCHC-4	-	Reproductive and Child Health Card number-4
RCHS	-	Reproductive and Child Health Services
RMO	-	Regional Medical Officer
RNO	-	Regional Nursing Officer
SPSS	-	Statistical Package for Social Sciences (=Statistical Product and Service Solutions)
SVD	-	Spontaneous Vaginal Delivery
TBS	-	Tanzania Bureau of Statistics
WHO	-	World Health Organisation

DEFINITION OF TERMS

Cultural beliefs on postnatal care in the context of this study refer to informationwomen, other family members and community have regarding postnatal care; and how the mother should behave or be handled during the 42 days after delivery.

Cultural practices in the context of this study cultural practices refers to things done traditionally to care for the mother such as use of herbs, certain type of water (hot or cold), traditional dances and in some places restriction from bathing for the period of strict confinement (usually three to eleven days).

Maternal postnatal care (or postpartum care) refers to the care provided to the mother by skilled health personnel in postnatal period for reasons related to the birth (WHO, 2001). In Tanzania, postnatal care from a skilled health personnel refers to care provided in a health facility.

Maternal postnatal morbidity refers to complications reported to have been experienced by a woman post-delivery that have arisen during delivery or the postpartum period (El-Gilany and Hammad, 2008).

Utilisation of maternal postnatal care (*outcome variable*) refers to a mother who has received one or more postnatal check-ups by health care personnel in a health facility (El-Gilany and Hammad, 2008).

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

There is a need to focus on maternal postnatal care since many of the maternal deaths are concentrated on the first week postparpartum. Maternal postnatal care services are often either not available, or they are not used in the postpartum period. Maternal postnatal (or postpartum) period can be defined as the time interval between one hour after delivery of placenta to 42 days post-delivery, (WHO, 1998). It is a period where many maternal deaths occur, hence the need for special attention in order to improve the health outcome of mothers after delivery. Maternal postnatal (postpartum) care refers to the routine care given to the mother in the postpartum period to ensure her of good physical, mental, and social wellbeing; provided by skilled personnel for reasons related to the delivery (WHO, 2001). Maternal postnatal care has several benefits routed from the routine service elements that a mother should get upon attendance to health facilities as per recommended schedule (within two days; 3 – 6 days; and 7 – 42 days), (WHO, 1998). At each of the visits, WHO recommended the following to be provided to a woman attending for PNC by a skilled health worker (WHO, 1998):

(i) **Care within two days post-delivery**, the mother should:

- Be assessed for general wellbeing;
- Be assessed for bleeding and pain;
- Be checked her blood pressure;
- Have abdominal examination (fundal height, distended urinary bladder); and
- Be advised on warning signs such as: heavy vaginal bleeding, foul smelling vaginal discharge, and signs of pre-eclampsia and eclampsia.

(ii) **During 3 – 6 days,** the mother should:

- Be assessed for bleeding, foul smelling vaginal discharge (lochia) and pain;

- Be checked her temperature and blood pressure;
- Be examined and advised on breast care;
- Have abdominal examination; and
- Be assessed for her mood.

(iii) **From 7 – 42 days**, a woman should be assessed for:

- Recovery: asked about her wellbeing and possible complaints or problems; perform general examination; examine the abdomen; and vaginal examination if necessary, but otherwise perineal examination for healing of large tears or episiotomy is adequate.
- Anaemia including haemoglobin estimation and prescription of iron and folic acid tablets if required.
- Family planning needs: asked if future pregnancies are planned, hence, she should be provided with information on family planning methods and options available.

In Tanzania, the national guidelines on maternal PNC are still in early development stages (recent draft dated September 2007). The current guidelines in use for provision of maternal PNC are stipulated in the Reproductive and Child Health Card number-4 (RCHC-4). According to the RCHC-4 card, the mother's visits are scheduled at day 7, 28 and 42 post-delivery; and in each of the visits the following are required to be provided to mothers by health care workers and documented on the card (MoHSW, 2006):

- Measuring body temperature, blood presure, and estimation of haemoglobin level.
- Assessment of the breasts: milk flow, baby suckling, condition of the nipples, whether breasts are engorged or have an abscess.
- Assessment of breastfeeding and provision of advice.
- Abdominal examination: for involution of uterus, severe pains or any other problems.

- Vaginal examination:
  - Perineum: to see if there was perineal tear or she had episiotomy; if the wound has healed, there is pus or it has gaped.
  - Vaginal discharge: if lochia has foul smell, its volume and colour.
- Assessment for psychological state: her mood to see if she has developed depression or psychosis.
- Counselling for family planning methods.
- Provision of nutritional supplements: ferrous sulphate and folic acid.
- Provision of vitamin A (if not given at delivery).
- Continuation of Tetanus Toxoid vaccination as scheduled.
- Treatment for any other problems identified.
- Reminding on the next PNC follow-up visit.

The aims of care in the postpartum period include provision of the following service elements: (i) prevention of complications, (ii) early detection of complications, (iii) treatment of complications, (iv) referral to specialist care where needed, (v) counselling on baby care, (vi) breastfeeding, (vii) maternal nutrition, (viii) contraceptive methods, and (ix) provision of nutritional supplements where needed (MoH, 2000). In each of the elements, the following actions are essential (MoH, 2000; Warren et al, 2006):

(i) Prevention of complications

This element is more related to the conduct of delivery, especially related to: the active management of third stage of labour (including use of uterotonic drugs); use of aseptic techniques by health workers conducting/assisting the delivery; and assessment of mother's immediately after delivery by skilled health worker. Proper management of the third stage of labour in which oxytocin is administered with the delivery of the anterior shoulder; or after delivery of the placeta, prevents postpartum haemorrhage (PPH), (Maughan et al, 2006).

(ii) Early detection of complications

Health worker should obtain labour and delivery history of the mother in order to get a clue of possible complications likely to arise. Health worker also should: actively probe for

symptoms of complications (excessive bleeding; foul smelling vaginal discharge; fever; severe abdominal pain; swollen hands, face, and legs with severe headaches or blurred vision); actively ask all mothers who visit a health facility for PNC within 42 days of delivery; and perform physical examination including abdominal, vaginal and breast examination.

(iii) Treatment of complications

Treatment of postnatal complications depend on the capacity and the level of care, hence, for severe complications the dispensary and health centres may need to refer to a hospital where facilities, supplies and skills are available. Dispensaries will treat complications which are within their capacity and refer the complicated ones to health centres; while health centres are expected to be able to treat most of complications including initiation of treatment of thromboembolic disease, and refer difficult ones to hospitals. At hospital level, severe complications are managed, such as postpartum haemorrhage (PPH) requiring blood transfusion and/or hysterectomy (removal of the uterus). In all levels of care, basic supplies including antibiotics, and intravenous fluids should be available; and at health centre and hospital level, magnesium sulphate – used for treatment of eclampsia should be available.

(iv) Referral to specialist care where needed

Referral chain starts at community level where trained community worker refers women to a health facility within two days after delivery; and higher levels from dispensary to hospital the referral depends on the severity of complication as assessed by health worker and the capacity to manage the complication.

(v) Counselling on baby care

Every woman after delivery should be provided with information on how to care for the newborn. The counselling should cover the following: importance of exclusive breastfeeding; good skin, eye and cord care; ensuring warmth of the baby; and knowledge of the danger signs of a baby. These dangers signs for the newborn that the mother should be told of include: convulsions; movement only when stimulated or no movement even

when stimulated; not feeding well; fast breathing, grunting, or severe lower chest in-drawing; fever; and bleeding. (Warren et al. 2006).

(vi) Breastfeeding

Breast feeding information to the mother should cover the following: early initiation of breastfeeding; positioning and attaching the baby to the breast; the need to avoid early supplementary foods, breastfeeding in HIV era and options available for mothers who are infected and exposed newborns; and care of the breasts.

(vii) Maternal nutrition

Usually the energy needs of the mother increase after delivery due to breastfeeding. A mother is supposed to increase the amount she eats to 10-20 percent depending on her physical activities. Mothers should be advised to eat more staple foods and other foods locally available which she can afford.

(viii) Contraceptive methods

After delivery planning for future pregnancies is very important, hence women should be counselled on available contraceptive methods; and be made available to her when she needs. The contraceptive methods are mainly in three groups: hormonal methods (combined oral pills; progestogen only pills; intra-uterine devices; implants; and injectable – Depo-Provera); barrier methods (condoms – male and female; diaphragm); and surgical method (bilateral tubal ligation and for her partner – vasectomy).

(ix) Provision of nutritional supplements where needed

Mothers during postnatal period should be assessed for signs of anaemia, deficiency of vitamin A and iodine. Where required, a mother should be provided with iron and folic acid supplementation for correction of anaemia and vitamin A deficiency. For iodine deficiency use of iodized salt or iodized oil early after delivery is essential.

Failure of mothers to attend for routine postnatal care may lead to mortality, morbidity and unplanned early pregnancy after delivery. Maternal postnatal care is a concern because of potential risk for maternal deaths especially in the first week after delivery as a result of

complications of delivery. Studies that have focused on maternal postnatal care have found it to be a critical step and opportunity to curtail maternal deaths worldwide. Risk of postpartum deaths persists up to 42 days, although it has also been shown to go beyond 42 days for up to six months post-delivery, (Ronsmans et al, 2006). In Tanzania, it was found that between 40.2% and 48.6% of women die in the postpartum period; with postpartum haemorrhage being the leading cause of mortality (Mswia et al, 2003).

Maternal postnatal care utilization in Tanzania faces a number of challenges including socio-cultural factors; lack of understanding among mothers on the importance of postnatal care; inability of mothers to differentiate it well with baby monitoring as well as immunization schedule follow-ups; inadequate equipment, supplies, and human resources; and lack of routine postnatal care provision to mothers by health care workers (Mrisho et al, 2009). Many women in Tanzania (53%) do not deliver in health facilities and very few (17%) attend health facilities for postpartum care (NBS, 2005). Such situation complicates the efforts to curtail maternal mortality in the country through utilisation of maternal postnatal care.

The Ministry of Health and Social Welfare (MoHSW) through the Reproductive and Child Health Services (RCHS) Section has done a lot of efforts to improve all aspects of RCHS including postpartum care. These efforts include development of guidelines and the road map strategic plan (one plan) for 2008 – 2015, with support of development partners. The Package of Essential RCHS in Tanzania outlines actions to be done by health workers at community, dispensary, and health centre and hospital level for postpartum care (MoH, 2000) as follows:

(i) Community level

The Council Health Management Team (CHMT) in collaboration with community leaders need to identify focal community member to be trained on postnatal care services (MoHSW, 2007). Village Government and Ward Development Committee (WDC) have the responsibility for planning and conducting continuum of care, mobilising resources and

supporting community based worker to provide PNC (MoHSW, 2007). A trained postnatal care provider at community level is expected to:

- Identify postnatal care (PNC) mothers at the catchment area.
- Provide follow up care and support between postpartum clinic visits and refer for problems and complications.
- Refer for first postpartum care visit within 48 hours of delivery.
- Liaise with village government and health service providers.
- Keep records on postnatal mothers in the catchment area.
- Collaborate with other community health workers to support postnatal mothers with special needs.
- Educate community on the importance of PNC services, through provision of Information, Education and Communication (IEC) to women, men, families and communities about: the needs of postpartum women; breastfeeding; immunisation; danger signs for mother and baby; and the importance of social support.
- Promote beneficial traditional practices and discourage harmful ones.

(ii) Dispensary level

Health workers at dispensary level, when attending women coming for postpartum care have to do the following actions:

- Provide Information, Education and Communication (IEC) to women and their families about the needs of postpartum women, breast feeding, immunization, danger signs for mothers, and social support.
- Obtain pregnancy and birth history and perform physical examination of the mother
- Recognize problems or complications early and manage appropriately or refer for further care.
- Provide vitamin A, other micronutrient supplementation when appropriate.

- Provide counselling about: breastfeeding; maternal nutrition; contraception and resumption of sexual activity; and other reproductive health concerns such as HIV and AIDS.

(iii) Health Centre level

At this level, on top of what dispensary health workers do, the following actions are expected to be done to mothers:

- Management of postpartum problems or complications including postpartum haemorrhage, puerperal infections, urinary tract complications, puerperal mastitis and psychological problems.
- Initiation of management of thromboembolic disease.
- Recognition of other problems or complications early and refer all complications for further care as necessary.

(iv) Hospital level

Hospital level is where severe complications which are not tackled at dispensary and health centre are managed. On top of actions done at health centre, health workers at hospitals are expected to:

- Manage severe postpartum problems such as postpartum haemorrhage requiring transfusion and / or hysterectomy.

It is important that service elements making up postpartum care are explained to mothers during antenatal care (ANC) clinic visits, and after delivery before discharge; through counselling and use of IEC materials. When the mothers are aware, they can seek the services during postnatal period as routine (MoH, 2000). The Ministry is also committed to strengthen postnatal care services as one of the components for promoting safe motherhood (MoH, 2003). These safe motherhood components are: care during antenatal; care during childbirth; care in pueperium; obstetric emergency; post-abortion care; and newborn care.

1.2 Problem Statement

There is underutilisation of maternal postnatal care (PNC) services in Shinyanga Region; and the data available on utilisation of maternal PNC is unreliable. The data available from the Tanzania Demographic and Health Survey (TDHS 2004-05) is for the women who delivered at home; while the data from health facilities covers those who deliver in a health facility. Nationally, the utilisation of PNC is 17% among women who delivered at home. Of those 17% who received postnatal check-up: 13% receive postnatal care within two days; two percent within 3-6 days; and other two percent from 7-41 days post-delivery as recommended by WHO. For Shinyanga Region, according to the TDHS 2004-05, utilisation of maternal PNC is very low: only 1.9% of mothers who delivered at home received PNC within two days as recommended (NBS, 2005).

