

Review of Maternal Mortality and Near-Miss Events in Kintampo Municipality in the Brong Ahafo Region of Ghana

Article by Gabriel Opoku

Ph.D. in Public Health, Texila American University, Ghana

E-mail: gabfaraday74@gmail.com

Abstract

Background: Ghana is one of the countries associated with high maternal deaths and near-miss events. This country has adopted the millennium development goals including reducing maternal mortality by three-quarters, and put improvement in maternal health as one of the health sector development programme performance indicators. The purpose of the study was to review maternal mortality and near-miss events in Kintampo Municipality in the Brong Ahafo Region of Ghana in the past 5 years.

Objectives: The measurement of the study were antenatal and postnatal services family planning and abortion practices, delivery care, education and information services, delay in reaching health facility and facility delay

Methods: Study participants were 196. Secondary data was used to collect information at facility level of which 16 health staff took part. In all, 30 maternal deaths and 45 near-misses from 2007 to 2011 were reviewed. Verbal autopsy was used on 180 participants from 5 communities.

Results: 92% of maternal deaths occurred among young adults. 73% were in critical condition upon arriving at the hospital. 97% of the death occurred at the health facility. Attitude of health staff and inadequate maternal health services were significantly associated with maternal deaths. 90% were not practicing family planning. 48% of them have practiced unsafe abortion before. Facility delay is significantly associated with maternal death and near-miss events

Conclusion: The results of the study can stimulate a change in clinical practice. The study can be used as a quality improvement tools in facilities.

Definition of terms

Adolescence: According to Eric Erikson's stages of human development, adolescence is from 13 to 19 years.

Community: A group of people who have something in common and act together in their common and collective interest.

Family planning: Family planning includes methods and practices to space births, limit family size and prevent unwanted pregnancies.

Haemorrhage: Haemorrhage is merely another word for bleeding or blood loss. It is a profuse bleeding from ruptured blood vessels.

Live birth: The birth of an infant, after the duration of gestational viability (28 weeks), that exhibits any sign of life, such as respiration, heartbeat, or umbilical pulsation

Maternal mortality: The death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes

Middle adult: According to Erik Erikson's stages of human development, a person in the middle adulthood is from 40 to 64 years.

Multiparous: A mother having two or more children

Near-miss: Any pregnant or recently delivered woman (within six weeks after termination of pregnancy or childbirth) who experienced complications that immediately threatened her survival but did not lead to her death.

Nulliparous: A woman who has never given birth.

Obstructed labour: The term implies failure of progress of **labour** due to mechanical obstruction despite strong uterine contractions.

Primiparous: A woman who has given birth only once or a woman who has borne but one child

Puerperium: The period immediately after childbirth when the womb is returning to its normal size, lasting approximately six weeks

Skilled birth attendants: Providers with midwifery and obstetric skills, thus excluding trained birth attendants.

Stillbirth: Stillbirth is the birth after 28 weeks of pregnancy which shows no signs of life. It can happen before the baby is born, during the pregnancy or during labour.

Sepsis: It is a severe illness caused by overwhelming infection of the bloodstream by toxin-producing bacteria. Microorganisms invading the body cause infections.

Young adult: A young adult, according to Erik Erikson's stages of human development, is generally a person in the age range of 20 to 40.

Introduction

A maternal death is defined as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental causes.

(WHO 1993)

Maternal near-miss event is defined as any pregnant or recently delivered woman (within six weeks after termination of pregnancy or childbirth) who experiences complication that immediately threatened her survival but did not lead to her death because of a decisive and timely intervention. Such a woman arrives at the hospital or clinic in a critical condition or developed a critical complication after admission (WHO, 2004; Fillippi et al., 2005.)

According to the last international estimates published in 2012, 287,000 maternal deaths occur annually worldwide, which represents a 47% decline from levels in 1990. However, 99% of these still occur in developing countries, with 85% occurring in sub-Saharan Africa and South Asia. Among developing regions, sub-Saharan Africa has the highest Maternal Mortality Ratio (MMR), with 500 maternal deaths per 100,000 live births (in comparison to a global MMR of 210).

In addition, for every woman who dies, approximately 20 more experience infection, injuries or disability.

Perinatal mortality tends to follow the same geographical pattern as maternal mortality. Every year there are 3.3 million stillbirths and over 4 million newborns die during the first 28 days of life, of which 3 million die in the first 7 days (3-4). In developing countries, about one third of these deaths are related to perinatal complications responsible for birth asphyxia.

The main causes of maternal mortality are known, and more than 80% of maternal deaths could be prevented or avoided through actions that are proven to be effective and affordable, even in the poorest countries in the world.

The international health community has repeatedly called for action to reduce the large number of preventable deaths and complications from childbearing and governments have formally committed themselves to act in order to achieve this.

Skilled attendance at delivery is advocated as the single most effective intervention for preventing maternal deaths, and the proportion of births attended by skilled health personnel is one of the indicators for the fifth Millennium Development Goal. Access to skilled delivery care is also crucial to prevent stillbirths and to improve newborn survival.

It is critical that women with serious complications receive care from a skilled birth attendant in an appropriate environment. This entails ensuring that appropriate drugs, equipment and infrastructure are available. “Hospital births alone are not enough to save

mothers' lives; high maternal mortality rates have occurred in hospitals where the quality of care is poor”.

“The quality of care provided to the women is a key determinant in maternal outcome and that simple changes in practice can save many lives”.

To improve quality of care, the WHO has developed and made available norms, tools, clinical standards and guidelines. These are aimed at ensuring that standardised guidance is available for the treatment and prevention of the major obstetric complications, which are responsible for the vast majority of deaths and disabilities.

However, having guidelines and evidence-based clinical standards in place may not be sufficient, and action is also needed to promote adherence to recommendations. Medical audits may help to maintain or increase adherence to clinical standards and improve quality of care. The Maternal Death Review (MDR) is a type of medical audit. It is “a qualitative, in-depth investigation of the causes of and circumstances surrounding maternal deaths occurring at health facilities”.

“Avoiding maternal deaths is possible, even in resource-poor countries, but it requires the right kind of information on which to base programmes. Knowing the level of maternal mortality is not enough; we need to understand the underlying factors that led to the deaths. Each maternal death has a story to tell and can provide indications on practical ways of addressing the problem. A commitment to act upon the findings of these reviews is a key prerequisite for success”.

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Problem statement

In Ghana, for the past 10 years of Millennium Development Goals implementation, challenges of inequalities, geographical disparities and sustaining the progress still remain. Last year marked Millennium Development Goals implementation deadline, Ghana still lack behind its efforts towards the achievement of all the Millennium Development Goals especially those lagging behind such as Millennium Development Goal 4 (Child Health), 5 (Maternal Health), and 7 (Environmental).

