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ORIGINAL ARTICLE

MATERNAL MORTALITY IN RURAL AREAS OF DODOMA REGION, TANZANIA: A QUALITATIVE STUDY

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Abstract

Introduction: High rate of maternal death is one of the major public health concerns in Tanzania. In Tanzania, the estimated Maternal Mortality Ratio (MMR) is 454 per 100,000 live births. The main objective of the present study is to find out the contributing factors to maternal mortality in rural areas of Dodoma region, Tanzania.

Material and methods: The verbal autopsy technique was used to reconstruct "the road to maternal death". A structured and open-ended questionnaire was developed on the basis of the "three delays" model: delay in the decision to seek care, delay in arrival at a health facility and delay in the provision of adequate care. The sample comprised 20 cases, 4 for each district of Dodoma, Tanzania. Data were collected by conducting in-depth interviews with close relatives or family members of the deceased women and those who accompanied her between the time the illness developed and death.

Results: The following incidents lead to delay in receiving appropriate medical care and eventually lead to the death of the pregnant woman in the study area: underestimation of the severity of the complication, bad experiences with the health care system, delay in reaching an appropriate medical facility, lack of transportation and delay in receiving appropriate care after reaching the hospital.

Conclusion: This study reveals that women do try to reach adequate health services when an emergency occurs, but that there are many obstacles that delay this process. Improving the accessibility and quality of emergency obstetric care services in the area is necessary if maternal deaths are to be prevented.

Key words: *causes; delays; maternal death*

INTRODUCTION

Worldwide, nearly 600,000 women between the ages of 15 and 49 die every year as a result of complications arising from pregnancy and childbirth (Reduction of maternal mortality 1999, Maternal mortality 2004). These women die not from any disease but during the normal, life-enhancing process of procreation and most of these deaths are avoidable. Maternal mortality is not only a health problem, but also a social disadvantage as it puts economic burden on the family, community, governments, and nations (Khan et al. 2005, WHO Progress 2005, Ronsmans and Graham 2006a). Studies show that the risk of maternal death is high during labour, delivery and up to 24 hours postpartum. Most maternal deaths occur in developing countries and a large proportion of these deaths are avoidable (Center for Population… 1992, Regional Strategy… 2002, Health Canada

2004, The 10/90 report on health research 2004, Ronsmans and Graham 2006b).

Comparatively, a woman in East Africa has a 1 in 12 risk of dying due to pregnancy as compared to 1 in 4,000 in northern Europe (Walreven and Ronsmans 2000). Most complications cannot be predicted; therefore timely diagnosis with skilled personnel is important to avoid introducing harm (Campbell 2006). High rate of maternal death is one of the major public health concerns in Tanzania and every hour at least one woman dies as a result of pregnancy and childbirth. In Tanzania, the estimated annual number of maternal deaths are 8,500 and the Maternal Mortality Ratio (MMR) has remained high for the last 10 years without showing any decline, and is currently estimated at 454 per 100,000 live births (USAID 2008, TDHS 2010). During the period of independence from 1961 to 1990, maternal mortality had been on a downward trend and dropped from 453 to 190 per 100,000 live births. From 1990 onward the trend reversed to an upward direction to date (TDHS 2010). The causes of maternal deaths were: Hemorrhage (28%), Unsafe Abortion (19%), Eclampsia (17%), Other causes (14%), Infections (11%) and Obstructed Labour (11%) (WHO 2004, 2005, WHO UNICEF/ UNPF 2005). The case of maternal mortality illustrates the presence of structural failures in the healthcare system, quality of care and particularly the ability to manage obstetric emergencies and access health services.

Factors contributing to this trend could be partly due to the economic crisis during that particular period, which led to the weakening of the healthcare system. To cope with this situation, the government introduced a cost sharing system. In addition, the government froze the employment of health workers. For instance, human resources declined from 67,000 in 1994 to 49,000 in 2001/02 and this affected staff ratios across the main cadres, including clinicians and nurses who provide most of maternal healthcare services. According to Ministry of Health staff, in 1999 the ratio of available healthcare professionals was 32.1% of the requirement. This was equivalent to a 67.9% shortage (MoHSW 2007). Generally the healthcare system weakened and hence the accessibility and quality of maternal healthcare services worsened.