Timing for maternal PNC visit in Tanzania has been put at day 7, 28 and 42 post-delivery (MoH, 2000). Maternal PNC utilization for Shinyanga Region using health facilities data for 2009 was 31.2% (day 7), 28.5% (day 28), and 19.4% (day 42). In Shinyanga Rural District utilization of maternal PNC in 2009 was 28.4% (day 7), 25.3% (day 28), and 18.8% (day 42). (S-RCHS report, 2010). These health facility data were not disaggregated with respect to place of delivery; and hence, taking into account that the TDHS 2004-05 data was for those who delivered at home, it becomes a challenge in deciding on which data to rely on when talking of maternal PNC utilisation.The low maternal PNC utilization in Tanzania could be contributed by lack of awareness among mothers on maternal PNC, financial constraints, health system factors, cultural beliefs and practices, type of delivery, mothers' perceived postnatal morbidity, and demographic factors (Mrisho et al. 2009).

Many mothers go for postnatal clinic to send their children for growth monitoring and immunisation services. Also health care workers unless there is a serious complaint from mothers, usually focus on the newborn (Manji, 2009; Mrisho et al. 2009). This may lead to wrong documentation that women have received postnatal check-up while actually it is lacking. Little information was available on the factors influencing utilisation of maternal PNC in Shinyanga Region. Therefore, this study was conducted to assess maternal PNC utilisation and associated factors in Shinyanga Rural District, in Shinyanga Region.

1.3 Rationale of the study

Care of mothers during postpartum period (which covers time interval from one hour after delivery of the placenta to 42 days post-delivery) is very crucial because it is during this period that many maternal deaths occur (Finger, 1997; de Bernis et al. 2003; Mswia et al. 2003). In Tanzania, maternal mortality is a public health concern with figures stagnating over recent years (578 deaths / 100,000 live births), in spite of increased numbers of health facilities.

It was important to conduct this study in order to contribute towards understanding of factors associated with women's underutilisation of maternal PNC services in Shinyanga Rural District. Also, the study is pertinent as we count down towards achievement of the Millenium Development Goals (MDGs) by the year 2015. Therefore, the findings from this study will contribute in designing interventions to improve maternal PNC utilization in Shinyanga Rural District and the region as a whole.

1.4 Research Questions

1. What is the proportion of women who use PNC at day 7, 28 and 42 post-delivery in Shinyanga Rural District?
2. What elements of postpartum care do mothers who attend for PNC receive?
3. What are the factors affecting mothers' utilization of postpartum care?
4. Are there traditional and alternative practices among mothers taken as part of maternal postnatal care that affect utilization?
5. What are common perceived postpartum morbidities affecting mothers in postpartum period and their influence on utilization of postnatal care available?

1.5. Conceptual framework: Low maternal postnatal care utilization

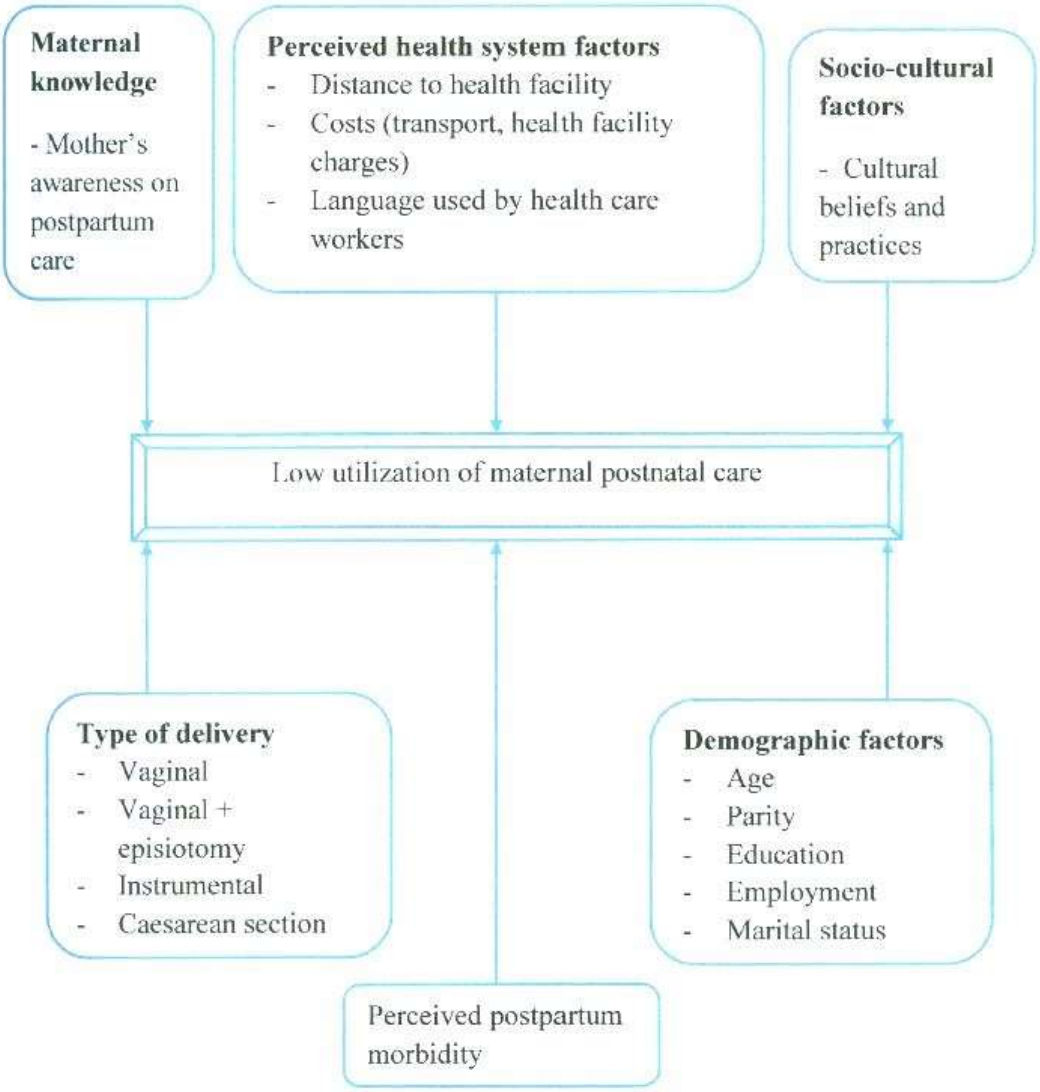


Figure 1: Conceptual framework on utilisation of maternal PNC

The factors which explain the utilisation of maternal PNC services in Shinyanga Rural District are summarized in figure 1. Underutilisation of the maternal PNC services is hypothesized to be influenced by demographic factors, mode of delivery, mother's awareness on maternal PNC, perceived postpartum morbidity, perceived health system factors, and cultural beliefs and practices.

- ***Demographic factors***

Demographic factors are good predictors of utilisation of maternal PNC services.

(i) *Age of mother and mother's age at marriage*: age of mother and age at marriage have been reported to influence utilisation of maternal PNC. Older women are more likely to utilise maternal PNC services compared to younger women. Likewise, women married at an older age (above 16 years) are more likely to utilise PNC services compared to those married at a younger age. Marriage at an age of above 16 years may be taken as aproxy indicator of a woman's educational attainment.

(ii) *Parity*: parity which refers to the number of viable children a woman has had previously; may affect utilisation of maternal PNC. Having more children may cause resource constraints which has a negative effect on utilisation of maternal PNC services. Also, women with large number of children may underutilize maternal PNC services because of too many demands on their time causing them to forgo seeking PNC services.

(iii) *Education*: education level of mother and that of husband have been shown to influence utilisation of maternal PNC services. Educated women are able to make appropriate decisions about their own health including care seeking. Husbands in developing countries like Tanzania, act like gate-keepers for women health care seeking decisions. Women of husbands with formal education are more likely to utilise maternal PNC services more comprated to women whose husbands have no education.

(iv) *Employment status*: employment status of a woman and that of husband are essential for mothers to afford effective PNC services. Husbands with good employment can better assist their wives to access PNC services including meeting transport and other costs. Unemployed women and women with unemployed

husbands are less likely to utilise PNC services compared to those with employment or those with employed husbands. Marital status influences women utilisation of maternal PNC services. Married women utilise PNC services more compared to those who are not married.

- ***Type of delivery***

Mode of delivery of the mother can predict whether a woman will utilise maternal PNC or not. Women with spontaneous vaginal delivery (SVD) are less likely to utilise PNC compare to those who deliver by caesarean section or episiotomy. Women having tear, episiotomy or caesarean section have been reported to utilise maternal PNC more compared to those who delivered by SVD, probably due to feelings of having a problem (the wound).

- ***Mother awareness on maternal postnatal care***

Awareness of mothers on maternal PNC is important for them to utilise maternal PNC services routinely. It is assumed that women, who know the importance of maternal PNC services to their health, are more likely to utilise the services compared to those who see maternal PNC as not important. Mothers who are aware of the maternal PNC are also more likely to demand the services when they visit PNC clinics even if they donot have any symptoms.

- ***Perceived postpartum morbidity***

Postpartum morbidity perceived by mothers can influence their decision to seek maternal PNC services from health facilities. Complications arising during delivery and immediate postnatal period can manifest in postpartum period affecting the health of mother; if she does not seek care from health facilities. It is assumed that mothers with perceived postpartum morbidity are more likely to utilise maternal PNC services compared to those without any perceived symptom.

- ***Perceived health system factors***

Perceived health system factors – distance to health facility, transport costs, health facility charges, and language used by health workers, can influence utilisation of maternal PNC services.

(i) *Distance to health facility*: the distance that a mother has to travel to reach a health facility is a primary determinant for her utilisation of maternal PNC services. Mothers living within a proximity to health facilities are more likely to utilise maternal PNC services compared to those who live far from a health facility.

(ii) *Transport costs*: long distance to health facilities also determine the transport costs involved in reaching a health facility. If transport costs are expensive such that a mother cannot afford, then it is unlikely that she will utilise maternal PNC services.

(iii) *Health facility charges*: National Health Policy states clearly that the services to women during pregnancy, labour, and postnatal are free of charge. However, it has been reported that some women are charged some money when they go to a health facility to seek PNC care services. Such health facility charges may affect mother's utilisation of the maternal PNC.

(iv) *Language of health workers to mothers*: health workers may use bad language to mothers who attend in health facilities for PNC. If a health care worker uses bad language to a mother, then it may deter her from attending to health facility in future to utilise maternal PNC services.

- ***Cultural beliefs and practices***

Socio-cultural factors may create a social curtain which makes women unable to seek maternal PNC services. It is assumed that cultural belief on maternal and newborn confinement for the 40-days post-delivery affects mother utilisation of PNC services; because they are not allowed to go out of their houses. Therefore, where women strongly observe seclusion practices, then they are less likely to utilise maternal PNC services. Practices such as use of local herbs to treat certain postnatal complications and care-seeking from traditional healers, hinder women perceived need for care from health facility. In this study, influence of seclusion on utilisation of maternal PNC was assessed.

1.6 Objectives

1.6.1 Broad objective

To assess maternal postnatal care utilisation among women with infants aged 2-6 months in Shinyanga Rural District, Shinyanga Region.

1.6.2 Specific objectives

1. To determine the proportion of women who utilise postnatal care at 7, 28 and 42 days and associated demographic factors in Shinyanga Rural District, Shinyanga Region.

2. To identify the elements of postpartum care provided to mothers during postnatal visits in Shinyanga Rural District, Shinyanga Region.

3. To determine association between type of delivery and utilisation of maternal postnatal care in Shinyanga Rural District, Shinyanga Region.

4. To determine mother's awareness on postpartum care, perceived postpartum morbidities, perceived health system factors and cultural beliefs in Shinyanga Rural District, Shinyanga Region.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview of maternal postnatal care

Postpartum period is one of the key time moments for reproductive life cycle of women. Majority of morbidity and mortality related to pregnancy occurs during this period, however about 70% of women in developing countries do not receive PNC (Finger, 1997; WHO, 1998; WHO, 2006; Warren et al, 2006; MAQI, 2008). The Tanzanian Demographic and Health Survey (DHS) of 2004-05 revealed that 53% of deliveries took place at home and that 83% of those women did not receive PNC. For women who deliver in health facilities, they are often discharged before 24 hours post-delivery hence denying them important care at the riskiest time of postpartum period (Mrisho et al, 2009). In Ethiopia, it was noted that less than three percent of women who delivered outside a health facility received postnatal care (Mekonnen and Mekonnen, 2002).

Recently, more attention has been drawn on the morbidity and mortality conditions in the postpartum period. The World Health Organisation (WHO) has reviewed its classification of maternal mortality causes. In these renewed efforts WHO working group on maternal mortality and morbidity classifications, has put deaths from puerperal psychosis and postpartum depression in the category of direct maternal deaths. The aim for the reclassification of maternal mortality causes is to ensure that country health systems work effectively to reduce complications of childbirth (Pattinson et al, 2009).

In order to improve maternal postnatal care services in Tanzania, the following are required: mothers and health care workers to understand the importance of postpartum care; increased knowledge and skills of health care workers, including routinely providing care to mothers coming with their newborn to clinic even if they don't present with complaints; availability of equipment, supplies and adequate number of skilled staff; awareness of mothers regarding their need for care during postnatal period; availability of clear postnatal guidelines; and ensuring that mothers routinely seek and utilise PNC during

postpartum period (Mrisho et al. 2009). Most of the recommended needs focus on aspects affecting routine utilization of PNC services that are important elements in improving maternal health services. Routine utilization of maternal PNC by mothers has been found to be influenced by some demographic factors including women employment status; perceived morbidity by mothers (reported symptoms); type of delivery (vaginal, assisted, or caesarean section); women awareness about importance of postpartum care and its contents; cultural beliefs and practices; and perceived health system factors (including distance to health facilities, inadequate information about postpartum care, bad language of health workers and time spent waiting for services). (Cofie, 2007; Mrisho et al, 2009).

2.2 Importance and recommended care content of maternal postnatal care

Maternal postnatal health outcome depends on how the delivery process was conducted. The effects of complications of delivery are felt immediately after birth and mostly within the first 24 hours. If there was poor management of the third stage of labour, then postpartum haemorrhage (PPH) is most likely. A study in Bagamoyo found that 25% of maternal deaths were caused by PPH with or without retained placenta (MacLeod and Rhode, 1998).