Maternal mortality rate as captured by both survey and institutional data has shown an improvement over the past 20 years. However, the pace has been slow. Between 1990 and 2005, maternal mortality ratios reduced from 740 per 100,000 live births to 503 per 100,000 live births; and then to 451 deaths per 100,000 live births in 2008. This trend is also supported by institutional data which suggest that maternal deaths per 100,000 live births has declined from 224/100,000 in 2007 to 201/100,000 in 2008, after an increase from 187/100,000 in 2004 to 197/100,000 in 2006. If the current trends continue, maternal mortality will be reduced to only 340 per 100,000 in 2015 instead of the Millennium Development Goal target of 185 per 100,000 by 2015. There are disparities in maternal mortality ratio (institutional) across the 10 regions in Ghana from 1992-2008. Maternal mortality ratio has decreased by up to, 195.2 per 100,000 in Central and Upper East region; 141 per 100,000 in Northern and Western Regions; 120.1 per 100,000 in Volta and Eastern Region; and 59.7 per 100,000 in Upper West, Brong Ahafo and Ashanti Regions. The only region where maternal mortality rate has worsened is Greater Accra (by 87.6 per 100,000). Unless extreme efforts are made by all stakeholders, Ghana is unlikely to meet the Millennium Development Goal target.

Policy measures for improving health services in general and maternal care in particular, are enshrined in the national development policy frameworks including the GPRS I, GPRS II and draft Medium-Term National Development policy Framework 2010-2013 as well as specific Health sector policies. Furthermore, Ghana has numerous initiatives in place to

address the issue of maternal mortality but the results have not led to desirable improvement in Millennium Development Goal target.

5. Specific initiatives put in place to address the high levels of maternal deaths include the Safe Motherhood Initiative, Ghana Vitamin A Supplementation Trial (VAST), Survival Programme, Prevention of Maternal Mortality Programme (PMMP), Making Pregnancy Safer Initiative, Prevention and Management of Safe Abortion Programme, Intermittent Preventive Treatment (IPT) of Malaria, Maternal and Neonatal Health Programme, Roll Back Malaria programme, and the free Antenatal Care.

In spite of the efforts made to reduce maternal mortality, it remains high in Ghana, and the Brong Ahafo region is of no exception. In 2007 Brong Ahafo region recorded 88 maternal deaths. However, in 2008, maternal deaths in Brong Ahafo region reduced from 88 to 81. In 2009, maternal deaths in the Brong Ahafo Region increased from 81 (in 2008) to 94, according to the opening report of the 2009 annual review meeting of the Regional Health Directorate at Fiapre near Sunyani on February 18, 2010. Again the Regional Health Directorate of the Ghana Health Service recorded 76 cases of maternal deaths in 2011 as against 66 cases the previous year. Looking at these statistics from 2007 to 2011, Brong Ahafo region alone has experienced 405 maternal deaths of which Kintampo alone experienced 30. In 2007, Kintampo municipality experienced 2 maternal deaths, and in 2008 the figure increased to 8. Maternal mortality was 6 in 2009. In 2010 the municipality experienced 10 maternal deaths out of the total of 66 of the entire region. In 2011, Kintampo municipality recorded 4 maternal deaths.

The increase in maternal death and near-miss in the region substantiate to the need for this research to be done to find out the factors contributing to maternal mortality and morbidity in Brong Ahafo region using the Kintampo Municipality as a case study.

Rationale for the study

Ghana, like other developing countries has a high maternal mortality ratio. Despite heightened efforts to reduce maternal deaths over the last decade, the country has lagged behind in achieving agreed targets as stated under Millennium Development Goal 5. It is unacceptable for 451 women out of every 100,000 babies born alive to die through pregnancy related complications in Ghana. Complications of pregnancy and child birth are usually not predictable but prevention of the fatality is possible when there is early recognition and effective management of the situation. Whenever we complain about children on the streets and other attendant problems, the problem can partly be traced to the non-availability of a mother to support the family.

While we talk about reducing maternal deaths as Goal 5, it invariably links up with Goal 4 which is reducing Child Mortality and Goal One in eradicating extreme poverty and hunger. The effort to encourage women to visit their health facilities during pregnancy must be compliment by positive attitude from health workers. This is the only way to motivate the mothers to continue to show up at the facilities. Every life is important and it pays for all not to see the figures as just mere statistics. They can relate to anybody from government officials through health workers to the person on the street. A woman should not die when giving life.

This study seeks to identify the major factors contributing to high maternal mortality in Kintampo North Municipality. Recommendations were based on the findings. This will help the municipal, government and other non-governmental organizations to adopt appropriate measures to bring the tragedy of maternal mortality in the municipality under control. The study will also serve as a reference material for policy makers and other stakeholders.

Objectives of the study

Main objective

The main objective is to study maternal deaths and near-miss events at the community and facility levels of Kintampo municipality of the Brong Ahafo region to explore the causes and circumstances surrounding maternal mortality and near-miss events.

Specific objectives

1. To determine factors that influence utilization of antenatal care services.
2. To determine factors that influence utilization of family planning.
3. To ascertain factors that influence women to opt for abortion.
4. To determine how delivery care influences maternal deaths.
5. To determine factors that influence postnatal care services.
6. To determine how education and information services influence maternal health.
7. To determine how delay in reaching health facility influences maternal mortality and severe morbidity.

Methodology

Study type

A non-experimental, descriptive design utilizing maternal death and near-miss events was used for data collection to determine factors contributing to maternal mortality and near-miss event in Kintampo North Municipality in the Brong Ahafo region of Ghana.

Study area

The study area comprised all the sub-districts in Kintampo North Municipality.

Target population

Interviews were conducted with women who suffered a severe morbidity or near-miss events, family members of women who died or presented with a severe morbidity, community members and health workers involved in the care of the women. Focus group discussion was also done in four sub-districts that experienced high rate of maternal mortality and near-miss events from 2007 to 2011.

Data collection techniques and tools

Data was collected on all maternal deaths and near-miss events which meet the purpose of the study. Secondary data was used to collect information on maternal mortality and near-miss events. The tools included sections for gathering demographic data as well as information from chart reviews. Health personnel were interviewed based upon the facility secondary data. In all, from 2007 to 2011, Kintampo municipality experienced 30 maternal deaths and 45 near-miss events. (Municipal Health Information Department)

In addition, to facilitate a better understanding of the circumstances surrounding the death or near-miss events, secondary data was used to collect information at facility level of which 16 health staff took part. In all, 30 maternal deaths and 45 near-missed from 2007 to 2011 were reviewed.

Verbal autopsy was used on 180 participants from 5 communities.

Interviews were conducted using open and close ended questions were conducted among women who suffered severe morbidity or near-miss event and family members of women who died or presented with a severe morbidity.

The sub-districts selected were New Longoro, Kawoumpe, Dawadawa, Portor, and Kintampo.

Interviews were conducted in the participant's choice of language with responses immediately recorded onto the tool in English language. Prior to data collection, the purpose of the study was explained to participants. Confidentiality was assured and verbal informed consent was obtained. Participants were informed they could decline to answer any questions or end the interview at any time.