It is estimated that over 80% of the Tanzanian population live within a distance of 5 km from a healthcare facility. However, in spite of this relatively good coverage of health facilities, not all components of essential maternal services are provided (MoHSW 2007). Despite a high attendance (96%) of pregnant women to an antenatal clinic (ANC), deliveries assisted by skilled attendants are still low (mean = 51%; urban = 83%; rural 42%) (URT 2005). Out of 49% of births which take place at home, 28% are assisted by relatives, 18% by traditional birth attendants (TBAs) and 3% are conducted without assistance (TDHS 2005). As expected, births to women in the highest wealth quintile are more likely to be assisted by a skilled birth attendant (87%) than women in the lowest quintile (31%) (TDHS 2004–05). The main objective of the present study is to discover the factors contributing to maternal mortality in the rural areas of Dodoma region, Tanzania.

MATERIAL AND METHODS

Area of study

Dodoma Region lies at 4° to 7° latitude South and 35–37° longitude East. It is a region centrally positioned in Tanzania. Dodoma region has four rural districts and one urban District, namely: Dodoma-Rural, Kondoa, Mpwapwa, Kongwa and Dodoma Urban. The region is the 12th largest in the country and covers an area of 41,310 sq. km, equivalent to 5% of the total area of Tanzania Mainland. Dodoma region is situated in an economically depressed area. Although it has rich agricultural land, it is affected by harsh semi-arid climatic conditions, and rather traditional agricultural methods are still predominating. In the urban areas, the main activities of the residents are commerce, urban farming and civil service employment, while in the rural areas, crop farming and livestock keeping are the most common means of livelihood. Based on the 2002 National Population and Housing Census, the population of Dodoma was 1,735,000 people, out of whom 48.5 percent are males and 51.5 percent are females (General Report 2003, The United Tanzania website 2011).

Verbal autopsies as a data collection method

The verbal autopsy technique (Chandramohan et al. 1989, Kane et al. 1992, Langer et al. 1999, Sloan et al. 2001, Gajalakshmi et al. 2002) was used to reconstruct "the road to maternal death" and describe the dynamics of factors that impeded timely and efficient contact with the healthcare system (Fathalla 1987). After reviewing verbal autopsy forms of the World Health Organization (WHO), the verbal autopsy questionnaire was modified slightly by omitting repetitive questions and questions with details of symptoms according to the local conditions of Dodoma region, Tanzania. A structured and open-ended questionnaire was developed on the basis of the "three delays" model: delay in the decision to seek care, delay in arrival at a health facility and delay in the provision of adequate care.

The field team comprised two female and one male students who had completed their graduation last year at Dodoma university, Tanzania. A one-day training was given on information of gathering, filling forms, and ways of proceeding in the field for initial identification of maternal deaths and data collection.

The sample comprised 20 cases, 4 for each district of Dodoma Region (Dodoma Rural, Dodoma Urban, Kondoa, Kongwa and Mpwapwa). Researchers identified maternal deaths in remote rural areas of Dodoma region – in most of them, the deceased did not reach healthcare services due to poverty and other reasons.

Data were collected by conducting in-depth interviews with close relatives or family members of the deceased women and those who accompanied them between the time the illness developed and death. These were mainly in-laws and the deceased's husband.

Analysis

Data were analysed by Thematic Content Analysis (TCA) (Andersson 1989, Graneheim and Lundman 2004). This was mainly carried out on the manifest level (Andersson 1989), aiming at identifying, describing and thematisizing the gathered data. The transcripts were read and considered as a whole. Each interview was regarded as a unit of analysis. Meaning units were identified in each interview. Later on, meaning units from all interviews with similar content were combined into three themes: delay in the decision to seek care, delay in arrival at a health facility and delay in the provision of adequate care. The findings are presented under these themes.

RESULTS

Delay in deciding to seek care or underestimation of severity

The deceased women's caregivers or family members underestimated the severity of the complication of delivery initially, but later they recognised the severity of the problem and sought out institutional care or medical attention. But the decision to take the pregnant women to the hospital was too late. In 6 out of 20 cases, the process of seeking medical attention was delayed after becoming aware of the complication. Previous uncomplicated pregnancies may influence the delay in the decision-making process.

A mother in-law of deceased woman narrated as below:
"In my family all of my daughter in-laws delivered at home without any complications. women who deliver at home are assisted by Traditional Birth Attendants, family members, friends or neighbours. Most of the time, our family members and neighbours support the women in delivering; if any difficulties in delivery were discovered, we used to seek help from the traditional birth attendant. We thought that she would deliver without any problems."