The importance of maternal postnatal care is reflected on the risk of maternal deaths in postpartum period. The risk of maternal deaths is very high on day one and decreases gradually to one week and up to 42 days. However, evidence exist that risk of death increases up to six months postpartum (Ronsmans et al, 2006). About 45% of maternal deaths occur within first 24 hours of delivery and another 23% occur between 2-7 days (Li et al, 1996; MAQI, 2008). A meta-analysis of studies on maternal mortality across several developing countries revealed that 61% of maternal deaths occurred in postpartum period (Li et al, 1996). The deaths decreased with increasing number of days post-delivery; 44.9% (day 0-1), 23.2% (day 2-7), 14.3% (day 8-14), 7.8% (day 15-21), 6.2% (day 22-30), and 3.6% (day 31-42). This shows that the first 7 and 14 days postpartum are responsible for about 68% and 82% respectively of maternal deaths (Li et al, 1996). Mswia et al (2003) observed that 40.2% to 48.6% of maternal deaths in Tanzania occurred during the

postpartum period. These findings underscore the need of having an effective maternal PNC check-up in health facilities.

It is important for mothers to seek postpartum care immediately when complications arise. Studies have found that postpartum complications kill mothers very fast (AbouZahr and Berer, 2000). For instance, postpartum haemorrhage kills within two hours of onset; eclampsia kills within two days; and puerperal sepsis kills within six days of onset (AbouZahr and Berer, 2000). The Tanzania Mainland annual statistical abstract revealed that in 2006, post-partum haemorrhage (PPH) and puerperal sepsis accounted for 11.5% and 8.5% of the total maternal deaths respectively (MoHSW, 2008). Shinyanga Region reported 235 (5.4%) cases of PPH out of the total reported 4,316 cases nationally for 2006 (MoHSW, 2008).

A set of proven interventions to be provided by health care workers to all mothers after delivery have been agreed. These interventions include: (1) advice on danger signs (such as excessive bleeding, foul smelling vaginal discharge, and fever), home self-care, nutrition, safe sex, breast care, contraception, exclusive breast feeding, newborn care, and use of insecticide treated nets (ITNs); (2) provision of iron-folate supplementation (where indicated); (3) detection and referral of complications; (4) procedures in the control of haemorrhage from non-contracting uterus; and (5) indications for use of various medications (Campbell et al, 2006). These five interventions that should routinely be provided to pregnant women in postpartum period have also been summarised into three broad areas focusing on: (1) promotion of healthy behaviours; (2) recognizing danger signs; and (3) counselling for family planning, (Warren et al, 2006; Mrisho, et al 2009).

Specifically, routine maternal PNC include the following elements (Warren et al, 2006):

- Check for bleeding and temperature;
- Support breastfeeding and check breasts to prevent mastitis;
- Manage anaemia, promote nutrition, give vitamin A supplementation, and provide insecticide treated bed nets where indicated;
- Complete tetanus toxoid immunisation, if required;
- Provide counselling and a range of options for family planning;

- Refer for complications such as bleeding, infections, or postpartum depression;
- Counsel on danger signs and home care; and
- Early identification and referral or management of emergencies for mothers who have life-threatening complications.

Key danger signs which health care workers are required to counsel mothers on, include the following (Warren et al, 2006):

- Excessive bleeding;
- Foul smelling vaginal discharge;
- Fever with or without chills;
- Severe abdominal pain;
- Excessive tiredness or breathlessness;
- Swollen hands, face and legs with severe headaches or blurred vision; and
- Painful, engorged breasts or sore, cracked, bleeding nipples.

In Tanzania, the Ministry of Health (MoH) defined a package for postnatal care at all levels from community to hospital level emphasizing on required inputs, actions to be taken and expected outputs (MoH, 2000). The package however is not clearly detailed to provide health care workers with the steps on how-to carry-out the outlined actions. Such situation is likely to contribute to health care workers' inability to offer recommended maternal PNC to mothers when they visit clinics. In places where the postnatal package has been revisited, majority of women (75-96%) received information on danger signs and had physical examinations which included: general examination; pulse, blood pressure, and temperature measurement; abdominal palpation; and breast examination (Warren et al, 2008).

2.3 Schedule of maternal postnatal care visits

There has been no straight foward consensus on the schedule; however WHO used a formula of 6 hours, 6 days, 6 weeks and 6 months to set the recommendation of timing (WHO, 1998). The World Health Organisation (WHO) recommends at least three checkups, the first visit within two days post-delivery, second visit within 3-6 days, and a third visit from 7-41 days (WHO, 1998). In Tanzania, the MoH scheduled the maternal PNC visits at day 7, 28, and 42 post-delivery basing on the recommendations of World Health Organisation.

2.4 Women utilisation of postnatal care

Utilisation has been defined generally as the extent to which a given group uses particular service in a specified period (Mosby's Dental Disctionary, 2008). In the context of utilisation of postnatal care, it refers to a mother who receives one or more postnatal check-ups by health care personnel in a health facility (El-Gilany and Hammd, 2008). Utilisation of health services is a complex behavioural phenomenon; it is related to availability, quality and cost of services, social structure, health beliefs and personal characteristics of the users (Chakraborty et al, 2002; Chakraborty et al, 2003). In Nepal it was reported that utilisation of PNC is 34% within 42 days after delivery and 19% within 48 hours (Dhakal et al, 2007). In Saudi Arabia, it was reported that 48.3% of mothers received one PNC check-up, while 1.6% received two PNC check-ups (El-Gilany and Hammd, 2008).

The literature is scarce regarding utilisation of maternal postnatal care in Tanzania. Data from Tanzania Demographic and Health Survey (DHS) shows that nationally 17% of women who deliver at home, attend a health facility for postpartum check-ups; while in Shinyanga Region it was 1.9 percent (NBS, 2005). The data available from health facility does not disaggregate the information on attendance according to place of delivery.

In a study conducted in Temeke Municipality in Dar es Salaam, only 23.0% of the mothers interviewed attended postpartum clinic (Mmbaga, 2003). In an intervention to increase skilled care in childbirth in Tabora Region, percent of women who received postpartum

check-up within 6 weeks between baseline and after implementation of the intervention (end-line) increased by 2 to 3 percent. In Igunga District it increased from 24% to 27% and Urambo District, increased from 11% to 13% (FCI, 2007). In a study conducted in Lindi Rural and Tandahimba Districts in southern Tanzania, it was reported that there was total lack of PNC for mothers (Mrisho et al, 2009). A recent study in six districts of Tanzania found that only six percent of mothers came within one week post-delivery for their check-up; while 23% between one to four weeks and 71% came after four weeks. These women were mainly attending PNC clinics to send their children for immunization instead of receiving maternal postnatal care (Manji, 2009).

2.5 Awareness of mothers on postpartum care and postnatal care elements provided to them

Lack of awareness and / or no perceived need for postnatal care by women and their families contribute to under-utilisation of PNC (Dhakal et al, 2007). In rural Uganda, most mothers were unaware that they had to return to the hospital after delivery. The reason for this was that health workers did not tell them to return when discharged; instead they only told them about immunizations (Nabukera et al, 2006).

Women also misunderstand PNC to be a service for children and thus not able to distinguish the services meant for them with the immunization services covered under Expanded Programme on Immunization (Mrisho et al, 2009). In Uganda, 86 percent of respondents thought that postpartum care was used only to immunize babies (Nabukera et al, 2006). Also, Waiswa et al, (2008) reported that in rural Uganda, most of respondents were not aware of the need for postnatal care attendance except for imunisation of children. Another study has shown that women in rural villages do not attend for postnatal check-up because they considered it to be essential only in case of complications (Kabakian-Khasholian et al, 2000). While other women inspite of being willing to have check-ups, they doubt its importance in the absence of any signs or symptoms (Kabakian-Khasholian et al, 2000).

Many service providers and families focus on the wellbeing of the baby and may not be aware or able to assess the importance of women's complications such as postpartum bleeding (WHO, 2005). These mothers should be encouraged to request postpartum services during children immunisation visits, even if they do not have any postpartum warning signs. In addition media messages need to focus on use of postnatal care services (Shaheen et al, 2003).

The elements of maternal postnatal care provided to mother vary in different places of the country. In Igunga and Urambo districts, less than two thirds of mothers reported receiving abdominal examination, breast examination and vaginal examination; being asked about vaginal discharge, bleeding or being advised about family planning (FP); receiving any family planning method; being advised about breastfeeding or infant care (FCI, 2007). The proportion of PNC elements provided to the mothers in the two districts ranged between 10.0% and 62.0%, in Igunga District; and between 21.0% and 58.0%, in Uranbo District. For each of the elements, the proportion of mothers reporting receiving them (at end-line) in the two districts was: abdominal examination (10.0% and 21.0%); breast examination (53.0% and 49.0%); vaginal examination (48.0% and 47.0%); asked about vaginal discharge (47.0% and 42.0%); asked about bleeding (40.0% and 38.0%); advised about family planning (52.0% and 49.0%); received family planning method (62.0% and 56.0%); advised about breastfeeding (55.0% and 58.0%); and advised about newborn care (53.0% and 54.0%). (FCI, 2007).

2.6 Influence of cultural beliefs and practices on utilisation of postnatal care

Women do not and probably often cannot embark on care seeking paths even when they know that they have life threatening condition. For many women, poverty combined with cultural constraints constructs a social curtain around them which health services can not penetrate (WHO, 2005). The socio-cultural practices around childbirth such as maternal seclusion after delivery and cultural beliefs in a community play a vital role in non-utilisation of maternal postnatal care services (Mesko et al, 2003; Dhakal et al, 2007; Mrisho et al, 2008).

Some of the mothers may opt to seek care from traditional healers instead of health facility. It is reported that about 13% of women who had experienced postpartum health problem sought care from a traditional healer (Dhakal et al, 2007). This may result from a lack of: accessible health services; skilled health workers in nearby facilities or if available their attitude (language); infrastructure inability to pay for transport costs where available (Dhakal et al, 2007). In rural Uganda cultural barriers such as: mothers' having not attended such check-ups (a belief that their mothers always did the right things, hence if they didn't attend for PNC, then it's not important); and use of herbs for babies, made the mothers not to use postnatal services (Nabukera et al, 2006).

Tanzania faces a number of non-health system factors in endeavours to achieve the millennium development goal five (MDG 5); including poor health seeking behaviour, and social-cultural beliefs and practices (MoHSW, 2006). Mothers who give birth at home are encouraged to go to a health facility for PNC check-up, but this is often not feasible due to economic barriers or cultural taboos. The mother's can't leave their houses during the period of postnatal seclusion and hence miss the check-up (Manji, 2009).

In some parts of southern Tanzania, the first week between 3-7 days is the time for umbilical cord to fall-off; hence, it requires intense seclusion for both mother and the newborn. The mother watches the baby closely to ensure cord does not fall off without her knowledge as people can steal it and harm the baby. In this community, the whole period of mother and baby confinement indoors is 40 days. Apart from protecting the newborn, seclusion allows mothers to regain energy lost during delivery; and become purified after the perceived pollution of pregnancy. This restriction of the movement of mother outside the home is potentially risky and potentially limiting factor for maternal PNC seeking (Mrisho et al, 2008).

Similar situation is observed in Bangladesh where the first 7-9 days are periods of intense seclusion corresponding to when the cord is usually cut by mother. The seclusion period can last up to 40 days. Both mother and child are considered vulnerable to malevolent forces, cold winds, foods, and water. The mother and the baby are considered to be in the

state of ritual pollution or impurity that begins immediately after birth or exposure to blood or other birth fluids. Through restrictions on movement, the mother and the newborn are regarded as being protected. (Winch et al, 2005). The period covering the first three to eleven days, are usually the days in which seclusion is strongly observed for both mother and her newborn (Gideon, 1962; Mesko et al, 2003; Winch, 2005; Mrisho et al, 2008). In some communities, women refrain from telling their husbands of fever episodes for up to 3-4 days. As a result of seclusion practices, women fail to recognize illness early and seek care outside the household (Mesko et al, 2003). This strong cultural belief can explain the low turn up of mothers who deliver at home for PNC check-up within two days as recommended by the WHO.

2.7 Mode of delivery and utilization of postnatal care

In a survey of six districts (Babati, Kahama, Kilwa, Manyoni, Njombe, and Nkasi) in Tanzania, those who came back to the health facilities for a check-up after delivery (six percent), most were mothers who had undergone a caesarean section (Manji, 2009). In Uganda, rural women with normal deliveries incline to attend for PPC believing it is for those with complications (Nabukera et al, 2006). A study in Brazil reported that women who delivered vaginally had a higher prevalence of absent postnatal visits, compared to women who had caesarean section (Matijasevich et al, 2009).

2.8 Demographic factors influencing utilisation of postnatal care

2.8.1 Age of woman

Age of a woman has been found to influence utilisation of postnatal services. It is assumed that maternal age serve as a proxy for the women's accumulated knowledge of health care services; but also as a result of development in educational opportunities and modern medicine, young women may have enhanced their knowledge of modern health care services and put more value on utilisation of PNC. It has been reported that women aged 20 years or more, are more likely to seek maternal health care services during the postnatal period than younger women (Chakraborty et al, 2002). The age of a mother at marriage also used as proxy for their educational attainment and social class; this may have a positive impact on the utilisation of maternal health services. It has been found that women married when they were 16 years or older are more likely to seek treatment from skilled

health care worker than women married at 15 years or younger (Chakraborty et al. 2002). Another study found that women aged >35 years were more likely to seek health care services than younger women aged <20 years (Chakraborty et al. 2003).

