Determinants of Risk Factors Associated to Pregnancy and Delivery in Maasai Community in Kiteto District, Tanzania

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ABSTRACT

The objective of this study was to determine risk factors associated to pregnancy and delivery. The purpose was to find out whether danger signs during pregnancy and delivery motivate the respondents to attend and seek for maternal health services. The study employed cross-sectional research design in four villages in Kiteto District namely Partimbo, Kimana, Engusero and Ngipa to find out the determinants of risk factors associated to pregnancy and delivery.

The study employed a three stage sampling technique. A simple random sampling technique was used to identify wards in the first stage. In second stage, four villages were purposively selected from two different wards. In third stage, households as a unit of analysis were obtained through random sampling, since the population was homogenous. However, in order to get population sample within each village, probability proportional to size (PPS) was applied.

Cross tabulation and Chi-square were tested to determine the association of the variables and factors influencing maternal health utilization. The findings showed that 53 percent of the respondents were aware of danger signs associated with pregnancy and delivery. About 87 percent delivered at home due to various reasons mentioned like distance and transport costs. Also from the findings majority of the respondents by 64.6 percent suffered from anemia during the first pregnancy. However, the level of antenatal clinic visits was not significantly correlated with any other socio-demographic variables, but place of delivery and assistance during delivery showed a significant association with socio-demographic variables (p < 0.005).

Indeed, a lot could be gained by simple prevention, in particular regular antenatal visits, vaccinations, and quick referral in case of complications. Also TBAs should be taken as part of RCH in these pastoralist communities because of their cultural believes. Regular training and seminars should be conducted so as to help mothers in those remote areas.

Keywords

Pregnancy, Danger Signs, TBAs, Delivery

Introduction

Maternal health has emerged as global priority because of a great gap in the status of mother's well being between the rich and the poor countries. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and the fetus (Fraser et al, 2003). This is particularly true in Sub-Saharan Africa and South Asia, where large number of maternal deaths occur each year because of high maternal mortality ratio and high fertility rates. The major complications that account 80 percent of all maternal death are severe bleeding, infections, high blood pressure during pregnancy, obstructed labor and unsafe abortion (Lerberghe, 2005), of which 99 percent of all maternal deaths occur in developing countries, whereby 85 percent of population lives.

According to WHO and UNICEF (2010), hemorrhage, sepsis and hypertensive disorders of pregnancies are among the top three causes of maternal deaths in both South Asia and sub-Saharan Africa, where the majority of maternal deaths occur. At the same time as in developed countries, the most common cause

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of maternal death is complications related to interventions such as caesarean section and anesthesia, reflecting global disparities in access to needed obstetrical care.

Meanwhile, more than 80 percent of rural women in Tanzania live more than five kilometers from the nearest hospital (URT, 2010). Vehicle shortages and poor road conditions mean that walking is often the main mode of transportation, even for women in labor (AbouZahr, 1997). Therefore, less than half of women in developing countries get adequate health care during and soon after child birth, despite the fact that most maternal deaths take place during these periods.

Indeed, poor maternal health remains a major reproductive health concern in most parts of the less developed world, including Sub-Saharan Africa. Regardless of significant achievements in the reduction of fertility and infant mortality rates in Sub-Saharan Africa over the past few decades, progress has been much slower in the area of maternal health, as evidenced in the persistently high maternal mortality rates in the region (UNICEF, 2002).

Despite various safe motherhood initiatives and inventions in East Africa, studies in Tanzania, Ethiopia and Uganda have shown that awareness of danger signs during pregnancy was still low, especially in rural populations (Pembe et al., 2009). Tanzania Demographic Health Survey report (2011) shows 53 percent of pregnant women were told about danger signs of pregnancy during ANC visits. Additionally, the issue of health seeking actions after identifying a danger sign during pregnancy was not investigated. These studies set out to show a clear picture of the problem in health delivery systems, since every pregnant woman is at risk of developing pregnancy related complications. Lack of information on danger signs during pregnancy is one of the factors that contribute to delay in seeking care and hence slow decrease in maternal mortality (WHO, 2012). A woman may die because they have not understood the need to seek care (Lewis, 2003).