Sampling techniques and sample size

Sample size

A total of 196 respondents was estimated and used for the study. This was based on the maternal mortality and morbidity prevalence rate of 15% in the municipality. (MHMT, 2010)

$n = z^2 (pq)/d^2$ (Wayne 2006) Where

n = sample size

z = Reliability Coefficient with 95% confidence interval

p= Population variance available from previous data, where q = 1-p

d = the desired or the required size of standard error allowed. If the value of p is 0.15 and the desired standard error chosen to be 0.05 with reliability coefficient of 95 % certainty (z = 1.96).

$$\text{Then, } n = \frac{[(1.96)^2 (0.15 * 0.85)]}{(0.05)^2}$$

$$n = 195.9 \approx 196$$

Sampling technique

Kintampo North municipality consists of seven sub-districts. Secondary data from each sub-district health facility was used to collect information on all maternal deaths and near-miss events and circumstances that led to the death or near-miss events. After having information on maternal mortality cases and near-miss events from 2007 to 2011 in each health facility in the sub-district, health workers involved in the care of the women were purposively selected and interviewed. This was done to validate and confirm secondary data collected from each facility.

Also all information on near-miss events, recorded at each health facility in the sub-districts was obtained.

Verbal autopsy was also used in the study to know the perception of the community members on the causes of maternal mortality and near-miss events in the community. This was based on the prevalence rate of maternal mortality and near-miss events in the sub-districts. The sub-districts selected were New Longoro, Kawoumpe, Dawadawa, Portor and Kintampo.

Data analyses

Data was analysed to identify factors contributing to maternal morbidity and mortality. Secondary data for both quantitative and qualitative were collected at the facility and community level. Quantitative data was transcribed into an excel spreadsheet for analysis. Quantitative data was analyzed within the framework of the objectives of the study.

Limitation

Limitations to the study were that, data was collected in only one of 22 districts in the region. There might be also selection bias, recall bias and information bias. These were addressed by cross-checking respondent's responses with other close relative for better accuracy. Other than that, this might have affected the general representation of the results.

Results

Introduction

This chapter details the findings of the 196 respondents interviewed. In all, 30 maternal deaths and 45 were near-miss events which occurred from 2007 to 2011 were analyzed and reviewed at the selected facilities. Verbal autopsy was also used on 121 respondents.

The presentation of the results is based on the objectives of the study.

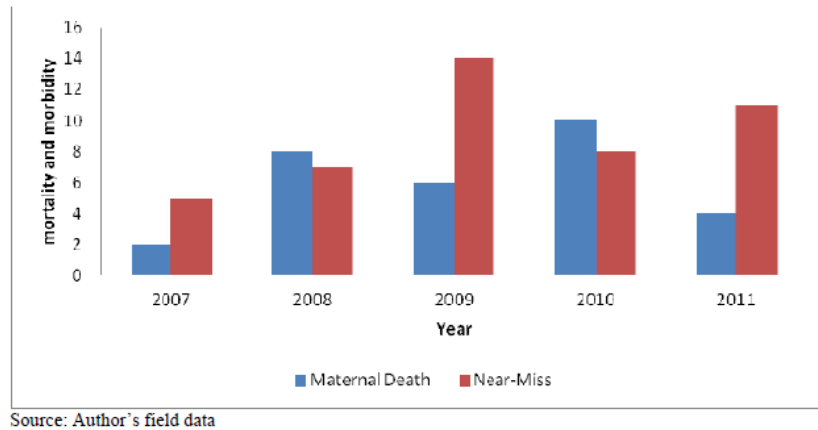


Figure 1: Distribution of Maternal Mortality and Near-Miss Events per Year.

Figure 1 above indicates that from 2007 to 2011, Kintampo North Municipality experienced 30 maternal deaths and 45 near-miss events. Out of the total deaths and near-miss events, there were six (6) deaths and fourteen (14) near-miss events that constitute 20.0% and 31.0% in 2009. In 2010, maternal mortality increased from 6 to 10 and maternal morbidity reduced from 14 to 8 respectively and constitutes 33.3% and 17.8%. In 2011, there were 4 (13.3%) deaths and 11 (24.0%) near-miss events.

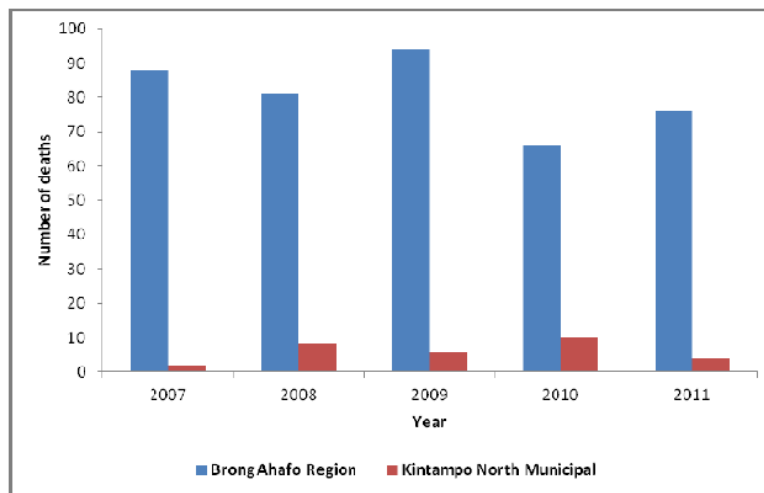


Figure 2: Maternal Mortality figures in Brong Ahafo Region as against Kintampo North Municipal; (2007-2011).

Looking at figure 2; from 2007 to 2011, Brong Ahafo Region experienced four hundred and five (405) maternal deaths for the entire 22 districts of which Kintampo North Municipality alone experienced thirty (30) maternal deaths which constitutes 7.4%.

The graph above indicates that in 2009 there were 94 maternal deaths in Brong Ahafo region and out of it; Kintampo North experienced 6 deaths constituting 6.3% in the region. In 2010 and 2011 there were 66 and 76 maternal deaths in the region of which Kintampo obtained 10 and 4 respectively constituting 15.2% and 5.3%.

Table 1: Demographic Characteristic of Study Population Stratified by Maternal Mortality and Near-Miss

Parameter	Total Population <i>n=75(%)</i>	Maternal Deaths <i>n=30(%)</i>	Near-Miss <i>n=45(%)</i>
<i>Marital Status</i>			
Single	17(22.67)	7(41.17)	10(58.82)

Married	58(77.33)	23(39.65)	35(60.34)
<i>Religion</i>			
Christianity	46(61.33)	16(34.78)	30(65.22)
Islam	24(32.00)	10(41.67)	14(58.33)
Traditional	5(6.67)	4(80.00)	1(20.00)
<i>Educational Status</i>			
No Education	37(49.33)	18(48.65)	19(51.35)
Basic	32(42.67)	11(34.38)	21(65.62)
Secondary	6(8.00)	1(16.67)	5(83.33)
<i>Occupational Status</i>			
Unemployed	8(10.67)	1(12.50)	7(87.50)
Farmer	30(40.00)	11(36.67)	19(63.33)
Trader	24(32.00)	5(20.83)	19(79.17)
Other	13(17.33)	13(100)	0(0.00)
<i>Parity</i>			
Nulliparous	14(18.67)	8(57.14)	6(42.86)
Primiparous	17(22.67)	10(58.82)	7(41.18)
Multiparous	44(58.66)	12(27.27)	32(72.73)
<i>Psychosocial Dev't</i>			
Adolescence	5(6.67)	2(40.00)	3(60.00)
Young Adult	69(92.00)	28(40.58)	41(59.42)
Middle Adult	1(1.33)	0(0.00)	1(100)
Average age	27.52	25.27	29.02

Data is presented as figure with percentages in parenthesis, and averages. N- Number, %-percentage, Dev't- development.