2.8.2 Employment status of woman and husband

Employment status of a woman is an important predictor of her ability to afford utilisation of postpartum care. Even where the services are free, there are indirect costs such as transport which are a function of whether a woman is employed or not (Coffie, 2007). Other women report lack of money as a barrier to utilisation of PNC services (Dhakal et al. 2007). Women's involvement in gainful employment increases their financial ability to use quality medical care to treat complications; and also empowers them to take part in the decision-making process about health care in the family. A study found that women who are involved in gainful employment are more likely to use modern healthcare services to treat their postnatal complications. Women who are not involved in gainful employment are more likely to receive treatment from traditional healers (Chakraborty et al. 2002; Chakraborty et al. 2003). Occupation of women has been associated with having received PNC services. Housewives were observed to have received more PNC services than women who reported farming as their main occupation.

Also, the employment status of husband is a determinant of his assistance to the wife to utilise postnatal care services (Cofie, 2007; Dhakal et al. 2007). Husband's occupation (taken as an indicator of family income and his ability to support the wife) is positively associated with postnatal care uptake, especially those with formal-sector jobs like teaching or civil servants (Dhakal et al. 2007). Women whose husbands work in business or services are more likely to be the users of professional healthcare services (doctors or nurses) to treat their complications during postnatal period (Chakraborty et al. 2002; Chakraborty et al. 2003).

2.8.3 Education level of woman and husband

Education has been shown to influence utilisation of maternal postnatal care. It is hypothesized that as education of a woman increases, the likelihood of having PNC

increases (Dhakal et al, 2007). Likewise, women with educated husbands are more likely to have received postnatal care compared to women whose husbands are illiterate (Chakraborty et al, 2003; Dhakal et al, 2007). Maternal education increases women's perceived seriousness about maternal morbidities and enhances women's knowledge about availability of health care services. It also helps women to use this information more effectively to maintain or achieve good health status. However not all women with life threatening and high risk complications portray the above mentioned trend with level of education (Chakraborty et al, 2002). Sometimes illiterate women (3.0%) seek care more from a doctor or nurse compared to women with primary education (2.4%). This trend may be a result of other factors such as their perception on postnatal morbidity symptoms, availability of alternatives sources of PNC services and other background characteristics of women. Additionally, female education does not appear to have any impact on the utilisation of health care services for postnatal complications independent of other background characteristics of women (Chakraborty et al, 2002).

2.8.4 Parity

Parity influences women's utilisation of postnatal care, since having more children may cause resource constraints or cause many demands on mother's time to utilise health care (Chakraborty et al, 2003). Women with three or more children are less likely to receive PNC than a woman with one or two children (Dhakal et al, 2007). It is also reported that having had more pregnancies is associated with a lower chance of PNC utilisation (Chakraborty et al, 2002; Dhakal et al, 2007). However not all studies have found such trend, utilisation among women with: excessive bleeding, fits/convulsions, fever lasting for three days, or foul smelling vaginal discharge increased with total number of previous pregnancies (Chakraborty et al, 2002). Another study found the relationship between number of previous pregnancies and the use of postpartum services to be U-shaped. Women who sought care from Doctor/nurse decreased from 29.0% in women with no previous pregnancies, to 26.1% in mothers with one to four previous pregnancies; it increased again to 35.1% in women with five or more previous pregnancies. This trend may be explained by the need factor, i.e., severity of disease condition among the women (Chakraborty et al, 2003).

2.8.5 Marital Status

Marital status has been shown to be associated with utilisation of maternal postnatal care. Married women have been found to be more likely to receive PNC than unmarried women. In Ethiopia 3.5 percent of married women received maternal PNC compared to 2.2 percent of women who are not married. (Mekonnen & Mekonnen, 2002). This may be due to possibility of getting support from the husband. In Brazil, it was reported that postnatal visits were less frequent among single mothers compared to those with a partner (Matijasevich et al. 2009).

2.8.6 Family size

Family size is one of important predisposing factors for utilisation of health care. Women from larger families underutilise various health care services because of too many demands on their time. Larger families also cause resource constraints, which have a negative effect on health care utilisation (Chakraborty et al. 2003). In Bangladesh it was found that a U-shaped relationship between family size and utilisation of maternal health services exists. Percentage of women who sought care from a qualified medical personnel decreased from 30.3% in women with less than four family members to 23.2% among mothers with four to six family members, and increased again to 33.6% in women with seven or more family members (Chakraborty et al. 2003). This trend may be due to more demands for modern care among women with seven or or more family members. Living with extended family and not nuclear family has been reported to influence women utilisation of maternal health services.

2.9 Perceived postpartum morbidity and utilisation of postnatal care

2.9.1 Common postpartum complications

Postpartum complications may be classified according to the presentation and area affected (Baker, 2006). The classification reveals the following categories among common postpartum complications:

- *Bladder function*: the complication here presents with symptoms such as voiding difficulty, overdistension of the bladder and leakage of urine (fistula);
- *Bowel function:* here a woman may present with either constipation, prolapsed haemorrhoids or anal fissure;
- *Haemorrhage:* common presentation here is secondary haemorrhage which is defined as bleeding from the genital tract between 24 hours and 42 days post-delivery;
- *Obstetric palsy*: a condition in which one or both lower limbs may develop signs of a motor and/or sensory neuropathy following delivery. Presenting features include sciatic pain, foot-drop, and muscle wasting;
- *Pelvic bones problems*: a woman may present with spontaneous separation of the symphysis pubis (called symphysis pubis distasia);
- *Thromboembolism:* presenting as deep venous thrombosis or pulmory embolim;
- *Disorders presenting with fever*: these include chest infection (only with cough); pneumonia (purulent sputum with dyspnoea); tonsillitis (sore throat with cervical lympadenopathy); meningitis (headaches with neck stiffness following epidural/spinal anaesthesia); pyelonephritis (loin pain, tenderness and dysuria); metritis (secondary bleeding); retained placental tissues (tender bulky uterus); and breast problems (painful, engorged breasts).
- *Mental disorders*: postpartum depression (presenting commonly with depressed mood) and psychosis.

2.9. 2 Common symptoms and conditions perceived by women

A range of symptoms of postnatal health problems experienced by women have been reported. These include: bleeding, lower abdominal pain, high fever, foul smelling vaginal discharge, urine incontinence, fever, headaches, vulval and perineal pains, breast problems, and constipation. Other studies have reported symptoms of anaemia and postpartum depression among women (WHO, 1998). Another study in Zambia has reported the following conditions: puerperal sepsis, malaria, infected tears/episiotomies, hypertension, pneumonia, infected caesarean section, anaemia, breast abscess, symphisiotomy, eclampsia, puerperal psychosis, after pains, pulmonary tuberculosis, postpartum haemorrhage, fever (pyrexia) not linked to diagnosis, retained products of conception, and urinary tract infection (UTI). (Vallely et al, 2005). In Saudi Arabia, breast abscess/engorgement, infected episiotomy/perineal tear, UTI, puerperal sepsis and PPH have been reported (El-Gilany and Hammad, 2008).

In Bangladesh 75% of women reported perceived symptoms related to postpartum morbidity conditions (Fronczak et al, 2005). The self-reported symptoms of postpartum morbidity included: leakage of urine or faeces (fistula); something protruding in vagina with cough or strain (uterine prolapse); vaginal torn-out (perineal tear); abdominal tenderness, fever, or foul vaginal discharge occurring 3-or more days postpartum (pelvic infection); burning urination frequency, urgency, or foul odour (urinary tract infection); thick discoloured or foul vaginal discharge (vaginal tract infection); passing fresh or clotted blood >3 days postpartum (secondary postpartum haemorrhage); tender, warm, painful or swollen calf or thigh, or still pain with walking >14 days (leg neuropathy or phlebitis) and general poor health (Fronczak et al, 2005). In Nepal, vaginal bleeding which soaked clothes, bed or floor, fever for more than one day, and vaginal discharge for more than one day was perceived by 27%, 15%, and 13% of women respectively (Mesko et al, 2003).

2.9.3 Grouping of the symptoms and care seeking

Symptoms for these morbidity conditions can be grouped into two groups - life-threatening and high-risk complications and others. The life-threatening and high-risk complications include: excessive bleeding, fits and convulsions, fever lasting for three days, and foul

discharge: while other complications include: pelvic pain, palpitation, giddiness and urinary problems (Chakraborty et al, 2002). Women with life threatening and high-risk complications have been shown to utilise postnatal care from qualified personnel if they had visited ANC clinics during pregnancy. This could be explained by the fact that with adequate counselling during ANC visits, mothers may become more aware of possible postpartum complications and sources of quality health services for treatment of these complications (Chakraborty et al, 2002).

In some places women get treated at home when they have postpartum morbidities. This is done so due to social and cultural issues surrounding postpartum women: they are regarded as susceptible to malevolent spirits that can set upon them and cause ill health and even death (Moran et al, 2007). In most cases family member bring medicines at home or sometimes they seek home treatment from unqualified person. It has been reported that 68% of women sought care through such mechanism to treat pain, bleeding, symptoms of infection. Those who sought care outside the home reported reputation of service providers as well as their pervious experiences (such as having lost a sister in childbirth) as their basis for seeking PNC services (Moran et al, 2007).

It has also been reported that care seeking for postpartum morbidity depended on the severity of the symptoms and available options for care (Fronczak et al, 2005). The percentage of women with severe bleeding who sought care was higher compared to women with moderate bleeding (13% and 8% respectively). When they sought care they started with traditional interventions, then buying medicines from a pharmacy, then bringing untrained pharmacist for treatment at home, and finally going to health facility (Fronczak et al, 2005). In Nepal, 75 percent of women consulted a traditional healer; and if condition worsened they consulted a specialist's services (Mesko et al, 2003)

A study in Nepal has reported that 10% of women perceived health problems in postnatal period, and having such problems was significantly associated with utilisation of maternal PNC services (Dhakal et al, 2007). Common health problems perceived by women were

weakness (27%), breast infection (27%), vaginal bleeding (20%), fever (13%), vaginal pain (13%), and prolapsed uterus (7%), (Dhakal et al, 2007). Majority of women sought care for the symptoms while those who did not seek care was caused by living far from a health facility and inability to walk to or travel to health facility for care (Dhakal et al, 2007).

2.10 Perceived health systems factors and utilisation of postnatal care

2.10.1 Health workers' attitude

Apart from having knowledge and skills, it is important for health workers to have appropriate attitude towards mothers seeking care. Poor attitude of health workers makes women not to utilize postnatal care services in Tanzania (Mrisho et al, 2009). Those women who deliver in health facilities most often are discharged very soon after birth, a practice which is likely to result in missed opportunity for care in the critical period of first 24 hours post-delivery (Mrisho et al, 2009). Effective PNC is more likely to take place if a mother gives birth in a health facility, but even then, women and babies do not necessarily receive effective postnatal contact before discharge (Manji, 2009).

Language used by health workers sometime can deter women from utilising services (Jewkes et at, 1998; Nabukera et al, 2006; Mrisho et al, 2009). In South Africa, some women don't utilise services due fear of verbal abuse (being shouted at), beaten, or neglected by health workers. This can happen if women question something, they can't help themselves (like walking or standing according to what a nurse may order), or when they fail to follow treatment or care as required (Jewkes et at, 1998). In Tanzania, verbal abuse and condescension are common complaints; sometimes when women go late to clinic for PNC health workers complain that they are getting a meagre salary and yet mothers keep bothering them, (Mrisho et al, 2009). Hence, respondents requested health care workers to behave more kindly so as to respond positively and politely to their clients (Mrisho et al, 2009). In Uganda, a respondent cited ruddiness of staff at the clinic especially if the mother delivered from home; this may discourage many from going for check-up after home delivery (Nabukera et al, 2006).

2.10.2 Distance to health facility, roads and availability of transport

Distance to health facility and lack of transportation or good roads have been seen as barriers to utilisation of PNC (Nabukeera et al. 2006; Dhakal et al. 2007; Mrisho et al, 2009). Distance limits women's willingness and ability to seek health care particularly when appropriate transportation is scarce and communications and terrain are difficult (Dhakal et al, 2007). Long distances and inaccessibility to health facility during rainy season have been cited as barrier to use of PNC in rural Tanzania (Mrisho et al. 2009). Women with life-threatening and high-risk complications (except fits/convulsions), living in closer proximity to modern health services were more likely to receive services from professional health personnel for the treatment of the conditions (Chakraborty et al. 2002). Another study found that there was no substantial difference in utilisation of maternal health care services for complications according to distance from health facilities both in bi-variate and multivariate analysis (Chakraborty et al, 2003). Additionally, lack of money for transport has been documented as key reason for mothers' failure to return to health facility for postnatal check-up (Nabukera et al. 2006).

2.10.3 Attendance to Antenatal Care (ANC) clinic and utilisation of PNC services

Attendance to antenatal care is associated with mothers'utilisation of PNC services. This is because when more women getting antenatal care they may have a positive influence on the uptake of postnatal care. The uptake PNC services may be associated with health education and counselling received during antenatal visits and during the delivery. In Nepal, women who had attended postnatal care were more likely to attend for PNC (Dhakal et al. 2007). Antenatal preparation of pregnant women has been shown to improve their awareness and practical knowledge on breastfeeding practices (Mattar et al. 2007). Women who received simple antenatal instruction with a short, single, individual counselling session combined with educational materials; demonstrated improvement on their awareness and practical skills on practice of exclusive breast feeding (Mattar et al. 2007). Failure of mothers to follow health information provided to them is caused by miscommunication between them and health workers (Conteh et al. 2006). This miscommunication may be caused by umbiguous style of communication in health facilities (Conteh et al, 2006).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

This was a descriptive, cross-sectional study conducted in June 2010. The design was appropriate in the assessment of utilisation of maternal PNC among the mothers. A descriptive, cross-sectional study was also carried out in rural Nepal to assess the proportion of the utilisation of PNC among women (Dhakal et al, 2007). A descriptive study is concerned with and designed only to describe the existing distribution of variables (predictor and dependent), without regard to causal or other hypotheses (Grimes and Schulz, 2002). The descriptive design answers five basic "W" questions – who, what, why, when, and where – and implicit sixth question, so what (related to the public health effect of the outcome of interest - utilisation of maternal PNC). (Grimes and Schulz, 2002).