In Tanzania, it is reported that 50 percent of deliveries occur in the health facilities, primarily in public sector and the remaining more than half deliver at home in the absence of skilled attendants (TDHS, 2010). Among other factors, the low level utilization of maternal health care has been attributed by maternal age and parity, maternal education, cultural background of the woman, women's decision making power, particularly in matters of reproduction and sexuality, accessibility of health services together with distance and transport cost (Addai, 2000).

Nevertheless, maternal mortality rate has not shown any significant improvement in Tanzania, whereby in Kiteto District maternal mortality is estimated to be 645 per 100,000 live births, at the same time home delivery is also high at 85 percent (Kiteto District Annual Report, 2010) and more than 58 percent of women in Manyara Region are facing big problems in terms of accessing maternal health care services and only 38.5 percent delivered at health facilities (TDHS, 2010).

Methodology

Research methodology refers to the logical process followed during the application of scientific methods and techniques when a particular phenomenon is investigated (Polit & Beck 2008:765). The research methodology included the setting, population, sampling and sample, and data collection and analysis.

The study was conducted in Manyara Region in Kiteto District. The area covers 16,685 square kilometers of Manyara Region which is about 34.1 percent of the total land. The inhabitants belong mainly to the Maasai ethnic and are predominantly Christians. In urban areas, the major occupation of the people is trading and formal employments while in rural, it is mainly subsistence farming and animal pasturing. The district has 1 hospital and 16 dispensaries. Among those 16 dispensaries, 2 are Rural Health Centers (Sunya and Engusero) and 14 are owned by government and the rest 2 are under private ownership (Loolera and Chapakazi). Also 7 dispensaries are at finishing stage at Katikati, Ilera, Olkitikiti, Engung'ongare, Asamatwa,

Bwagamoyo, Loltepes and Emalt.

A cross sectional survey research design was used in this study. The cross-sectional research design allows data to be collected at a single point in one time and used in descriptive study and for determination of relationships of variables (Bailey, 1998; Babbie, 1990 and Bernard, 1994). The cross-sectional research design was considered to be favorable not only because of resource and time limitations for data collection but also it takes place at a single point in time.

Study Participants

The study population consisted women of reproductive age (15-49 years) and who gave birth in the past five years prior to the study. The age of the respondents and parity (CEB) were considered as important variables in the analysis. On the other hand, key informants including midwife nurses at each ward health centre and Reproductive and Child Health Coordinator at district level were also included in the study.

Sample Size Determination

The minimum sample size for the study was determined by the formula used to compare two independent proportions (Onwasigwe, 2010). Three factors are considered when selecting sample size, this includes the level of precision (sampling error), the level of confidence or risk, and proportion of population in the attributes being measured (Kikwembe, 2005).

$$n = \frac{z_{\alpha/2}^2 pq}{e^2}$$

Whereby;

n = is the sample size

Z^2 = the normal curve that cuts off an area at the tails (the desired confidence level is 95%)

e = the desired level of precision (sampling error)

p = the estimated proportion of an attribute that is present in the population.

q = 1-p. The estimated proportion of the population (P) utilizing maternal health services in Kiteto District was 20 percent and the error to be tolerated (sampling error) is ± 5 percent at 95 percent confidence interval. Therefore, sample size will be;

$$n = \frac{z_{\alpha/2}^2 pq}{e^2}$$

$$n = \frac{1.96^2 \times 0.2 \times 0.8}{0.05^2}$$

$$n = \frac{3.8416 \times 0.16}{0.0025}$$

$n = 245$

Now, suppose only 80 percent of the intended respondents will respond, hence to compensate for non response and the actual sample size will be:

Actual sample Size $= \dfrac{245}{0.8} = 306$ respondents.