Table 1 indicates that the average age of women who experienced maternal mortality and women with a near-miss event was approximately 28 years with the greatest number between 20 and 30 years, of which 17 of them were single and 58, were married constituting 22.7% and 77.3% respectively. The computed chi-square statistic has a value of 22.413 and the significance value is 0.00. Since this value is less than the alpha level, we can reject the hypothesis of independence at the 0.05 level. Thus, marital status has influence on maternal mortality and morbidity.

Also looking at Table 1 above, majority, 46 were Christian, 24 Islam, and only 5 were traditionalists, constituting 61.3%, 32.0%, and 6.7% respectively. The computed chi-square has a value of 33.680 and the significance level is 0.00. Since this value is less than the alpha level, we can reject the hypothesis of independence at the level 0.05. Thus religion and maternal mortality and morbidity are in fact related.

Out of 75 women who experienced maternal mortality and near-miss events, majority 37(49.3%) had no education, 32(42.8%) had basic education, and only 6 (8.0%) had up to secondary education respectively. The obtained chi-square statistic is 22.160 and significance value is 0.00. Since this value is less than the alpha level, we can reject the hypothesis of independence at the 0.05. Thus the level of education and maternal mortality and morbidity are in fact related.

Table 1 above further shows that out of the 75 women who experienced maternal mortality and morbidity, 8(10.7%) were unemployed, 30(40.0%) were farmers, 24(32.0%) were traders, and 13(17.3%) were hair-dressers respectively. There was no civil servant. The computed chi-square statistic has a value of 16.147 and its significance value is 0.001. Since this value is less than the alpha level of 0.05, we can conclude that occupation and maternal mortality and morbidity are not independent; rather the two variables are related.

Table 1 indicates further that, 14(18.7%) women had no children, 17(22.7%) were having 1 child each, and 44(58.6%) were having 2 or more children each. The computed chi-square statistic has a value of 21.840 and significance value 0.00. Since significance value is so low that it is displayed as 0.00, the two variables are indeed related. Thus the number of children of a woman actually influences maternal mortality and near-miss.

Table 2: Respondent Health Seeking Behaviour and Priority Rating of Factors that Contribute to Maternal Death and Near-Miss Events

Parameter	Total (n=75)	Maternal Deaths (n=30)	Near-Miss (n=45)
<i>Health Seeking Behaviour</i>			
Excellent	28(37.33)	13(46.43)	15(53.57)
Good	22(29.33)	7(31.82)	15(68.18)
Poor	25(33.34)	10(40.00)	15(60.00)
<i>Priority Factor Rating</i>			
USA	28(37.33)	11(39.29)	17(60.71)
NAAC	22(28.00)	8(38.14)	114(61.91)
DRH	14(18.67)	3(21.43)	11(78.57)
IDC	5(8.00)	2(33.33)	3(66.67)
IEDU	2(2.67)	2(100)	0(0.00)
NPCS	2(2.67)	2(100)	0(0.00)
TMB	2(2.67)	2(100)	0(0.00)

Data is presented as figures with percentages in parenthesis, N-number, %-percentages, USA-unsafe abortion, NAAC-not attending antenatal care, DRH-delay in reaching health facility, IDC-inadequate delivery care, IEDU-inadequate education and information services, NPCS- not attending for postnatal care services, TMB-too many births.

Of the 75 respondents who were interviewed on contributory factors to maternal mortality and near-miss events, 28(37.3%) attributed it to unsafe abortion, and 22(28.0%) said not going for ANC services. Delay in reaching health facility also constituted 14(18.7%). The rest attributed it to inadequate delivery care 5(8.0%), inadequate education and information services 2(2.7 %), not going for postnatal care services 2(2.7%), and 2(2.7%) said too many births.

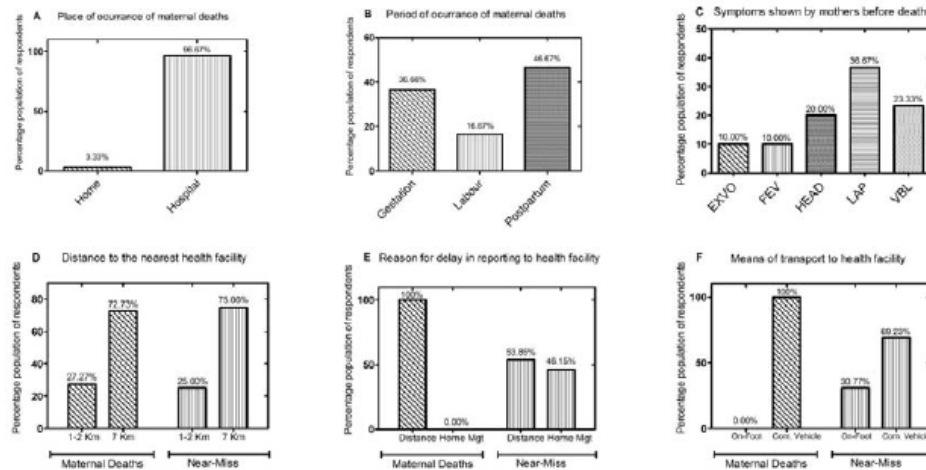


Figure 3: graph (A) shows place of occurrence of maternal deaths, (B) gestational period of occurrence of maternal deaths, (C) symptoms shown by mothers before death, (D) distance to the nearest health facility, (E) reason for delay in reaching health facility, and (F) means of transport.

Figure 3, graph (A) above indicates that out of 30 maternal deaths, only 1(3.3%) death occurred at home, and the rest 29(96.7%) constituting the majority occurred in hospital. Figure 3 graph B; shows that majority of the deaths 14(46.6%) occurred immediately after delivery, 11(36.7%) during pregnancy, and 5(16.7%) during labour. Figure 3 graph C; indicates the symptoms shown by mothers before death. Lower abdominal pains (36.7%), vaginal bleeding (23.3%), headache (20.0%), fever (10.0%), and excessive vomiting (10.0%). Figure 3 graph D; shows that for majority constituting (72.7%) of women who experienced maternal death, the distance to the nearest health facility was 7km and only (27.3%) was 1-2km. For women who experienced maternal morbidity, (75.0%) distance to the nearest health facility was 7km and only (25.0%) was 1-2km. Figure 3 graph E; indicates that; for the maternal deaths, all the women who were delayed in reaching the health facility attributed the delay to distance to the nearest health facility was too far. For maternal morbidity, the majority (53.8%) attributed the delay to distance; while (46.2%) attributed it to delay at home. Figure 3, graph F shows that, for the maternal deaths, means of transport to health facility was by commercial vehicle while women who experienced near-miss, majority (69.3%) means of transport to facility was by commercial vehicle and only (30.7%) walked to the facility.