As cross-sectional study, the design aimed at provision of a "snapshot" of the outcome of interest (utilisation of maternal PNC) and the characteristics associated with it, at a point in time (Levin, 2006). This study design has its advantages and disadvantages as follows:

- *Advantages of the cross-sectional study* (Levin, 2006):
    - Relatively inexpensive and takes up little time to conduct;
    - Can estimate prevalence of outcome of interest because sample is usually taken from the whole population;
    - Many outcomes and risk factors can be assessed;
    - Useful for public health planning and for the generation of hypothesis;
    - There is no loss to follow-up.
- *Disadvantages of the cross-sectional study* (Levin, 2006):
    - Difficult to make causal inference;
    - Only a snapshot: the situation may provide differing results if another time frame had been chosen;
    - Prevalence-incidence bias (Neyman bias), especially in the investigation of longer-lasting outcome (disease) of interest. Any risk factor that results in death with be under-represented among those with the disease.

3.2 Study Area

The region was chosen because it has a low maternal postnatal care utilisation among women who delivered at home (1.9%); and there was no reliable information on proportion of women who delivered in health facilities. The district has an area of 3,646.28 square kilometres and it lies between $3^0.20''$ and $3^0.95''$ latitudes south of equator, and between $32^0.30''$ and $33^0.30''$ longitudes east of the Greenwich Meridian, (SDC, 2010). The district has temperature range of 16^0 centigrade to 28^0 centigrade (with recent period changes to: 17^0 centigrade to 32^0 Centigrade). Rain season is usually November to April and dry season between May and October. Sometimes the district experiences dry spell between January and February which affects crop harvests. Population projections by 2009 revealed that the district has a population of 346,920 people; among these 177,775 are females (SDC, 2010). The district has 3-divisions, 16-administrative wards, 115 villages and 685 hamlets, with an average of six hamlets per village.

The district has a total of 876.6 km of roads of which 398 km (45.4%) are impassable during rain season. Major means of transport in the council include buses, lorries, ox-cars, government and private cars, railways and bicycles. The district has 41 health facilities as explained in the following breakdown: there is no district hospital hence the citizens use regional hospital as a district hospital; there are four (4) health centres and 31-dispensaries owned by government; three (3) dispensaries owned by Faith Based Organisations (FBO) and three (3) dispensaries that are private for profit. The residents of the district are mainly Sukuma by tribe; other small tribes are Nyamwezi and Sumbwa. Main economic activities are agriculture, livestock keeping, petty business and mining. Important district indicators are: population growth rate (3.3%); children less than one year (4%); women 15-49 years (23%); maternal mortality ratio (181 deaths per 100,000 live births); average household size (6.3), and literacy rate (26.5%), (SDC, 2010). Utilisation of modern family planning methods among women of reproductive age has been reported to be 12.2% (Kessy et al. 2006).

3.3 Target Population

The target population were mothers with infants aged from 2 months to 6 months; this time interval since delivery was chosen to facilitate recall of utilisation of maternal PNC services.

3.4 Inclusion and exclusion criteria

The inclusion criteria were:

- Mother with infant aged 2-6 months; taking the two months as lower cut-off time from delivery, in order to have all mothers who have completed maternal PNC visits (which end at day 42; about one-and-half months post-delivery).
- Mother who voluntarily agreed to participate and consented either by signature or thumbprint

The exclusion criteria included:

- Mothers who had infants aged seven months or older as well as those with infants less than two months old.
- Mother who decided not to participate in the study.

3.5 Sample Size and Sampling Procedure

3.5.1 Sample Size

Sample size was calculated using the single proportion formula. Design effect was taken into account since the study involved use of multi-stage sampling, employing simple random sampling procedure in each stage.

$$n = \frac{[Z_{\alpha}^2 P (1-P)]}{\varepsilon^2} * Deff.$$

Where: n = Represent the required sample size for the mothers.

Z_{α} = Represent a standard normal deviate value corresponding to 95% significance level, which is equal to 1.96.

P = Proportion of women who attend PNC =13.1%; [this was obtained by calculating the average of: proportion of women attending PNC who delivered at home in the region (1.9%); and the average of reported

facility PNC attendance at day 7 (28.4%), day 28 (25.3%), and day 42 (18.8%) in the district = 24.2%].

ε = Margin of error; for this study allowed margin of error was taken as 5%.

* Deff. = Multiplying with a "design effect" = 2; because the sampling procedure included multi-stage sampling, employing simple random sampling procedure in each stage.

Substituting for the values in the formula above,

$$n = [\ \underline{(1.96)^2 \times 13.1 \times 86.9}\ ] * 2 = 350 \text{ mothers}$$
$$(5)^2$$

n = 350 mothers

Non-response rate was calculated as 10% of 350 mothers ($^{10}/_{100}$*350 = 35) and added (350 + 35 = 385). The total sample size (n) required was taken as 385 mothers.

3.5.2 Sampling Procedure

The study was done in 12 randomly selected villages, from six randomly selected wards (Didia, Iselamagazi, Lyabukande, Samuye, Tinde and Usule) of Shinyanga Rural District, in Shinyanga Region. In each ward, two villages were randomly selected (total of 12 villages) and then three hamlets from each village (total of 36 hamlets) were randomly selected. The sampling procedure applied was multi-stage sampling, using simple random sampling in each stage as follows:

- ***Stage one***: involved obtaining the whole list of 16-wards in which six wards (37.5%) were selected using simple random sampling by lottery technique.
- ***Stage two***: in each of the six wards selected, a list of all villages was drawn. Two villages from each ward were selected using simple random sampling, employing lottery technique (total of 12 villages).
- ***Stage three***: in each village a list of hamlets was obtained and three hamlets were selected randomly by lottery technique (total of 36 hamlets). In each hamlet all households were visited to look for eligible women with infants aged 2 months to 6 months. It took between 7 and 9 hours to complete one hamlet depending on its size.

3.6 Data Collection Tools

A questionnaire containing closed and open ended questions was used as an interview schedule, to collect data from the mothers. Face-to-face interviews were conducted to allow women with different education background to participate. Hence all mothers qualified for the questionnaire irrespective of education level. The instrument had six parts with questions on: (1) demographic factors (age, marital status, occupation, parity, education, as well as age, education and occupation of husband); (2) reproductive health covering history of the last delivery and attendance to PNC clinic at 7, 28, and 42 days including the content of care in each visit; (3) perceived postpartum morbidity symptoms experienced by the mother; (4) mother's awareness on postnatal care; (5) cultural beliefs and practices regarding PNC; and (6) perceived health system factors. The tool was developed in English and later translated to Swahili to facilitate participation of respondents. Where difficulties were encountered during translation, consultation was made with Swahili experts based in the "National Board for Swahili" (BAKITA). Mother's card (RCHC-4) was used to validate reported maternal PNC use.

3.7 Variables

3.7.1 Dependent variable

Utilization of maternal postnatal care

3.7.2 Independent variables

Demographic factors (age, marital status, education, parity, occupation); type of delivery; perceived postpartum morbidity; mother's awareness on postpartum care; cultural beliefs and practices; perceived health system factors (distance, transport, health workers language).

3. 8 Pre-testing of the Questionnaire

Pretesting of the study questionnaire was conducted in Kizumbi ward (a semi-rural ward in Shinyanga Municipality) prior to onset of the study. A total of 14 mothers with infants aged 2-6 months were interviewed. The research team (the PI and five research assistants) discussed the questionnaire based on challenges encountered and the way the questions

were answered by the mothers. Modification of the questionnaire was made according to these findings.

3.9. Data collection procedure

All households in each of the selected hamlets were visited by the research team (a group of two) and introduced by the respective hamlet leader. Interviews were conducted within the household's compound in a convenient place for the mother and away from the hamlet leader accompanying the researcher for privacy. The interviewer initiated a structured interview after the mother had given a written consent (signature or thumbprint). An interview took about 20 -30 minutes to be complete. Each day after field work, the PI and research assistants discussed the situation on data collection; explored problems encountered in obtaining data from mothers; and found solutions to identified problems.

3.10 Recruitment and training of Research Assistants

Five experienced research assistants (three nurses and two data clerks) were recruited and trained for one day by the Principal Investigator (PI). The training covered familiarisation with the data collection process, the study instrument and how to administer it. Also the research assistants were emphasized on the importance of proper and consistent interviewing, proper recording and having complete information. Sincerity and avoidance of cheating were emphasized during the one day training.

3. 11 Data Management and Analysis

3.11.1 Data Management

Questionnaires were coded and checked for completeness daily immediately from field. Any problems encountered in the questionnaires were discussed with the research assistants. After completion of data collection (field) work in all the selected areas, open ended questions were coded and then the whole data was entered in SPSS version 13. The frequencies for every variable were run to facilitate data cleaning and checking for errors before actual analyses was done.

3.11.2 Data analysis

Frequency tables showing demographic characteristics of the mothers and other independent variables were prepared and results presented in percentages. Cross-tabulation was done to find association between independent variables and utilization of maternal postnatal care at 7, 28 and 42 days; as well as for overall utilisation within 42 days. Logistic regression models were run to identify effect of demographic and other predictor variables, on the utilization of maternal postnatal care after adjusting for potential confounders. The 95% confidence interval of the calculated odds ratio (exp[B]) value are given. A p-value of 0.05 was used as cut-off point.

3.12 Ethical Considerations

Ethical clearance was obtained from Muhimbili University of Health and Allied Sciences (MUHAS) Research Ethics Committee, after review of the research proposal. Permission to conduct the study was requested from the District Executive Director (DED) of Shinyanga Rural District and copied to the District Medical Officer (DMO) for Shinyanga Rural District. The research team convened a meeting with leaders of each selected ward, villages and hamlets to explain the purpose of the research and methodological approach. The purpose of the study was explained to each mother and informed consent requested (mother given consent form to read or read for her by the research team), before interviews were initiated. The mothers were assured that the information they gave, will be used confidentially and anonymous. The mothers were also told that participation was voluntary and were free to leave the study at any point without any consequence. Each mother who agreed to participate gave a written or thumbprint consent in the form before interview began.

CHAPTER FOUR

4.0 RESULTS

4.1 Description of the study participants

A total of 386 women (response rate 100%) agreed to participate in the study. Eight women ($^{8}/_{386}$ = 2.1%) had missing information about their age. The mean age of the study participants was 25.7 (± 6.6) years, with age ranging from 15.0 to 45.0 years. The mean age at marriage was 18.0 (± 2.4) years, with age at marriage ranging from 13.0 to 28.0 years. The parity of the mothers ranged from 1 to 10 children with median of 3.0 children. The family size ranged from 2 to 22 people, with median of 6.0 people. A total of 50 women (13.0%) had missing information about their husband's age. The mean age of the husbands was 31.9 (± 7.7) years, with age ranging from 19.0 to 67.0 years. The detailed distribution of the study participants by socio-demographic factors is shown in table 1.

Table 1: Socio-demographic characteristics of the respondents

Socio-demographic factor	Categories	Total (n = 386)	Percent
Age of the mother	<20	78	20.6
	20-34	247	65.3
	≥35	53	14.0
Age at marriage	≤16	95	28.1
	>16	243	71.9
Marital status	Married	344	89.1
	Not Married	42	10.9
Education level of mother	None	99	25.6
	Primary education and above	287	74.4
Occupation of mother	Peasant	342	88.6
	Other	44	11.4
Parity	1	95	24.6
	2-4	207	53.6
	≥5	84	21.8
Number of previous pregnancies	0	90	23.4
	1-4	231	60.0
	≥5	64	16.6
Family size	≤3	56	14.5
	4-6	173	44.9
	≥7	156	40.5
Education level of husband	None	52	14.7
	Primary education and above	302	85.3
Occupation of husband	Peasant	292	75.6
	Other	94	24.4

4.2 Utilisation of maternal PNC at day 7, 28 and 42 post-delivery

Table 2 shows the utilisation of maternal PNC services at day seven. For the first maternal PNC visit scheduled at day seven post-delivery, 122 (31.6%) women utilised the services. Mothers who had one-to-four previous pregnancies (36.4%) utilised maternal PNC services more compared to those without previous pregnancy (22.2%) and those with five or more pregnancies (26.6%). The difference in utilisation of maternal PNC by number of previous pregnancies was statistically significant ($\chi 2 = 6.9$, p-value = 0.03). Other socio-demographic factors had no significant association with utilisation of maternal PNC at day seven post-delivery.

Table 2: Utilisation of maternal PNC services at day 7 post-delivery

Socio-demographic factor	Categories	Utilised maternal PNC at day 7 post-delivery		Total (n=386)	p-value
		Yes (%)	No (%)		
Age of the mother	<20	18 (23.1)	60 (76.9)	78	0.26
	20-34	81 (32.8)	166 (67.2)	247	
	≥35	17 (32.1)	36 (67.9)	53	
Age at marriage	≤16	29 (30.5)	66 (69.5)	95	0.94
	>16	77(31.7)	166 (68.3)	243	
Marital status	Married	108 (31.4)	236 (68.6)	344	0.94
	Not Married	14 (33.3)	28 (66.7)	42	
Education level of mother	None	27 (27.3)	72 (72.7)	99	0.34
	Primary education and above	95 (33.1)	192 (66.9)	287	
Occupation of mother	Peasant	107 (31.3)	235 (68.7)	342	0.84
	Other	15 (34.1)	29 (65.9)	44	
Parity	1	23 (24.2)	72 (75.8)	95	0.21
	2-4	71 (34.3)	136 (65.7)	207	
	≥5	27 (32.1)	57 (67.9)	84	
Number of previous pregnancies	0	20 (22.2)	70 (77.8)	90	**0.03**
	1-4	84 (36.4)	147 (63.6)	231	
	≥5	17 (26.6)	47 (73.4)	64	
Family size	≤3	16 (28.6)	40 (71.4)	56	0.81
	4-6	57 (32.9)	116 (67.1)	173	
	≥7	48 (30.8)	108 (69.2)	156	
Education level of husband	None	11 (21.2)	41 (78.8)	52	0.11
	Primary education and above	101 (33.4)	201 (66.6)	302	
Occupation of husband	Peasant	94 (32.2)	198 (67.8)	292	0.76
	Other	28 (29.8)	66 (70.2)	94	

A total of 59 (15.3%) women attended PNC services at day 28 and/or 42 post delivery. Of those women, 45 (11.7%) utilised the PNC services at day 28 and 14 (3.6%) utilised the PNC services at day 42. Detailed utilisation of maternal PNC services at day 28 and 42 by socio-demographic characteristics is illustrated in table 3. The table shows that, utilisation of maternal PNC at day 28 and 42 post-delivery increased with education level of mother. Mothers with primary education and above had higher percent of women who utilised the maternal PNC services compared to mothers without education (13.6% vs. 6.1%; p-value = 0.04). Other maternal socio-demographic factors were not significantly associated with utilisation of maternal PNC at day 28 and 42 post-delivery. Education level of husband influenced the maternal utilisation of PNC at day 28 and 42 post-delivery. Women whose husbands have primary education and above, had significantly higher percent of utilisation of maternal PNC (13.9%) compared to women with husbands without education (13.9% vs. 3.8%; $\chi 2 = 4.1$, $p = 0.04$). The occupation of husband had no influence on maternal PNC utilisation at day 28 and 42 post-delivery.