Sampling Technique

The study employed a three stage sampling technique. A simple random sampling technique was used to identify wards in the first stage. In second stage, four villages were purposively selected from two different wards. In third stage, households as a unit of analysis were obtained through random sampling, since the population was homogenous. However, in order to get population sample within each village, probability proportional to size (PPS) was applied. A structured questionnaire was administered to the respondents. Participation in the study was voluntary and participants were assured that there would be no victimization of respondents who refused to participate or who decided to withdraw from the study after giving consent. The main idea to use structured questionnaire was easy because it reduces error due to interviewer variability, accuracy and ease of data processing.

Data analysis was done using the Statistical Package for Social Sciences, (SPSS), as statistical software. Frequency tables and cross tabulations was generated, and level of significance was determined by p-value of less than 0.05. The socio-demographic characteristics of the respondents of maternal health service, their receiving information of the danger signs of pregnancy during the antenatal care period. Also the respondent's good knowledge of the danger signs of pregnancy was determined. Multivariate analysis was used to determine the factors predictive of good knowledge of the clients of the danger signs of pregnancy.

Results and Discussion

Knowledge of Danger Signs Associated with Pregnancy and Delivery

The study tried to find out whether the respondents were first of all aware of such signs, and the problem encountered during the first pregnancy. From Table 1 the results depicted that, majority of the respondents (53 percent) accepted that they ever heard about danger signs for pregnant mothers, while 47 percent had not ever heard of any danger sign to a pregnant mothers. Moreover, this result reflected that despite the fact that more than half of the respondents ever heard of danger signs still almost half of them did not have right information concerning any danger signs for pregnant mother, which may influence the population in utilization of maternal health care services.

Table 1: Awareness of danger signs for pregnant mothers

Ever heard risk factors	No. of the respondents (N=300)	Percent
Yes	159	53
No	141	47

Danger Signs of Mothers during Pregnancy and Delivery

The results from Table 2 depicted that, majority of the respondents (about 63 percent) said severe bleeding is the critical danger sign, followed by 57.3 percent of the respondents who said that eclampsia is one of the danger sign for a pregnant mother. However, 39.7 percent of all respondents said oedema is a danger sign while high blood pressure was reported by only 17.7 percent of all respondents. Therefore, the results generally, depicted that severe bleeding (hemorrhage) is critical danger sign to a pregnant mother in the study area.

However, the study done in Senegal (2012) described that danger signs which causes death were hemorrhage by 21 percent, eclampsia and pre-eclampsia was 19 percent, ruptured uterus/obstructed labor was 7 percent, and anemia was 5 percent. Obviously, women experiencing complications during pregnancy and at time of delivery were more likely to die than women who had no complications. Therefore, implications of the findings were associated with low level of awareness, right information on reproductive health to mothers and children as well as infrastructure and physicians and gynecologists. Virtually all the complications investigated were highly significant, with the exception of localized oedema, but risks associated with some complications were much higher than others.

Table 2: Differentials in Knowledge of Danger signs for Pregnant Mothers

Variable characteristics	No. of the respondents (n=)	Percentage
High blood pressure		
Yes	53	17.7
No	247	82.3
Severe bleeding/anemia		
Yes	188	62.7
No	112	37.3
Oedema		
Yes		39.7
No	119	60.3
	181	
Eclampsia		
Yes	172	57.3
No	128	42.7

Problem Encountered During First Pregnancy

The results from Table 3 below depicted that majority of the respondents (67.7 percent) encountered problems during their first pregnancy. It was found out that most of the women in the study area gave birth at early ages and obviously, the early the child birth the high the risks of getting problems associated with pregnancy and delivery. However, respondents who were asked about the problem incurred during their first pregnancy and said no, were only 32.3 percent of all respondents in study area.

A study done in Burkina Faso, Côte d'Ivoire, Mali, Mauritania and Niger (2001) depicted that, most common life threatening pregnancy complication was hemorrhage, which accounted for 46 percent of severe complications, more than half of hemorrhages occurred during the postpartum period. Most frequent severe complications were hypertensive disorders accounted for 10 percent, sepsis for 1 percent and a variety of other causes for 12 percent.