Discussion

Introduction

This section of the study discusses the findings of the study. The implications of the findings to the health of the community and mostly, pregnant women are inferred. In addition, it provides other observation of maternal mortality and near-miss events that have been established in related work and also related to the observations made in this study. Its arrangement is based on the objectives of the study.

Maternal Mortality and Near-Miss events trend in Kintampo North Municipality compared to that of the Brong Ahafo Region.

In 2007 to 2011, Kintampo North experienced 30 maternal deaths and 45 near-miss events. In 2007, maternal death was 2 and near-miss events 5. In 2008, maternal death was 8 and near-miss was 7. In 2009 maternal death was reduced from 8 to 6 deaths while near-miss was increased from 7 to 14 in the same year. Again in 2010, maternal death increased from 6 to 10 while near-miss reduced from 14 to 8. In 2011, maternal mortality was reduced from

10 to 4 whiles near-miss increased from 8 to 11. In the same year period, (2007 to 2011) the Brong Ahafo Region experienced 405 maternal deaths. In 2007, the region experienced 88 maternal deaths. In 2008, maternal deaths in the region assuaged from 88 to 81 whiles in 2009 it increased from 81 to 94. In 2010, maternal deaths in the region abated from 94 to 66 deaths. However, in 2011, maternal death increased from 66 to 76.

This unfortunate trend has implications on improving the lives of women in the region and more importantly achieving the MDG goal number five (Hertcht, 2006). On the later, if the trend continues it is obvious that reducing mortality ratio by 75% by the year 2015 would be a mirage. There is therefore the need to critically examine the impact of current interventions aimed at achieving this objective such that, at least, a reasonable achievement could be made towards the target within the few years left towards 2015.

It was observed that, almost half of the deaths 14 (46.6 %) occurred after delivery, 11(36.7%) during pregnancy, and only 5(16.7%) during labour. Most of the deaths, 96.7% occurred in health facility and only 3.3% occurred at home. Most symptoms associated with the deaths were severe labour pains 36.67%, and vaginal bleeding was 23.33%

Association between Socio Demographic Characteristic of Respondents and Maternal Death and Morbidity

Age has been noted to be a significant factor in the incidence of maternal death and morbidity (Christian, 2009). Indeed most of the maternal deaths and morbidity occurred among relatively younger women. The study found out that 5(6.67%) of the women who experienced maternal mortality and morbidity were adolescence, 69(92.00%) were young adult and only 1(1.33%) was middle adult. Prolonged labour or obstructed labour occurs where malnutrition is greater and where girls marrying at a young age are expected to prove their fertility. (The consequences of maternal morbidity and mortality, national research council, 2000). The young women form critical part of the productive sector of the economy of the municipality. They could have dispensed their energy in farming, education, and among other occupation to the benefit of the people and the municipality. The death of these young women therefore could affect the development of the area. The essence of young people forming the critical manpower for every community cannot be underestimated. It is therefore worrying that despite this recognition, the communities are still not up to the task of protecting their own from avoiding deaths such as maternal deaths. The life of these young and productive women could be saved through family and community support and the use of the community structured health services including CHIPS were used.

It is perceived that married couples would care for each other by providing social and financial support for each other in times of meeting health needs of one another. Pregnant women who might have been sick or required urgent attention during labour may have received enough assistance and care from the spouse so as to prevent death. Unlike the unmarried women who are pregnant, there should be some concern and response to ill health in times of pregnancy among married women. However, it is worth noting that maternal deaths and near-miss were higher in married women than single women. Maternal deaths and morbidity among married women was 58(77.3%) as compared to single women 17(22.7%) respectively. This may be due to the fact that the majority of the women's husbands were unemployed. The occupation of the women husbands is a significant predictor of maternal deaths. The unemployed partner may not have the requisite resources to support the pregnant wife to go through regular ANC, labour and delivery.

It is evident from this study that the educational level of the women had strong relationship with maternal mortality and morbidity. In fact, out of 75 women who experienced maternal mortality and morbidity from 2007 to 2011, 37(49.3%) had no basic education, 32(42.8%) had basic education, and only 6(8.0%) had education up to 2nd circle. The computed chi-square statistic is 22.160 and significance value is 0.00. Therefore the study found that the level of education and maternal death are not independent.

The occupation of the women was also a significant predictor of maternal deaths and near-miss event. The study found out that 8(10.7%) of the women were unemployed, 30(40.0%) were in small scale farming, 24(32.0%) were petty traders, and 13(17.3%) were in apprentice in seamstress and hairdressing. In fact there was no death and near-miss among civil/public servant. It is presumed that the pregnant women who were employed were more capable, concerned and responsible for themselves either than relying on their husbands as compared to those unemployed. The obtained chi-square statistic has a value of 16.147 and its significance value is 0.001. Since this value is less than the alpha level of 0.05, the study concluded that, occupation and maternal mortality and morbidity are in fact related.

The parity of the women had significant influence on maternal death and near-miss (Christian, 2009). The trend analysis showed that women who were nulliparous 14(18.7%) were less likely to experience maternal mortality and morbidity as compared to primiparous, 17(22.7%), and those who were multiparous, 44(58.665%) are more likely to experience maternal mortality and morbidity. The computed chi-square has a value of 21.840 and significance value 0.00. It is well documented that increased risk of maternal death and morbidity has a relationship with parity. Indeed, the Ghana health service identifies women with parity five and above as high risk groups requiring tertiary services attention due to the possibility of developing of complications.

Health Seeking Behaviour of Mothers who Experienced Maternal Mortality and Near-Miss Events

Attending ANC is one of the key indicators for measuring pregnancy outcomes (Galadance et.al, 2007). Ghana health service promotes the use of ANC services as a means of preventing avoidable maternal deaths. Antenatal care is one of the most important ways of reducing maternal mortality and morbidity (2007 maternal health survey). The question is; how many women are taking advantage of it? This is intended through the intensive education in the community on the need to use ANC services coupled with providing services to the door steps of the women in the form of CHPS. It is enshrined in the ANC policy of the GHS that women who access the services among several services are examined thoroughly for possible complications of pregnancy and are advised or treated appropriately. The problem is that some of these complications cannot be predicted and worst of all cannot be prevented. Yet early identification in a facility can help for it to be managed to avoid needless death (Save the Children, 2000). Unfortunately majority of the women who died as a result of pregnancy or its related complications did not use ANC services. This was also observed in many studies (Onah et.al. 2006; Galadance et al 2007). Indeed those (70.7%) who used the services fell below the national average of about 90% (GHS, 2007).