In another case a close relative who accompanied the deceased women narrated:
"She did all house hold work like cleaning vessels, sweeping the house, cooking food and even fed herself and her children. We planned to go collect fire wood, when suddenly she was lying on the floor, complaining of labour pains. We thought she would deliver without any problems, like in her last pregnancy. But she did not deliver, and so we decided to look for a means of transport to take her to the healthcare centre."

Patriarchal values
Patriarchal values limit women from making the decision to seek health care; the decision is taken by the husband, in-laws, other relatives. Lack of authority to make a self-decision leads to delay in receiving healthcare.

Neighbours explained as follows below:
"One deceased woman was getting serious abdominal pain seriously and cried for medical care but her husband did not make the decision to take her to the hospital immediately; instead he sought help from neighbours and a traditional birth attendant. Later he found out that the problem is so complicated that even traditional birth attendants failed to rescue the woman."

Experience with the health care system
Lack of money and refusal to receive medical attention were identified as factors affecting the process of seeking out medical aid. Eleven out of twenty women were out of funds when the complication developed. In all these cases the woman was taken to a medical facility without money and a relative was left behind to raise money in the community. Lack of money caused a delay of treatment.

A husband of a deceased woman narrated as below:
"We did not have money, and my wife was getting severe abdominal pain and we decided to take her to a hospital. In hospitals they charge large amount of money, more than I can afford. We make a living on agriculture and grazing animals, however agriculture is also not good since it is a semi-desert here. We depend most of the time on family members and traditional doctors, particularly for delivery issues – since these are affordable for us. When we get severe health complications, we collect money in the community for hospital charges."

Delay in reaching an appropriate medical facility
After making the decision to seek out medical care, another problem is reaching a hospital on time. Eight out of twenty women were delayed in reaching maternity hospitals in Dodoma Town due to lack of transportation and rough roads from their rural and remote areas.

A husband of a victim explained as follows:
"We decided to take my wife to a hospital in Dodoma town when we noticed she was bleeding and her condition was serious – this happened in the evening, maybe around 4 or 5 o'clock. Our village is 8 kilometres away from the main road and the road is in very bad shape, by the time we brought her to that road to look for transport it was 7 o'clock. Few vehicles were going towards Dodoma, but those did not stop; at last, one vehicle owner stopped at ten o'clock and took us to the hospital."

Lack of appropriate medical facilities in health centres which are located in rural areas
A husband narrated:
"I took my wife to the health centre which is near our village. When we reached the health canter, it was empty and its facilities were also inadequate for delivery. Two hours later, the nurse told me that my wife will be transferred to the Dodoma maternity hospital. We spent valuable 3 to 4 hours seeking medical care, and even primary healthcare was also not possible. The severity increased over time. She died in severe pain when we were on our way to Dodoma town, hence these kinds of conditions make us depend on traditional doctors."

Seeking care at more than one medical facility
In Tanzania in general and in Dodoma region particularly so, almost every village is well connected to health centers but most of the health centers cannot provide maternity health services, such as consultations with a gynaecologists, trained nurses who can provide medicine, and other infrastructure (facilities). Many pregnant women come to health centers in search of air, but are instead told to go to hospitals which are in Dodoma town. Due to this process, delays occur before care can be provided at the appropriate hospital. 20 out of 20 women visited more than one medical facility during the care seeking process.

The husband of the deceased narrated:
"We took her to the health centre in the village. [...] She was examined by the nurse who later transferred her to another health

centre [46 km away]. *Immediately after we reached the hospital she died."*

Delay in receiving appropriate obstetric care after reaching the hospital

Nine women experienced delays in receiving adequate obstetric care at the hospital in Dodoma town. Lack of blood banks and basic medical supplies in Dodoma hospitals has contributed to the high maternal mortality rate.

A mother in-law explained:
"When we reached the hospital, doctor told us that she is bleeding extensively, that the condition is serious and that we need to bring a minimum of three bottles of blood to possibly save the pregnant women from bleeding out. We immediately rushed to find blood bottles but unfortunately blood bags were not available. At last my daughter's blood group matched with the deceased women's. My daughter donated her blood but that was not sufficient. We went to find blood containers from another laboratory in the town, and then we received the sad news."

A husband of a deceased women narrated:
"My wife was hospitalised due to heavy bleeding, the doctor asked us to bring blood bags. We enquired for Blood containers in different blood banks but those were all out. I found blood donors from my relatives and friends. Since it was a weekend, they couldn't draw blood because the blood bank staff was not available."