Table 3: Utilisation of maternal PNC services at day 28 and 42 post-delivery

Socio-demographic factor	Categories	Utilised maternal PNC at day 28 & 42 post-delivery		Total (n=386)	p-value
		Yes (%)	No (%)		
Age of the mother	<20	7 (9.0)	71 (91.0)	78	0.08
	20-34	26 (10.5)	221 (89.5)	247	
	≥35	11 (20.8)	42 (79.2)	53	
Age at marriage	≤16	9 (9.5)	86(90.5)	95	0.51
	>16	31(12.8)	212 (87.2)	243	
Marital status	Married	43 (12.5)	301 (87.5)	344	0.20*
	Not Married	2 (4.8)	40(95.2)	42	
Education level of mother	None	6 (6.1)	93 (93.9)	99	**0.04**
	Primary education and above	39 (13.6)	248(86.4)	287	
Occupation of mother	Peasant	40 (11.7)	302 (88.3)	342	1.00
	Other	5 (11.4)	39 (88.6)	44	
Parity	1	8 (8.4)	87 (91.6)	95	0.52
	2-4	26 (12.6)	181 (87.4)	207	
	≥5	11 (13.1)	73 (86.9)	84	
Number of previous pregnancies	0	7 (7.8)	83 (92.2)	90	0.40
	1-4	29 (12.6)	202 (87.4)	231	
	≥5	9 (14.1)	55 (85.9)	64	
Family size	≤3	5 (8.9)	51 (91.1)	56	0.74
	4-6	20 (11.6)	153 (88.4)	173	
	≥7	20 (12.8)	136 (87.2)	156	
Education level of husband	None	2 (3.8)	50 (96.2)	52	**0.04**
	Primary education and above	42 (13.9)	260(86.1)	302	
Occupation of husband	Peasant	33 (11.3)	259 (88.7)	292	0.84
	Other	12 (12.8)	82 (87.2)	94	

*Fisher's Exact Test value

The overall utilisation of maternal PNC (at least once within 42 days post-delivery) among the study participants was 34.7%. Table 4 shows the overall utilisation of maternal PNC services within 42 days post-delivery. Husbands with primary education and above had higher percent (37.1%) of women who utilised the maternal PNC services, compared to women of husbands with no formal education (21.2%). The difference in utilisation of maternal PNC by husband's level of education was statistically significant ($\chi 2 = 4.3$, $p = 0.04$). Other socio-demographic factors were not significantly associated with overall utilisation of maternal PNC services within 42 days post-delivery.

Table 4: Utilisation of maternal PNC services within 42 days post-delivery

Socio-demographic factor	Categories	Utilised maternal PNC at least once within 42 days		Total (n=386)	p-value
		Yes (%)	No (%)		
Age of the mother	<20	22 (28.2)	56 (71.8)	78	0.44
	20-34	87 (35.2)	160 (64.8)	247	
	≥35	20 (37.7)	33 (62.3)	53	
Age at marriage	≤16	31(32.6)	64 (67.4)	95	0.83
	>16	84 (34.6)	159 (65.4)	243	
Marital status	Married	118 (34.3)	226 (65.7)	344	0.75
	Not Married	16 (38.1)	26 (61.9)	42	
Education level of mother	None	28 (28.3)	71 (71.7)	99	0.15
	Primary education and above	106 (36.9)	181 (63.1)	287	
Occupation of mother	Peasant	118 (34.5)	224 (65.5)	342	0.94
	Other	16 (36.4)	28 (63.6)	44	
Parity	1	28 (29.5)	67 (70.5)	95	0.46
	2-4	75 (36.2)	132 (63.8)	207	
	≥5	31 (36.9)	53 (63.1)	84	
Number of previous pregnancies	0	25 (27.8)	65 (72.2)	90	0.16
	1-4	89 (38.5)	142 (61.5)	231	
	≥5	20 (31.3)	44 (68.8)	64	
Family size	≤3	18 (32.1)	38 (67.9)	56	0.90
	4-6	61 (35.3)	112 (64.7)	173	
	≥7	55 (35.3)	101 (64.7)	156	
Education level of husband	None	11 (21.2)	41 (78.8)	52	**0.04**
	Primary education and above	112 (37.1)	190 (62.9)	302	
Occupation of husband	Peasant	102 (34.9)	190 (65.1)	292	0.97
	Other	32 (34.0)	62 (66.0)	94	

Logistic regression analysis was done to determine the influence of socio-demographic factors on the overall utilisation of maternal PNC services within 42 days post-delivery. The model contained ten independent categorical variables: age of mother, age at marriage, marital status, education of mother, occupation of mother, family size, number of previous pregnancies, parity, education of husband, and occupation of husband. The full model containing all ten predictor variables was not significant; $\chi 2$ (14, N = 331) = 21.7, and p = 0.09. The findings indicated that the model was unable to predict well maternal PNC utilisation within 42 days post-delivery. The model as a whole explained between 6.3% (Cox and Snell R squire) and 8.8% (Nagelkerke R square) of the variation in utilisation of maternal PNC services. The model correctly classified 66.2% of the cases, a predicted percent similar to the original SPSS baseline (meaning the model did not improve prediction). From the model, only education level of husband was statistically significant (table 5). Women whose husbands have primary education and above were 2.4 times more likely to utilise maternal PNC within 42 days post-delivery, compared to women whose husbands have no formal education (OR = 2.4, 95% CI = 1.1 - 5.6). Other socio-demographic factors were not statistically significant (table 5).

Table 5: Distribution of utilisation of maternal PNC by socio-demographicfactors

Socio-demographic factor	Categories	B	Adjusted OR	95% CI		p-value
				Lower	Upper	
Age of the mother	<20					0.361
	20-34	-0.177	0.837	0.345	2.033	0.695
	≥35	0.413	1.511	0.447	5.113	0.507
Age at marriage	≤16					
	>16	1.573	4.823	0.528	44.024	0.163
Marital status	Married					
	Not Married	-0.277	0.758	0.158	3.633	0.729
Education level of mother	None					
	Primary education +	0.313	1.368	0.748	2.501	0.309
Occupation of mother	Peasant					
	Other	0.074	1.077	0.437	2.652	0.872
Parity	1					0.755
	2-4	-0.262	0.769	0.104	5.697	0.797
	≥5	0.052	1.053	0.125	8.883	0.962
Number of previous pregnancies	0					0.126
	1-4	1.162	3.198	0.420	24.343	0.262
	≥5	0.329	1.390	0.149	12.991	0.773
Family size	≤3					0.537
	4-6	-0.354	0.702	0.321	1.534	0.375
	≥7	-0.460	0.631	0.281	1.421	0.267
Education level of husband	None					
	Primary education +	0.884	2.420	1.051	5.571	**0.038**
Occupation of husband	Peasant					
	Other	-0.136	0.873	0.408	1.868	0.727
Constant		-3.464	0.031			0.006

4.3 Elements of maternal PNC services provided to the mothers

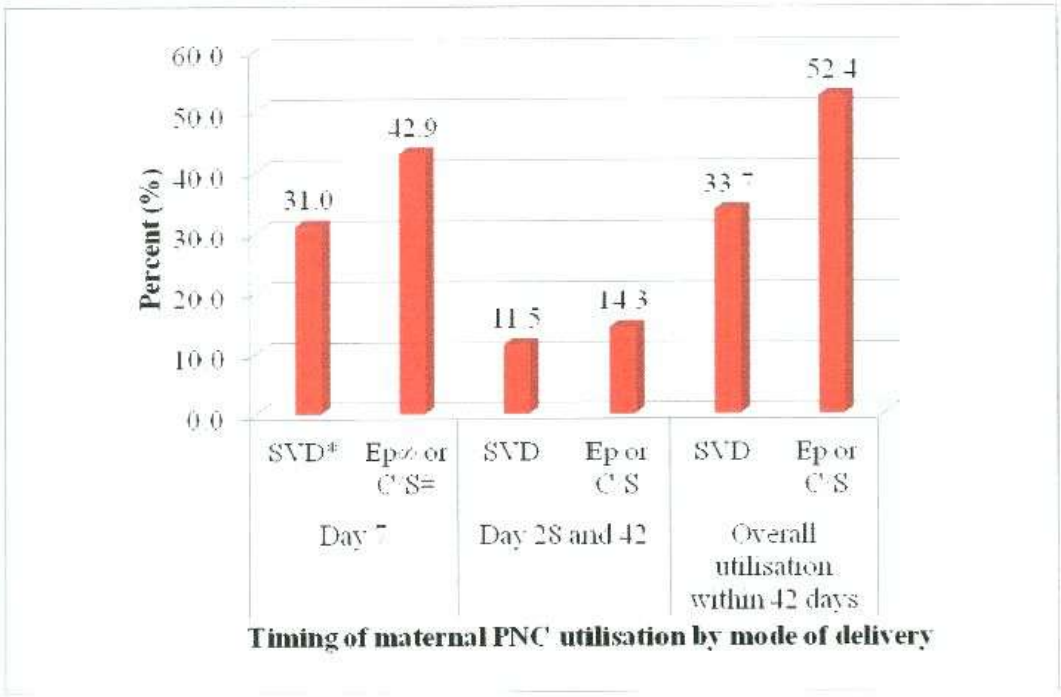
Information regarding the content of the PNC services provided to mothers during their visits was collected. Twelve recommended services to be provided to mothers during their PNC clinic visits were assessed at day 7, 28 and 42 post-delivery. The 12-recommended elements of maternal PNC provided to the mothers who attended the three scheduled PNC visits were as shown in table 6. Day 28 and 42 were combined to ensure reliable percentage calculations. The percent of mother who received all recommended services was 14.8% and 15.6% for day 7 and day 28 combined with 42 respectively.

Table 6: Reported PNC service elements received by mothers

Reported maternal PNC services	Day 7 visit (n =122)	Day 28 and 42 visits (n = 45)
Asked about her labour history (% yes)	54 (44.3)	22 (48.9)
Asked if she had any abnormal bleeding (% yes)	60 (49.2)	23 (51.1)
Asked if she had foul smelling vaginal discharge (% yes)	59 (48.4)	23 (51.1)
Asked if she had fever (% yes)	54 (44.3)	23 (51.1)
Asked if she had low abdominal pain (% yes)	60 (49.2)	25 (55.6)
Asked if she had any breast problem (% yes)	51 (41.8)	23 (51.1)
Her blood pressure was measured (% yes)	50 (41.0)	23 (51.1)
Abdominal examination was performed (% yes)	45 (36.9)	24 (53.3)
Vaginal examination was performed (% yes)	40 (32.8)	18 (40.0)
Discussed about breast feeding (% yes)	45 (36.9)	20 (44.4)
Discussed about family planning (% yes)	35 (28.7)	12 (26.7)
Given advice and information on care of her baby (% yes)	51 (41.8)	19 (42.2)
Percent received all recommended services	18 (14.8)	7 (15.6)

4.4 Mode of delivery and utilisation of maternal PNC services

Among the 386 mothers interviewed during the study, five delivered by caesarean section, 16 delivered vaginally with assistance of episiotomy, and the rest (94.6%) had spontaneous vaginal delivery (SVD). Utilisation of maternal PNC was high among mothers who delivered vaginally with assistance of episiotomy or delivered by caesarean section, as compared to those who had SVD (figure 2). The difference in utilisation of maternal PNC by mode of delivery was not statistically significant. At day 7 ($\chi 2 = 0.8$, $p = 0.37$); at day 28 and day 42 ($\chi 2 = 0.1$, Fisher's value = 0.72); and for the overall utilisation within 42 days post-delivery ($\chi 2 = 2.3$, $p = 0.13$).



*SVD = Spontaneous Vaginal Delivery; "Ep = Vaginal Delivery with Episiotomy;
#C/S = Caesarean Section.

Figure 2: Maternal PNC utilisation by mode of delivery at day 7, 28 and 42 post-delivery.

4.5 Mothers' awareness, postpartum morbidity symptoms, perceived health system factors, and cultural beliefs and practices.

4.5.1 Mother's awareness on maternal PNC services

A total of 150 out of 386 women interviewed (39.0%) responded that postpartum care is important for a mother. Among the mothers who reported that maternal PNC is important, 59.3% utilised the maternal PNC services within 42 days post-delivery, compared to 19.1% of those who reported that maternal PNC is not important (table 9). The associated between reported importance of maternal PNC and its utilisation within 42 days post-delivery was statistically significant ($\chi 2$ = 63.4, and p-value = <0.01). Each of the 150 mothers who responded that the maternal PNC (postpartum care) is important was able to give at least one reason to support her answer. The reasons which were given by the mothers to support importance of maternal PNC were:

1. To check the mother's health ($^{128}/_{150}$ = 85.3%)
2. To get assistance in case of problems ($^{14}/_{150}$ = 9.3%)
3. To get advice on care of the baby ($^{8}/_{150}$ = 5.3%)
4. To have abdominal examination to assess the uterus status ($^{5}/_{150}$ = 3.3%)
5. To be advised on family planning ($^{4}/_{150}$ = 2.7%)

Majority of the 235 mothers ($^{211}/_{235}$ = 89.8%) who said maternal PNC is not important, gave the following reasons to support their response:

1. They don't know anything about maternal PNC ($^{159}/_{211}$ = 75.4%).
2. They are not told about maternal PNC by health care workers ($^{28}/_{211}$ = 13.3%).
3. They thought that PNC is only for child services such as: weighing and vaccination of the baby ($^{14}/_{211}$ = 6.6%).
4. They thought that if there are no problems, there was no need to attend for maternal PNC ($^{6}/_{211}$ = 2.8%).