It is not only important to attend ANC but to also be regular. It is expected that every pregnant woman in Ghana should attend ANC at least four times. Regular attendance to ANC would ensure that indicators for complications and necessary delivery plans such as caesarean section are quickly noted and planned ahead of time. It was observed in the study that (81.1%) attended ANC twice or more. However, only 1(0.02%) attended ANC four times. Gestational period at first ANC; three months or less was 62.3%. It was observed in the study that majority (99.98%) of the maternal deaths and morbidity was noted to have not attended ANC four times or more. The question is what could have accounted for this? During interview, majority (67.3%) said ANC services are discouraged as a result of attitude of health staff during ANC services and only (32.7%) pivoted it to inadequate maternal health services during ANC. Also during focus group discussion among community members, majority (53.3%) said attitude of health staff and financial constraints. The studies found out that, the health seeking behaviour of the women are not encouraging and this could have accounted for this high incidence of maternal deaths and near-miss events.

Delivery Care, Necessary Emergency Obstetric Care facility and Equipment and Utilization of Postnatal Care Services

Postnatal period is the medical term for the period following childbirth during which the body tissues, in particular the genital and pelvic organs, return to the condition in which they were in pre-pregnancy. This post delivery period of change continues about six weeks (42 days) from delivery. Postnatal care is the care given to both mother and the baby during this period. The first 24 hours after birth is a critical stage of the postpartum period. Occasionally, this is the time most life threatening complications of delivery manifest. Ideally, a new mother should visit a health facility for her first postpartum, or be visited by a health worker at home, within 7 to 10 days after the delivery. This is especially true if she delivered at home. This visit is important to make sure that the woman and the baby are recovering from the labour and delivery.

Serious complications can still occur after the woman has given birth and as such activities carried out during PNC include management of the normal puerperium, identification and management of complications, micronutrient supplementation, immunization of mother and baby, voluntary counselling and testing and STI prevention, family planning counselling and services. (Dr. Arkutu, 1995)

The study found out that 48(64.0%) of the women were able to carry their pregnancy to gestational term, majority 36(75.0%) delivered at health facility and the rest 12(25.0%) delivered at home. The study observed that of the women who delivered at home, 10(88.3) experienced complications during labour and 4 died. According to State of the World's Mothers 2000, Save the Children; and Reproductive Health Interventions, although Sri Lanka has a low per capita income, over 94 percent of its births occurred in hospitals causing its MMR to decline thus, 30 deaths per 100,000 live births in 1999.

Those who delivered at health facility 11(30.6%) of them experienced complications during labour and 1 of them died. The complications were haemorrhage (33.3%), and severe anaemia (31.0%) followed by sepsis (27.7%) and eclampsia (9.0%). Furthermore, it was noticed that, only 4(33.3) of women who delivered at home had live births while live births for women who delivered at health facility was almost 64%.

It was also observed in the study that 37 mothers who experienced complications after delivery, 6(16.2%) had their PNC less than three days after delivery, 11(29.7%) three days and above, and 20(54.1%) had no PNC. Of the women who did not have any PNC, 14(70.0%) of them died. During focus group discussions among community members, almost 75.0 percent of the respondents said some women do not use health facility during delivery because of unfriendly attitude of health staff and financial constraint. Almost 76 percent said they are assisted by Traditional Birth Attendants of which 60 percent of them are trained.

Of the women who did not attend PNC after delivery, 6(30.0%) attributed their absenteeism to the attitude of health staff, 11(55.0%) not having money for the services, 5(25.5%) inadequate maternal health services. According to (MOH 2008), the available data showed that over 40% of women did not use health facility during delivery and after delivery because some of them thought it was unnecessary to do so. The causes of the complications were severe bleeding (46.0%), prolonged labour (32.4%), and sepsis (21.6%)

World Health Organisation report (2007) indicated that most maternal deaths occur during labour, delivery, or the first 24 hours after delivery, and most complications as mentioned earlier cannot be prevented or predicted. This study found out that most of the deaths occurred during labour 11(36.7%), and after delivery (46.7%).

Skilled care during pregnancy, childbirth, and the immediate postpartum period, by health care professionals with appropriate skills has been recognised as the key intervention to reduce maternal mortality. Skilled birth attendants include midwives and other health professionals with midwifery skills. The study reviewed that majority 52(69.3%) of women who experienced maternal deaths and morbidity received care from auxiliary midwives and TBA's. Sri Lanka's nationwide healthcare system expansion and improved midwifery skills

contributed to a dramatic decline in the MMR, (The Consequences of Maternal Morbidity and Maternal Mortality, National Research Council, 2000)

Report of the Ghana Statistical Service (2005, 2008), Ministry of Health (2006) indicated that delivery that were assisted by a health professional recorded a slow progress, increasing from 40% in 1988 to 59% in 2008. In the Northern region, 1 in 4 compared to 4 in 5 children in Greater Accra region, is likely to be delivered in a health facility. Professional assistance at birth for women in urban areas was found to be twice more likely to occur than those in the rural areas (MOH, 2008). The available data showed that over 40% of women did not deliver in a health facility because some of them thought it was unnecessary to do so. (MOH, 2008). According to MOH, 2010 Programme of Work, skilled delivery was a key in the maternal health care. Labour and delivery are the shortest and most critical periods in the childbirth continuum. It stated that “most maternal deaths occur from complications during delivery.” Even with the best possible antenatal care, any delivery can become complicated. Therefore, skilled assistance is required to ensure safe delivery care.

The GHS road map for accelerating the attainment of the MDGs related maternal and neonatal health in Ghana 2007-2011 indicated that there have been several attempts to widen coverage of skilled delivery service and improve service utilization. These include introduction of free delivery, NHIS, community education to improve demand, posting of midwives to health centres and CHPS compounds, lifesaving skills training. A mix of strategies exists to improve the quality of skilled delivery care, including maternal deaths audit and maternal death notification.

However, skilled delivery rate has remained low at 59% (GDHS 2008) annually compared to antenatal registrant rate of above 90%. The challenges explained the low rates of skilled delivery among others are the provider attitude, socio- cultural challenges and inadequate midwives.

It must, however, be noted that for skilled birth attendants to effectively perform, they need the necessary emergency obstetric care facilities and equipment in order to prevent the senseless deaths of our mothers and sometimes their children which had continued over the years. It was observed in the study that, majority (69.3%) of women who experienced maternal deaths and morbidity were not cared by facility with necessary emergency obstetric care and equipment. It was observed in the study that most of these women were normally referred to Kintampo government hospital which majority (61.5%) said the distance to the facility is between 6-15 miles, and the means of transport to the referral facility was clients' own means through the use of commercial transport which sometimes it was difficult to come by.