Table 3: Problem Encountered During First Pregnancy

Problem during first pregnancy	No. of the respondents (N=300)	Percent
Yes	203	67.7
No	97	32.3

3.4 Number of Antenatal Visits during pregnancy (ANC)

The findings from Table 4 depicted that almost 55 percent of the respondents attended ANC below four times of which the recommended antenatal visits by WHO is four times. Only 15.7 percent visited ANC more than four times, while few of them had attended ANC by 12.3 percent. This has implications to pregnant mothers because they are not attending ANC as recommended by World Health Organization (WHO), so they may have danger signs but because they are not aware of it, hence pregnancy complications.

Table 4: Antenatal visits

Number of ANC visits	Frequency	Percent
Four times	37	12.3
Below four times	37	55.3
More than four times	47	15.7
Not at all	50	16.7

Health Seeking Behavior on Danger Signs during Pregnancy

The results from Table 5 depicted that than 52 percent of the respondents went to TBAs when they recognized danger signs associated with pregnancy and delivery, 17.7 percent had to take traditional herbs, followed by 14 percent of all respondents who went to hospital and only 2.3 percent had to go for prayers to religious leaders. When TBAs experience complications during delivery, which they feel they cannot manage, they usually seek assistance from other TBAs, traditional healers, health workers resident in their communities, or they refer to a health care facility.

Table 5: Health seeking behavior with pregnancy and attendance to obtain services

Places of getting services	No. of the respondents (N=258)	Percent
TBAs	156	52.0
Hospital	42	14.0
Take traditional herbs	53	17.7
Go for prayers	7	2.3

Types of Problem Experienced During First Pregnancy

The findings in Figure 1 confirmed that majority of the respondents by 64.6 percent had the problem of anemia during the first pregnancy, 17 percent got problem of eclampsia during their first pregnancy, while 11.3 percent of all respondents faced the problem of scissors birth due to pregnancy complications.

Only 11 percent of the respondents suffered from hypertension during their first pregnancy. Generally, the results depicted that most of the women in the study area they have got problem of anemia when they are pregnant due to iron deficiencies.

Also another study done in Malawi, found that even the most basics, like iron supplements, were often out of stock, which naturally is a problem in a country where 50 percent of the pregnant women suffer from anemia (Kulmala, 2000). The same study, mentioned danger signs were anemia (35.0 percent), vaginal bleeding (17.3 percent) and swelling of the feet (13.9 percent),of which over a quarter (27.2 percent) of the respondents reported that they did not know of any danger sign during pregnancy (Hussein and Mpembeni, 2005).

Figure 1: Percentage distribution of problems faced during first pregnancy
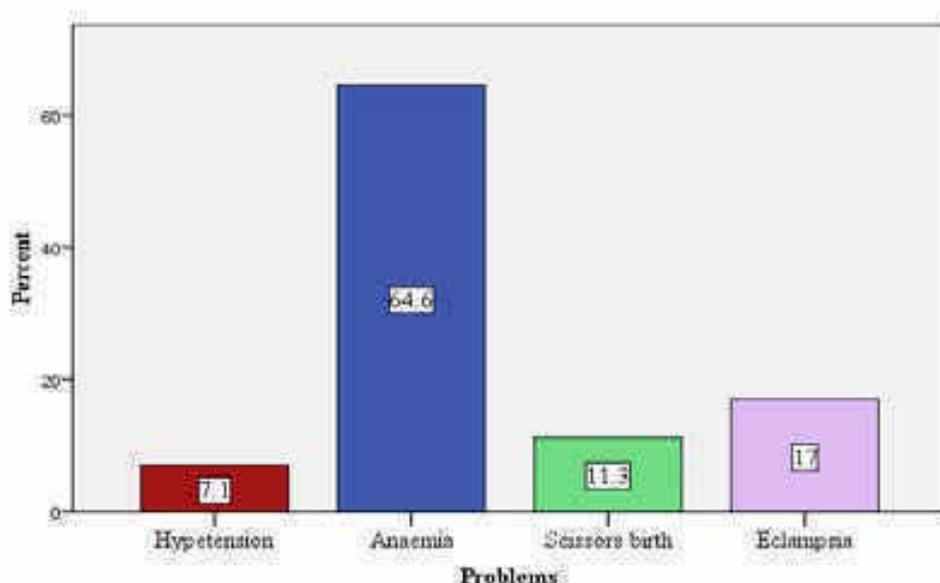
Association between Socio-Demographic Variables and Place of Delivery