The mothers were also interviewed for services they expected when they visited health facilities for maternal PNC services. The reported expected services by mothers who attended for PNC are shown in table 7. Many of them reported that they expected to have mother's health checked ($^{93}/_{134}$=69.4%); to check the weight of the baby ($^{78}/_{134}$=58.2%);

and to have the baby vaccinated ($^{58}/_{134}$ =43.3%). The specific maternal services were expected by between 0.7% and 3.7% of the 134 mothers who attended at least once for maternal PNC services.

Table 7: Reported expected services by mothers who attended PNC

Reported expected services	Number (n = 134)	Percent
To have mother's health checked	93	69.4
To check the weight of the baby	78	58.2
To have the baby vaccinated	58	43.3
To get advice in general	19	14.2
To get advice on care of the baby	8	5.8
To have abdominal examination	5	3.7
To have blood pressure and pulse rate measured	5	3.7
To have her vagina examined if it has healed	5	3.7
To have her blood tested for HIV	4	3.0
To get family planning information	2	1.5
To check if baby breastfeed well	2	1.5
To have breast examination	1	0.75

4.5.2 Reported postpartum morbidity symptoms

Sixty-seven mothers out of 386 (17.4%) reported postpartum morbidities symptoms (appendix 8). Majority of the mothers reported one or two symptoms, while two mothers reported four and five postpartum morbidity symptoms respectively. The common postpartum morbidity symptoms reported by the mothers were: low abdominal pain ($^{25}/_{386}$ = 6.5%); fever after first 24 hours ($^{17}/_{386}$ = 4.4%); heavy vaginal bleeding ($^{10}/_{386}$ = 2.6%); vulval and perineal pains ($^{6}/_{386}$ = 1.6%); foul smelling vaginal discharge ($^{4}/_{386}$ = 1.0%); and backache or waist pains ($^{4}/_{386}$ = 1.0%). Table 8 shows that, reporting postpartum morbidity symptoms among the mothers was not significantly associated with utilisation of maternal PNC services within 42 days post-delivery, ($\chi 2$ = 0.2, p-value = 0.62).

Table 8: Reported maternal postpartum morbidity symptoms and utilisation of maternal PNC within 42 days post-delivery.

		Utilised maternal PNC at least once within 42 days		$\chi 2$	P-value
		Yes (%)	No (%)		
Postpartum morbidity symptoms	Yes	21 (31.3)	46 (68.7)	0.2	0.62
	No	113 (35.4)	206 (64.6)		

4.5.3 Perceived health system factors

Many of the mothers interviewed (71.8%) stayed within 5km to the nearest health facility (table 9). The overall utilisation of maternal PNC services within 42 days post-delivery by distance to the nearest health facility was statistically significant ($\chi 2$ = 10.0; p<0.01). The commonest means of travelling to the nearest health facility was bicycle ($^{171}/_{386}$=44.3%) and walking ($^{170}/_{386}$=44.0%); others (motorcycle and vehicle) were used by 11.7% of the mothers. The cost of transport depended on whether the family owns a bicycle or a motorcycle or they have to hire. The breakdown of the costs for transport was as follows: 36.9% had no costs involved (they walk or own a bicycle); 25.7% were charged Tanzanian

shillings 500/=; 22.9% were charged Tanzanian shillings 1,000/=; 7.5% were charged between Tanzanian shillings 200/= and 400/=; and 7% were charged between Tanzanian shillings 1,500/= and 4,000/=. A total of 131 mothers out of 134 with at least one visit within 42 days responded about transport costs. Table 9 shows that, about 58.0% ($^{76}/_{131}$) of the mothers reported that the transport costs were expensive to them. Among the mothers who reported that the transport costs were cheap, 40.0% utilised the services within 42 days post-delivery compared to those who reported that the cost were expensive (23.7%). However, the difference in overall utilisation of maternal PNC by transport costs was not statistically significant ($\chi 2 = 3.3$, $p = 0.07$).

Health facility charges existed when mothers sought their care or care of the babies. A total of 224 mothers responded to the question, in which 27 mothers (12.1%) reported that they were charged money for PNC services. Twenty mothers (74.1%) were charged Tanzanian shillings 500/=; 14.8% were charged Tanzanian shillings between 1,000/= to 1,500/=; 11.1% were charged Tanzanian shillings 5,000/=. Although not directly related to maternal PNC, charges for the child card were the commonest mentioned item by mothers; sold at Tanzanian shillings 500/=. Twenty out of 27 mothers (74.1%) mothers reported that the health facility charges were expensive to them. The health facility charges did not affect the overall utilisation of maternal PNC services within 42 days post-delivery (Fisher's exact test p-value = 1.00).

The language of health care workers in the health facilities was impressive to the mothers, with ($^{291}/_{386}$) 72.2% reporting that the health workers' language was good. Utilisation of maternal PNC within 42 days post-delivery by perceived health workers' language was not statistically significant ($\chi 2 = 0.02$, p-value = 0.89).

Table 9: Reported PNC importance, perceived HS factors and reported seclusion days.

Factors	Categories	Utilised maternal PNC at least once within 42 days		Total (n = 386)	p-value
		Yes (%)	No (%)		
Maternal PNC	Important	89 (59.3)	61 (40.7)	150	**<0.01**
	Not important	45 (19.1)	190 (80.9)	235	
Distance to HF	Within 5km	110 (39.7)	167 (60.3)	277	**<0.01**
	≥6km	24 (22.0)	85 (78.0)	109	
Transport costs	Expensive	18 (23.7)	58 (76.3)	76	0.07
	Cheap	22 (40.0)	33 (60.0)	55	
HF charges	Expensive	10 (50.0)	10 (50.0)	20	1.00*
	Cheap	4 (57.1)	3 (42.9)	7	
HCWs language	Bad	23 (35.9)	41 (64.1)	64	0.89
	Good	110 (37.8)	181 (62.2)	291	
Maternal confinement (seclusion) days	≤7 days	29 (36.3)	51 (63.8)	80	0.28
	8-14 days	17 (30.4)	39 (69.6)	56	
	15-30 days	58 (35.2)	107 (64.8)	165	
	>30 days	21 (48.8)	22 (51.2)	43	

*Fisher Exact Test value

4.5.4 Cultural beliefs and practices in postpartum period

This study assessed only one cultural belief (seclusion) among the respondents. Postpartum period in Shinyanga Rural District was reported to be a period when mother and the baby are required to stay at home (87.7% of the 386 mothers responded yes to the question). Specifically, this period was referred to as: time for the mother and baby confinement ($^{166}/_{386}$ = 43.3%); mothers to regain energy after delivery ($^{158}/_{386}$ = 41.3%); a combination

of mother and child confinement and time for mother to rest to regain energy lost ($^{39}/_{386}$ = 10.2%); time when the mother and baby are susceptible to bad eyes ($^{12}/_{386}$ = 3.1%); and other combined explanations (1.8% of the 386 mothers).

The days to stay at home before allowed out varied considerably depending on how the mother and the family regard the period (family cultural emphasis post-delivery). Also the need and ability for mother to involve herself in economic activities (judged by either sick, weak or lack of energy); and religious background dominated the decision of how many days to stay confined at home. The median maternal confinement period was 30 days with minimum of one day and maximum of 150 days. The association between overall utilisation of maternal PNC services and maternal confinement (seclusion) days (table 9) was not statistically significant ($\chi 2$ = 3.9, p = 0.28). Logistic regression analysis of the maternal seclusion days was run controlling for education level, occupation, and age of the mother; education level of husband; and number of previous pregnancies. The results of the logistic regression are shown on table 10. Women who reported a seclusion period of 15-30 days were 0.4 times less likely to utilise maternal PNC within 42 days post-delivery, compared to women who reported seclusion period of seven or less days (OR= 0.4, 95% CI = 0.1- 0.9).

The commonest traditional care practice provided to mothers after delivery was hot water body sponging (especially the waist, perineal, back, abdomen, neck and shoulders) reported by 77.2% of the 386 mothers, followed by use of traditional medicines (2.3% of 386 mothers). The hot water body sponging among the mothers was administered by mother in-laws, while few of the study participants reported it was self-administered.

Table 10: Distribution of utilisation of maternal PNC by reported seclusion period

Factor	Categories	B	Adjusted OR	95% CI		p-value
				Lower	Upper	
Seclusion days	≤7 days					0.148
	8-14 days	-0.663	0.515	0.218	1.218	0.131
	15-30 days	-1.036	0.355	0.137	0.920	**0.033**
	>30 days	-0.829	0.436	0.199	0.958	**0.039**
Education of mother	None					
	Primary education +	0.360	1.433	0.779	2.634	0.247
Occupation of mother	Peasant					
	Other	0.281	1.324	0.580	3.026	0.505
Age of mother	<20 years					0.520
	20-34years	-0.150	0.860	0.248	2.984	0.813
	≥35 years	-0.424	0.654	0.283	1.512	0.321
Education of husband	None					
	Primary education+	0.595	1.814	0.799	4.118	0.155
Number of previous pregnancies	0					
	1-4	0.981	2.667	1.084	6.561	0.033
	≥5	0.232	1.261	0.389	4.092	0.700
Constant		-0.571	0.565			0.548

CHAPTER FIVE

5.0 DISCUSSION

5.1 Utilisation of maternal postnatal care at 7, 28 and 42 days post-delivery

This study found that the overall utilisation of maternal PNC among the study participants was low (34.7%); and utilisation decreased from day 7, 28 to day 42 post-delivery (31.6%, 11.7% and 3.6% respectively). The low utilisation of maternal PNC found in this study has also been found in other studies. In Temeke Municipality in Dar es Salaam, 23.0 % of the mothers interviewed utilised maternal PNC services (Mmbaga, 2003). In Tabora Region, in Tanzania (Urambo and Igunga Districts) the overall utilisation of maternal PNC was found to be 13.0 percent and 27.0 percent for the two districts respectively (FCI, 2007). In another study, a survey in six districts (Babati, Kahama, Kilwa, Manyoni, Njombe and Nkasi) in Tanzania found that, only six percent of mothers who were interviewed came for their PNC check-up (Manji, 2009). In Nepal, utilisation of maternal PNC within 42 days post-delivery was 34.0 percent (Dhakal et al, 2007).

Utilisation of maternal PNC is found to increase with age of mother at day 7, 28 and 42 visits, although the trend is not statistically significant. Similar findings have been observed elsewhere where, women aged 20 years or more are more likely to seek maternal health care services during the postnatal period compared to women less than 20 years old, (Chakraborty et al, 2002; Chakraborty et al, 2003). In Dar es Salaam, the percent of mothers who utilised PNC increased from 18.0% (age group 15-19 years) to 40.0% in age group 35 years and above (Mmbaga, 2003). In addition, we found that maternal PNC utilisation at 7, 28 and 42 days post-delivery increased with increased age at marriage; although this association did not reach statistical significance. This differs from what has been observed in Bangladesh where mother's age at marriage had significant influence (both in bivariate and multivariate analysis) on utilisation of maternal PNC services (Chakraborty et al, 2002). Lack of association may be due to other background characteristics of mothers and awareness on importance of maternal PNC.

Education level of mother was significantly associated with utilization of PNC at day 28 and 42 but not at day 7 or in the overall utilisation. This may be due to other characteristics such as distance to health facility, means of transport and costs, or awareness on importance of maternal PNC explaining more the variation observed. In other studies, education level of mother was found to increase utilisation of maternal PNC services (Chakraborty et al, 2002; Chakraborty et al, 2003; Dhakal et al, 2007). In the current study, the education level of husband is significantly associated with overall utilisation of maternal PNC services within 42 days post-delivery. Women whose husbands have primary education and above, utilised more the PNC services compared to women of husbands without education. This finding is similar to finding in Nepal where it was observed that women with husband educated to secondary school level had significantly greater chance of having PNC than with illiterate husbands, (Dhakal et al, 2007).

This study has found that utilisation of maternal PNC is increasing with increased number of previous pregnancies at day seven PNC visit. This differs from other studies (Chakraborty et al, 2002; Dhakal et al, 2007) in which it was reported that having had more pregnancies is associated with a lower chance of maternal PNC utilisation. Also the results of this study show that mothers with one to four previous pregnancies utilised the services more compared to the mothers without previous pregnancy or those with five or more previous pregnancies. These findings differ from that of study by Chakraborty et al, (2003) where; 29.0 percent of women with no previous pregnancies sought care compared to 26.1 percent of mothers with one to four previous pregnancies and then increased to 35.1 percent for women with five or more previous pregnancies. This trend may probably be explained by the need factor among the women (such as status of her condition - whether severe or not), other background characteristics or their experience with use of health facilities for PNC services.

Although in the current study education level of the mothers, number of previous pregnancies, and education level of husbands are associated with increased utilisation of maternal PNC services; only education level of husbands was statistically significant when logistic regression analysis was performed. This suggests that socio-demographic factors

alone among the study population cannot predict the utilisation of maternal PNC services at 7, 28 and 42 days post-delivery. These findings shows some similarity to those found in two studies (Chakraborty et al, 2002; Chakraborty et al, 2003), in which logistic regression analysis estimates for maternal education, number of previous pregnancies, mother's age did not show significant impact on utilisation of maternal PNC services. The two studies considered husband employment but not husband education in the variables. The reason for taking husband occupation may be due to the fact that husband occupation can be considered a proxy of family income as well as social status.