Delay in Reaching Health facility and Delay at facility

The first delay is the decision to seek care by the woman and/or family. This level of delay is one of the most complexes as it involves many layers of socio-cultural factors such as educational level, women's status, cultural beliefs and perception in illness severity. All of these elements play a role when a woman and her family and birth attendant (if present) decide to seek skilled care. The study observed that of the women who experienced maternal mortality and morbidity most of them (72.7%) and (70.0%) distance to the nearest health facility was 7km and above. For maternal mortality cases, (73.3%) were delayed in reaching health facility and the reason was distance to the nearest health facility was too far. Various modes of transportation were used including walking, taxis and market trucks. Eighteen women with near-miss and nine women who died at the facility experienced some delay in transfer to a health facility including difficulty in finding money for transportation, living in remote villages with no transportation available and seeking assistance during the night when people did not want to travel on unsafe roads.

One woman stated, “it took almost 2 hours to get to reach the hospital because the driver refused to bring me, so we have to look for extra money to pay another driver to take me to the hospital.

The family of one woman who died in the community recounted difficulty in finding transportation. This woman died while the family members searched for a way to transport the woman to the hospital.

Indeed majority, (96.7%) of the deaths occurred in health facility. The majority of women experiencing maternal mortality and near-miss event (74.0%) were in critical condition upon arrival at the hospital suggesting that important delays were encountered in reaching the facility. Nearly half (49.0%) were referred from another facility, usually a rural clinic or facility without necessary emergency obstetric equipment. Of the mothers who were near-miss, 28.9% delayed in reaching health facility and the reasons were distance (53.8%) and home management (46.2%). A delay in the recognition of obstetric complications among women, family members and community members including traditional midwives was the most common in the data when examining for each delay. A total of 35 with maternal mortality and near-miss events (74.3%) experienced this delay. In addition, a delay in the decision to seek care was reported in connection with eight women who died at the facility and one woman who died in the community. Other factors contributing to the delay included keeping a problem hidden from others and trying self-treatment or traditional remedies before seeking care. Women were often referred to multiple levels of providers before seeking care at the tertiary care level. One participant said the following: "I was in labour at home for very long hours, about 7 hours, when I started feeling very weak and unable to push my baby. That was the time I told my Auntie that they should take me to hospital. I was given country herbs to drink. My stomach was rubbed with chalk. I was very restless and my stomach became very tense and tender." Her family waited to seek help from a trained provider until the situation worsened despite the woman's desire to find help sooner.

The most common causes of mortality and severe morbidity were haemorrhage (45%) and severe anaemia (24%) followed by sepsis (17%) and eclampsia (14%). Distance from a health centre, quality of care expected at the health centre and ability to pay for services also can affect the decision to seek care (Thaddeus and Maine, 1994).

Reaching an adequate health facility is the second delay in the three delay model. Access to health facilities, adequate infrastructure for transportation and distribution of appropriate health facilities are all logistical factors in causing a delay for a woman and her family (Thaddeus and Maine, 1994).

Mothers who were not delayed in reaching health facility, 5(12.5%) experienced complications as a result of facility delay. After delivery, 3(60.0%) experienced excessive bleeding and there was no blood in facility blood bank and they became weak leading to unconsciousness. Forty percent (40.0%) experienced excessive bleeding because at the time they reached the facility, there were no adequately trained staffs present. According to Thaddeus and Maine, (1994) once a woman arrives at the facility, she may not receive the care she needs. Staff may not be present or adequately trained and supplies may not be available and this goes a long way to worsen their health status.

Education and Information Services during Pregnancy, Delivery and after Delivery

Education and information services comprise community education about safe motherhood, education about pregnancy danger signs and complications, and reproductive health and family planning information and services for adolescents and adults. The study found out that almost 72.0% of mothers who experienced maternal mortality and near-miss events did not receive adequate care during pregnancy, delivery and after delivery. The director of Noguchi Memorial Institute for Medical Research, Prof Ofori-Adjei, speaking at the launching of the Initiative for Maternal Mortality Programme Assessment (IMMPACT) in Accra on Wednesday, 6th of February, 2003, attributed the high maternal deaths to lack of information in designing effective interventions to save the lives of many women. He observed that, despite efforts at reducing maternal deaths in the country, following the

coming into force of the safe motherhood initiative in 1987, data assessment on maternal deaths still remains unacceptably high.

According to Ghana MAF Action Plan (CAP) (August 2010), behaviour change communication is another key initiative to create awareness about pregnancy risk factors, danger signs and increased demand and utilization of antenatal services, skilled personnel, emergency obstetric care and postnatal care. The programme uses the media to inform, educate and communicate messages for adoption of desired behaviours; printing of posters, leaflets, fliers; advocacy; use of traditional leaders/religious leaders and groups etc. Recently, with support from UNICEF, the Health Promotion Department of Ghana Health Services has developed a common framework for behavioural change termed “Communication for Development” (C4D).

Family Planning and Abortion Practices

According to Ghana MAF Action Plan (CAP) (August 2010), effective family planning is one of the high impact interventions that reduce the risk of maternal deaths from pregnancy related complications and unsafe abortion. But as indicated, family planning acceptor rate remained low (21.2-25.4%) of women in their reproductive age between year 2001 and 2007. It was observed in the study that almost (90.0%) of women who experienced maternal mortality and morbidity were not practicing family planning.

It was articulated in the study that, side effects were the main reason that prevent them from family planning utilization. The majority, 63 percent said the practice delays pregnancy in later life, 34 percent said the practice leads to infertility, only 3 percent said they sleep a lot due to the practice. Since the implementation of the “repositioning of FP” to improve comprehensive FP coverage, fear of side effects bottlenecks among many others, that slow down the achievement of set targets still persist. (Demographic and Health Survey, 2008)

It was found in the study that women who were not practicing family planning, almost (60.0%) of their pregnancies were unplanned. Family planning prevents unwanted pregnancy and reduces the risk of maternal deaths from pregnancy related complications and unsafe abortion, (Demographic and Health Survey, 2008). During focus group discussion, majority 94 percent said the number of children each woman has is five and above, and 100.0 percent said they do not practice family planning because of its side effects. Majority, almost 49% said the practice delays pregnancy in later life. One in four maternal deaths could be prevented by family planning. Access to family planning has a great impact on maternal mortality. (Save the child). An estimated 150 million women in developing countries want to delay or stop childbearing, but are not using family planning. (Save the child). Almost (48.0%) of women who were not practicing family planning had unsafe abortion.

According to WHO 2007 report, preventing unplanned pregnancies could reduce unsafe abortions and maternal deaths, especially among young women by about 30 per cent.

It was articulated in the study by almost 58 percent that the reason for having an abortion was to space childbearing and 42 percent said they were not financially viable to take care of the pregnancy and the baby as well. Majority, almost 74 percent partners were in favour of abortion. Majority, almost 79 percent practiced unsafe abortion. Their pregnancies were terminated by either buying drugs from a pharmacy or chemical stores. During the focus group discussion, it was revealed that: when partner denies pregnancy 39 percent, financial constraints 34 percent, and to space childbearing 27 percent were the main reasons for abortion practices.