Place of Delivery and Income

From Table 6 it was found that, 86.1 percent of the respondents who had income less than 30,000/= delivered at home while about 14 percent of them delivered at hospital. This compares with 85.1 percent of the respondents who had income above 30,000/= who delivered at home while 13.5 percent delivered at hospital. However, based on the computed Chi-square income showed insignificant correlation with place of delivered at 5 percent level (p = 0.094).

Indeed, proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that can cause the death or serious illness of the mother and/or the newborn baby. Unlike the use of antenatal care, the place of delivery, if adequate facilities are provided effectively, has consistently been found to be associated with reduction of maternal mortality (Thaddeus and Maine, 1994). However, according to TDHS (2010), 50 percent of births in Tanzania are delivered at a health facility, and 48 percent are delivered at home. The proportion of births that take place at health facilities varies according to the child's characteristics like births to younger women, low-order births, and births in urban areas are much more likely than other births to take place in a health facility.

Table 6: Cross tabulation between place of delivery and other variables

Variable	At home	At hospital	Total
Age (n = 229)			
15-24 years	49 (77.8%)	149 (22.2%)	63(100%)
25-34 years	96(90.6%)	10(9.4%)	106(100%)
35-49 years	56(93.3%)	4(6.7%)	60(100%)

$$\chi^2 = 8.364 \quad df = 2 \quad p = 0.015$$

Variable	At home	At hospital	Total
Education (n=300)			
No education	206(95.4%)	10(4.6%)	216(100%)
Primary +	63(75%)	21(25%)	84(100%)

$$\chi^2 = 27.086 \quad df = 1 \quad p = 0.000$$

Variable	At home	At hospital	Total
Income (n = 300)			
Below 30,000	68(86.1%)	11(13.9%)	79(100%)
30,000	45(85.1%)	7(13.5%)	52(100%)

$$\chi^2 = 0.006 \quad df = 1 \quad p = 0.094$$

Variable	At home	At hospital	Total
Transport(n=300)			
Foot	193(92.3%)	16(7.7%)	09(100%)
Motorcycle/ car	76(83.5%)	15(16.5%)	91(100%)

$$\chi^2 = 5.332 \quad df = 1 \quad p = 0.021$$

Place of Delivery and Age

The results depicted that majority (93.3 percent) of women aged 35-49 years delivered at home and merely 6.7 percent of them delivered at hospital, followed by 90.6 percent of women aged 25-34 years who delivered at home while only 9.4 percent delivered at hospital. About 78 percent of women aged 15-24 years delivered at home while 22.2 percent delivered at hospital. These results generally implied that, at young ages more respondents do deliver at hospital compared to older ages. A Chi-square test for the association between place of delivery and age was very significant at 5 percent level (p = 0.015).

Place of Delivery and Education

As it has been stated that education has a great influence on individual health seeking behavior, the results from Table 4.9 demonstrated that majority of the respondents (95.4 percent) who had no education delivered at home while only 4.6 percent delivered at hospital. Whereas, 75 percent of respondents who had attained primary level of education and above delivered at home, only 25 percent delivered at hospital. The computed Chi-square shows the significant association at 5 percent level between place of delivery and education (p = 0.000).

Place of Delivery and Means of Transport

The results from Table 4.9 depicted that 92.3 percent of the respondents who use their feet as a means of transport delivered at home while only 7.7 percent delivered at hospital. On the other hand 83 percent of those using motorcycle/car as means of transport delivered at home and only 16.5 percent delivered at hospital. The Chi-square test shows a significant association between place of delivery and means of transport (p = 0.021) at 5 percent level of significance.