5.2 Elements of maternal postnatal care provided to mothers

This study has found that not all of the recommended elements of maternal PNC are provided to the mothers who attend to health facilities for PNC services. Only 14.8% of the mothers received all the recommended maternal PNC elements on day 7; while on day 28 and 42 (combined), 15.6% received all the recommended maternal PNC elements. This differs from findings by Mmbaga (2003), where it was found that 3.5% of mothers received all the recommended maternal PNC services. The current study shows that the percent of each of the maternal PNC elements received by mothers is low. This finding of low coverage of maternal PNC service elements is almost similar to findings in Igunga and Urambo Districts. In Igunga District (at endline), the percent of each maternal PNC service element received by mothers ranged from 10.0% (had abdominal examination) to 62.0% (received family planning method). In Urambo (at endline), the percent of each maternal PNC service element received by mothers ranged from 10.0% (had abdominal examination) to 58.0% (advised about breastfeeding); (FCI, 2007). The findings among the study participants may probably be due to the fact that, health care workers (HCWs) do not follow recommended care if mother does not report any problems. This may also be due to lack of information communication to mothers on maternal PNC visits during pregnancy and delivery. Mmbaga (2003) found that only 15% of HCWs had the correct knowledge that, mothers should be informed about postpartum follow-up visits during their ANC visits.

5.3 Mode of delivery and utilisation of maternal postnatal care

This study has found that mode of delivery is associated with utilisation of maternal PNC services, however not statistically significant. Mothers who delivered vaginally assisted with episiotomy or delivered by caesarean section utilised the PNC services more compared to mothers who had spontaneous vaginal delivery (SVD). Few mothers (five) delivered by caesarean section and one utilised maternal PNC services at day 28. None of the mothers who had caesarean section utilised maternal PNC services at day seven and day 42 post-delivery. Three of the mothers with caesarean section were discharged between day seven and day 14 post-delivery. One of them, her baby was sick and admitted in hospital on the day of the second visit schedule (day 28 post-delivery); and another mother reported that she had no one to assist with the child. These reasons may explain the low utilisation of maternal PNC among the five mothers who delivered by caesarean section. This finding is different from finding in a six districts survey in Tanzania (Babati, Kahama, Kilwa, Manyoni, Njombe and Nkasi), in which six percent of mothers who were interviewed came back for maternal PNC check-up, mostly those who had undergone caesarean section (Manji, 2009). The high percent utilisation among women with episiotomy may probably be due to mother knowing that they have a problem (wound) that need check-up to see if it is healing. Less utilisation of maternal PNC among women with SVD was also reported in Uganda that, women with normal deliveries inclined to attend maternal PNC believing it is for those with complications (Nabukera et al, 2006). Also less utilisation was reported in Brazil that, women who delivered vaginaly had high prevalence of absent postnatal visits compared to women who had caesarean section (Matijasevich et al, 2009).

5.4 Mothers' awareness, postpartum morbidity symptoms, perceived health system factors, and cultural beliefs and practices.

5.4.1 Mother's awareness on maternal PNC services

In this study about two-fifth of respondents said that maternal PNC is important for a mother. Reporting that maternal PNC is important is associated with increased utilisation of maternal PNC services. This low level of awareness that PNC is important may have contributed to the low maternal PNC utilisation found in the current study. Similar finding

was reported by Dhakal et al, (2007) in Nepal that lack of awareness and/or no perceived need for PNC by women and their families contributed to underutilisation of PNC. Also in this study, about one-third of women who responded that PNC is important related the importance to weight monitoring of the baby. These findings that women relate PNC to services of the baby have been reported elsewhere: in southern Tanzania (Mrisho et al, 2009) where most of the women interviewed reported that PNC services were good for the child; and in Uganda where 86 percent of mothers thought that PNC was used only to immunise babies (Nabukera et at, 2006). Also, Waiswa et al, (2008) reported that postnatal care was non-existent in rural Uganda; and most respondents were not aware of the need to attend for PNC except for immunization of children. In Lebanon, it was reported that women in rural areas consider PNC to be important only when there are complications (Khabakian-Khasholian et al, 2000). In the current study, awareness of the mothers in terms of specific services to expect when they visited the clinic is low. Majority know that the mother's health will be checked, without the detailed specific services like blood pressure measurement or abdominal examination. However, many expected their children to be vaccinated and checked their weight. This low awareness among study participants may be contributed by lack of regular health information from health workers to mothers concerning maternal PNC (about three-quarters of mothers who said PNC is not important do not know anything about maternal PNC).

5.4.2 Reported postpartum morbidity symptoms

The current study has found that the prevalence of postpartum morbidity symptoms among the study participants is 17.4 percent. Mother having reported a postpartum morbidity symptom is not associated with utilisation of PNC. The finding differs from that of a study done in Nepal in which it was reported that 10 percent of women reported health problem in postnatal period; and having such problem was significantly associated with utilisation of PNC services (Dhakal et al, 2007). Also the findings of the current study differs from findings in Bangladesh, where 75 percent of women reported symptoms related to postpartum morbidity conditions, with small proportion seeking care for the symptoms (Fronczak et al, 2005). The common postpartum morbidity symptoms reported in this study are: low abdominal pain; fever after first 24 hours; heavy vaginal bleeding; vulval

and perineal pains; foul smelling vaginal discharge; and backache or waist pains. These symptoms have also been reported in other studies (Mesko et al, 2003; Fronczak et al, 2005; Vallely et al, 2005; Dhahal et al, 2007; El-Gilany and Hammad, 2008).

5.4.3 Perceived health system factors

The current study has found that distance to health facility is associated with utilisation of maternal PNC. This finding in the current study may be due to the few number and geographical location of health facilities; and road network in the study district. About 45.4 percent of roads (398km out of 877 km) in Shinyanga Rural District are impassable during rainy season. Similar explanation has been reported by Dhakal et al, (2007) that, distance limits women's willingness and ability to seek health care particularly when appropriate transportation is scarce and communications and terrain are difficult. Also, Mrisho et al, (2009), reported that long distances and inaccessibility to health facility during rainy season are barriers to utilisation of maternal PNC in rural southern Tanzania. Different finding was reported in a study done by Chakraborty et al, (2003), that there was no substantial difference in utilisation of maternal health care services for complications according to how far respondents lived from health facilities. Such finding may probably be due to other background characteristics of the mothers and their husbands such as education level.

Transport costs in this study are shown to influence utilisation of maternal PNC services, although not statistically significant. This suggest that a woman living far from health facility who has no money for transport, may fail to attend for care; while a mother living in a proximity (within 5 km) may opt to walk to seek for care in a health facility. Similar reason was reported in Uganda that lack of money for transport is key reason for mothers' failure to return to health facility for postnatal check-up (Nabukera et al, 2006).

The current study has also found that the influence of health facility charges on utilisation of maternal PNC services is insignificant. This may be due to the small number of women who reported to be asked for money to receive PNC services. However, the finding that child card is the common item sold to mothers require attention of the District Health Management Team (CHMT). Although not directly related to maternal PNC, newborn care

visits are scheduled on similar days on the child card (day 7, 28 and 42). Mather's cards were found in use (the partograph side) to document child vaccination and weight, while the mother prepares to get the required amount. Such practice may affect utilisation of maternal PNC services given the observed importance of child card among the mothers who participated in the current study. Also, since the child card has similar PNC visits schedule similar to maternal PNC visits, it needs to be taken as an opportunity. If the child cards are provided on time and free of charge, mothers may see the value of the day 7, 28 and 42 post-delivery attendance for PNC (that both her and the baby will be provided with care).

This study has also found that the perceived health care workers language used in health facilities is good to the mothers; however it does not significantly influence utilisation of maternal PNC services. This may be due to other background characteristics of the women in this study. This differs from reported findings from southern Tanzania, where bad language of health workers to women caused them not to utilize postnatal care services. The common complaints reported were verbal abuse and condescension, (Mrisho et al, 2009).

5.4.4 Cultural beliefs and practices in postpartum period

The study assessed one postpartum cultural belief – the maternal confinement (seclusion) with 42 days post-delivery. Postpartum period among the study participants is a time for mother and baby confinement as well as time for mother to regain energy lost during delivery. During the confinement period the mother cannot move out of their houses hence she may not seek care in health facilities. The influence of confinement period has also being reported in other studies (Gideon, 1962; Mesko et al, 2003; Winch, 2005; Dhakal et al, 2007; Mrisho et al, 2008; Manji, 2009). The reported confinement period varied among the participants, with median of 30 days. The 30th day coincide with the time when the child is shaved and allowed to go out (taking the child out before shaving is regarded by some of the participants to cause child mental problems). This differs from findings in southern Tanzania, in which the whole period of mother and baby confinement indoors has been reported to be 40 days, (Mrisho et al, 2008). In bivariate analysis, confinement

period has no significant association with utilisation of maternal PNC services. However, logistic regression analysis results (when controlling for other factors), reported confinement period is shown to have a significant association with utilisation of maternal PNC. Mothers who reported confinement period of 15 - 30 days are 0.4-times less likely to utilise maternal PNC services compared to those who reported confinement period of less or equal to seven days. This may probably be due to the fact that seclusion period of less than 15 days, allows the mothers to utilise PNC at day 28 and day 42 post-delivery.

5.5 Study limitations

1. The reported service elements in each PNC visits provided to mothers and postpartum morbidity symptoms depended on recall by the mothers, which is subject to recall bias. This may have affected the reported information on the service content provided to them at each visit. Chronological enquiry of events and a short recall duration (use of mothers with children between 2-6 months) may have minimized recall bias. In addition, where mother's card was available (74 percent of the mothers who utilised at list one visit had the card), the research team validated PNC utilization information.

2. Illiteracy and dominance of the local language (Sukuma) among the mothers. This may have affected the way the study questions were understood by the mothers. However, since the principal investigator anticipated the situation, he recruited research assistants with knowledge of "Sukuma" language. Also, where members of the research team encountered woman with such situation, pace of interview was slowed (took 30-40 minutes instead of the 20-30 minutes used to complete one interview); to ensure the mother understood the questions. All the required information for the study was collected well after taking the above measures.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The overall utilisation of maternal PNC services in Shinyanga Rural District was found to be low (34.7%); and the utilisation decreased from day 7, 28 to 42 post-delivery (31.6%, 11.7% and 3.6% respectively). Among the socio-demographic factors: number of previous pregnancies; and education level of mother and husband, were found to be significantly associated with utilisation of maternal PNC services at day 7 and day 28 combined with 42 post-delivery respectively. However, logistic regression analysis revealed that, only education level of husband was significantly associated with the overall utilisation of maternal PNC services within 42 days post-delivery.

Mothers who attended maternal PNC services did not receive all the recommended service elements of maternal PNC. At day 7 only 14.8% received all the recommended PNC elements; while on day 28 and 42, only 15.6% received all the recommended PNC elements. On day 7 check-up it was found that the percent of each of the maternal PNC elements received by mothers ranged from 28.7% to 49.2%. On day 28 and 42 (combined), percent of each of the PNC elements received by mothers ranged from 26.7% to 55.6%. This call for the need to sensitize all health care workers (HCWs) in health facilities that, all the recommended maternal PNC service elements need be provided to all mothers regardless of their condition. Mothers who delivered vaginally assisted with episiotomy or had caesarean section utilised maternal PNC services more compared to mothers who had spontaneous vaginal delivery. However, the difference in utilisation of maternal PNC by mode of delivery was not significantly associated with utilisation of maternal PNC.

Mother's awareness on importance of maternal PNC was crucial for mother to utilise maternal PNC. Knowing that PNC is important was associated with utilisation of maternal PNC. Prevalence of reported postpartum morbidity symptoms among the mothers who participated in the study was high (17.4%). However, having the symptom was not significantly associated with utilisation of maternal PNC services. Among the perceived

health system factors (distance, transport costs, health facility charges, and health care workers language), only distance was significantly associated with utilisation of maternal PNC services. Seclusion period has a negative influence on utilisation of maternal PNC services. Mothers who reported confinement period of 15 - 30 days, were 0.4-times less likely to utilise maternal PNC services as compared to mothers who reported confinement period of seven or less days (while controlling for age, education level and occupation of the mother; education level of husband; and number of previous pregnancies).

6.2 Recommendations

This study suggests the following recommendations to the DMO, District Reproductive and Child Health Coordinator (D-RCHCo), and the entire CHMT of Shinyanga Rural District:

1. Husband's level of education was found to be significantly associated with utilisation of maternal PNC services within 42 days post-delivery. Based on this finding, it is suggested that: Information, Education and Communication (IEC) messages (audio and print) need to be designed targeting husbands on importance of maternal PNC services; and the need for husbands to take part (be involved) in ensuring that their wives receive PNC services at day 7, 28 and 42 post-delivery. The budget for the development of IEC messages need to be included in the next financial year Comprehensive Council Health Plan. The D-RCHCo in collaboration with DMO needs to involve all the stakeholders in RCHS in the district in the design and dissemination of the messeges.

2. Mother's knowledge of maternal PNC and its importance is crucial for a mother to utilise maternal PNC services. This study suggests that the D-RCHCo in collaboration with DMO and other stakeholders need to design IEC messages (audio and print) targeting mothers. The designed messeges will then be disseminated to mothers attending to health facilities and also aired in local (available within Shinyanga Region) radio stations (or other radio stations reaching the remote areas of the district) on importance of maternal PNC services at day 7, 28 and 42 post-delivery.

3. Since not all mothers received all the recommended maternal PNC service elements, it is suggested to sensitize all HCWs on maternal PNC services. The DMO and the entire CHMT need to design a mechanism to sensitize all HCWs, on the need to provide maternal PNC services to all women within 42 days post-delivery. The maternal PNC provided need to follow the recommended maternal PNC service elements (as itemised on the mother's card) regardless of whether the mother presents with a problem or not. On-the-job training and supportive supervision of HCWs may be used to improve the provision PNC elements. The DMO and the CHMT also need to consider budgeting for comprehensive refresher training of HCWs to improve their knowledge on maternal PNC services.

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