Thirty per cent of maternal deaths recorded in Accra in 2001 were said to be caused by unsafe abortion. Abortion is legal in Ghana, but many of the women go for backstreet abortions due to poverty. (World Health Statistics, 2010). In an interview under which abortion is legal, almost 74 percent said when the life of the mother is in danger and 26 percent said risk to physical health of mother. Majority, 68 percent said they were counselled by health professional following abortion.

Conclusion and Recommendations

Conclusion

Socio-Demographic Characteristics in Relation to Maternal Mortality and Near-Miss Events in the District.

- Most of the maternal deaths and morbidity occurred among young adults within the ages of (20-30) with mean age 27 years.
- The risk of maternal death as well as morbidity is less among unmarried women than married women.
- Women who are not educated stand the risk of maternal death than those who are educated.
- Pregnant women who are unemployed are more likely to die than their counterparts who are employed
- Women with more parity are at risk of experiencing maternal deaths and morbidity
- More women die during delivery and after delivery in the district.

Health Seeking Behavior among Mothers who Experienced Maternal Mortality and Morbidity

- Majority of pregnant women in Kintampo north district use ANC services
- Majority use ANC services less than four times as required
- Majority complained about unfriendly attitude of health staff during ANC and that discouraged them from utilizing the ANC services.
- Many of the pregnant women in the district develop complications
- The complications arise because of delay in reaching health facility
- They only seek health care when the women have advanced in the development of complication.

Delay in Reaching Health Facility by Women who experienced maternal Mortality and Near-Miss Events

- More maternal deaths occurred in the health facility in the district than at home
- On the basis of results of this study, it is evident that women and family members prolonged the decision to seek professional care from the hospital or community based clinic and that many women arrived at the hospital in very poor condition
- Majority of the women distance to the nearest health facility was 7km and above
- The contributory factors to the delay were distance to the nearest health facility and home management
- Various modes of transportation were used including walking, taxis and market trucks.
- Most of them who delayed in reaching health facility suffered complications.
- Among complications experienced were excessive bleeding, and severe anaemia, eclampsia, and sepsis.

Delivery and Postnatal Care Services, and Education and Information Services

- Most of the women delivered in the health facility
- Most of the women who delivered in the health facility were assisted by auxiliary midwives.
- Women who did not deliver in the health facility were assisted by TBAs, at home of which majority of them are trained.
- Majority of women who did not deliver at health facility attributed their failure to do so to unfriendly attitude of health staff
- Women who delivered at home have risk of dying as compared to those who delivered at health facility

- Risk of experiencing stillbirth in women who delivered at home is higher than those who delivered in health facility
- Most of the mothers did not utilise PNC services
- Attitude of health staff and financial constraint were the contributory factors that discouraged the use of PNC services
- Most of the facilities do not have necessary emergency obstetric equipment for maternal health services.
- If needed, clients are stabilised before referring to Kintampo north government hospital.
- Majority of the women did not have adequate monitoring during pregnancy, delivery, and after delivery
- Most health facilities do not have blood banks, and even a few of them that have, always experience shortage.
- Majority of women who experienced maternal mortality and morbidity did not receive much education and information services during pregnancy, delivery and after delivery.

Family Planning and Abortion Practices

- Most of the women who experienced maternal mortality and near-miss events were not practicing family planning.
- Most of the women who were not practicing family planning have more children compare to those who are practicing
- The reason for not practicing family planning was its side effects
- Among the side effects mentioned were, it leads to infertility, it delays pregnancy in later life and it leads to too much sleep.
- Majority of women who did not practice family planning experienced unplanned pregnancy.
- Most of them who experienced unplanned pregnancy aborted the pregnancy
- Majority of the abortion practices were unsafe
- Most of the women who had unsafe abortion either bought drugs from chemical or pharmacy shops
- Most of the women died as the result of unsafe abortion
- Few who were near-miss experienced severe complication like excessive bleeding or damaged to the womb
- Reasons for having an abortion were financial constraints, wanted to space childbearing or when partner denies pregnancy
- Most of their partners were in favour of abortion practices
- Those who were near-miss were counselled by health professional following abortion

Recommendation

Health seeking behaviour

1. Health education should be intensified by health workers on the importance of early ANC and PNC services
2. Women and women groups should come together and identify the real needs as far as seeking maternal care is concerned.
3. In groups, women in the district should advocate for freedom from male dominance that affects the life and health and most importantly the rate of death.
4. Mothers in-law should assist their daughters in-law to seek prompt medical care whenever they are pregnant
5. Pregnant women in the district should take action to seek for ANC and PNC services when pregnant and after delivery and continue with it to term

6. Women and women groups should also advocate for equity in terms of access to education and employment by women since it is a protective measure against the incidence of maternal deaths
7. Health staff should change their unfriendly attitudes towards clients during ANC and PNC visits and adopt friendly attitude that will bring conducive atmosphere to encourage ANC and PNC utilisation services among women
8. Educating family and community members as well as traditional birth attendants on issues concerning maternal death can be instrumental in encouraging a family to seek early care when complications arise.
9. Community based interventions such as educating traditional midwives, families and women in early problem recognition and prompt referral can help save lives
10. Policy makers and providers must re-examine current approaches to improve reproductive health, addressing the contextual factors and community based issues. Uncovering and unveiling the barriers to seeking care embedded in the context of this study could be a beginning step to address reducing maternal morbidity and mortality.
11. District health administration in collaboration with district assembly can have free transit accommodation nearer to health facility for pregnant women who are in the remote areas whose pregnancies are few weeks or months to gestational term. If this is done, it will avoid unnecessary delay

Maternal Health Care Services during Pregnancy, Delivery and after Delivery

1. There should be proper medical attention and hygienic conditions during delivery. This will reduce the risk of complications and infections. There should be attention to clean delivery and testing for and management of STDs during pregnancy to prevent sepsis
2. It is necessary to increase the births in medical facilities with trained attendants. Training skilled attendants who are able to prevent, detect and manage obstetric complications as well as provide equipment, drugs and other supplies is the single most important factor in preventing maternal deaths. Primary convulsion, or eclampsia, can be prevented with monitoring during pregnancy and simple drug treatment, and severe bleeding can be prevented by the prompt administration of drugs to stop the bleeding and by the massage of the uterus.
3. Blood must be available at all times in the blood bank. There is a need to strengthen blood replacement at the bank. Embarking on blood donation campaign by quality assurance team. Request for blood donation for health facilities.
4. Follow-up care encompasses care for complications and emergencies, and postpartum care

Family Planning, Education and Information Services

1. Education and information services comprise community education about safe motherhood, education about pregnancy danger signs and complications, and reproductive health and family planning information and services for adolescents and adults.
2. Access to low-cost, good quality contraceptives to prevent unwanted pregnancies and increase women's age at first childbirth can prevent prolonged labour
3. Unsafe abortion can be prevented with access to family planning information and services, care for abortion-related complications and, where legal, safe abortion services.
4. Municipal Health Management Team should assist in the development of programmes and policies that reduce unsafe abortion and improve access to safe abortion and high quality post abortion care.

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