However, a study done in West Africa (2001), the findings depicted that the majority of women by 81 percent gave birth at a health center, of these, 72 percent were assisted by midwives, 21 percent by

trained traditional birth attendants, 3 percent by doctors, and the rest by untrained attendants or family members. Among women who delivered at home, only 5 percent were attended by midwives or doctors, and 24 percent were assisted by trained traditional birth attendants.

Association between Assistance during Delivery and Other Variables

Assistance during Delivery and Education

From Table 7, the results demonstrated that 94.4 percent of all respondents who had no education delivered under the assistance of traditional birth attendants (TBAs) while only 5.6 percent delivered under the assistance of a doctor/nurse. On the other hand about 73 percent of the respondents who had attained primary level of education and above delivered under the assistance of traditional birth attendants and 27.4 percent delivered through assistance of a doctor/nurse. The computed Chi-square shows significant association at 5 percent level between assistance during delivery and education (p = 0.000).

Assistance during Delivery and Income

It was found that, about 52 percent of the respondents who had income less than 30,000/= delivered under the assistance of a doctor/nurse and 48 percent delivered through assistance of TBAs. About 54 percent of the respondents with income more than 30,000/= delivered under the assistance of a doctor/nurse while only 46.2 percent delivered with the assistance of TBAs. Based on the computed Chi-square income showed no significant effect on place of delivered at 5 percent level (p = 0.827).

Table 7: Cross tabulation between assistance during delivery and other variables

Variable	Doctor/nurse	TBAs	Total
Percentage distribution			
Education(n=300)			
No education	12(5.6%)	204(94.4%)	216(100%)
Primary +	23(27.4%)	64(72.6%)	84(100%)
	$c^2 = 27.955$ df =1 p = 0.000		
Income (n = 131)			
Below 30,000	41(51.9%)	38(48.1%)	78(100%)
30,000+	28(53.8%)	24(46.2%)	52(100%)
	$c^2 = 0.048$ df =1 p = 0.827		
Age (n=229)			
15-24 years	15(23.8%)	48(76.2%)	63(100%)
25-34 years	10(9.4%)	96(90.6%)	106(100%)
35-49 year	7(11.7%)	53(88.3%)	60(100%)
	$c^2 = 7.153$ df =2 p = 0.028		

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Assistance during Delivery and Age

The results from Table 7 depicted that about 91 percent of the respondents aged 25-34 years were assisted by TBAs during delivery and 23.8 percent were assisted by doctors/nurses; 88.3 percent of the respondents aged 35-49 years were assisted by TBAs while only 11.7 percent were assisted by doctors/ nurses. The majority of the respondents are assisted by TBAs due to various reasons including distance as well socio-cultural aspects of Maasai communities. However, at the young ages (15-24 years) about 24 percent do seek assistance from health professionals due to pregnancy and delivery complications. Based on the computed Chi-square, the results show that age has a significant association with seeking assistance during delivery at 5 percent level (p = 0.028).

Conclusion and Recommendations

According to the empirical findings, a lot could be gained by simple prevention, in particular regular antenatal visits, vaccinations, and quick referral in case of complications. Many simple actions are at stake here, such as warning the women about clean delivery, warning about the critical symptoms requiring quick referral, prevention and treatment of anemia, and monitoring of hypertension. Better care of emergencies in the hospital could also save many lives.

However, TBAs should be taken as part of RCH in these pastoralist communities because of their cultural believes. Regular training and seminars should be conducted so as to help mothers in those remote areas. Some deaths could also be prevented by identifying biological risks factors, in particular any previous obstetric complication such as cesarean section. Although maternal complications and deaths often occur to women without previous problems and obviously to women in their first pregnancy, empirical evidence shows that special care of these women could significantly contribute to the reduction of maternal risks. Some maternal deaths could also be prevented by tackling demographic risk factors.

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