Delay in providing adequate care by the medical team was also highlighted in the testimonies

A close relative of a deceased woman:
"The pregnant woman was brought to the hospital on the 12th at around 1.00 pm. Due to lunch hours, staff was not available until 3 o'clock. We scheduled a consultation with a doctor at 3.30 pm, the doctor saw her and diagnosed her and sent her for medical examinations such as blood tests. We were waiting for the reports until the next day afternoon. No action was taken by the doctors up to the 14th, late in the evening [52 hours later] *when they took her to the theatre for caesarean section. Due to delay, the patient was died in the theatre within half an hour. The cause of death was professional negligence, with no doctor being present when required."*

Poor management of staff, availability of doctors and skilled nurses has been highlighted in testimonies as a factor of contributing to poor maternal care

A husband of a deceased woman narrated:
"We went to one hospital in Dodoma town and initially we met counselors to find out whom to consult and where to pay money etc., but we waited for 45 minutes due to a long queue. We paid money in the counter for the doctor consultation for there we also spent more than 45 minutes due to another long queue. Then, the doctor was not immediately available for consultation, since he was in the operating theatre and other junior doctors were in the ward rounds. We got a doctor's consultation the next morning and the doctor prescribed some medical tests. There are more patients than doctors and supporting staff, this situation reduces the people's willingness to seek healthcare in hospitals and leads to patients facing problems during treatment."

DISCUSSION

High rate of maternal death is one of the major public health concerns in Tanzania. Most maternal deaths are caused by factors attributed to pregnancy, childbirth and poor quality of health services. Over 80% of maternal deaths could have been prevented if pregnant women could gain access essential maternity care and received skilled attendance at childbirth as well as emergency obstetric care.

An analysis of the maternal mortality situation in Tanzania during the past 50 years shows that from 1961 to 1990 the maternal mortality ratio in Tanzania had been on a downward trend from 453 to 200 per 100,000 live births. However, from 1990's there has been an increasing trend to 578 per 100,000 live births. Current statistics indicate that maternal mortality ratio has dropped slightly in 2010 to 454 per 100,000 live births (TDHS 2010). Maternal death is often a consequence of a long and complex chain of delays which

could be fatal to a woman with obstetrical complications.

Delay in deciding to seek medical care
Delays in deciding to seek medical care are influenced by many factors such as patriarchal values, bad experience with the healthcare system, financial constrains, long distances of Maternity hospitals and failure to recognise seriousness of the complications. First, the illness or complication must be recognized and classified as abnormal. In Tanzania, rural women seem to avoid going to the hospital because of fear of discrimination, geographical and financial barriers and different interpretation of danger signs (Kowalewski et al. 2000). Bad experience with the health system will mostly lead to reluctance or non-utilization of healthcare services. Poor services for patients have been identified as a major factor of the low utilization of healthcare services in Kigoma (Mbaruku and Bergstrom 1995).

Delay in reaching an appropriate medical facility
Long distances coupled with poor and unaffordable transport systems have been cited as major factors accounting for poor access to health facilities in the rural areas, with pregnant women being the worst affected. Available data indicate that about 75% of the population living in rural Tanzania and only 38% of the rural population of have reliable access to a means of transport with a mean distance of 5.4 km to public transport services and 75% of the time women need to walk long distances (National Transport Policy 2003). Improvement in rural connectivity through the development of effective rural transport systems would have a significant effect on reducing maternal mortality in Tanzania.

Health centres are strategically located in Tanzania and 80% of the population lives only 5 kilometres away from health centres, but accessing them does not necessarily mean receiving appropriate care (MoHSW 2007). Sometimes going to these health centres can actually delay the receipt of adequate health care. Upgrading health centres to include fully functional basic obstetric emergency units could reduce the delay caused by long transportation times. To avoid delay in reaching maternity centres, it is necessary to keep an ambulance for emergency purposes.

Delay in receiving appropriate care after reaching the hospital
Many pregnant women died after reaching the hospital due to inadequacy of the healthcare system in terms of shortage of medical supplies such as blood containers and important medicines, lack of equipment, shortage of trained doctors and nurses, and incompetence of the staff. Health system failures have been identified as a major contributing factor to maternal deaths (MoHSW 2007).

CONCLUSION

An attempt has been made in the present study to shed light upon some of the factors which had contributed to maternal deaths in rural areas of the Dodoma region. This study reveals that women do try to reach adequate health services when an emergency occurs, but that there are many obstacles that delay this process. Improving the accessibility and quality of Emergency obstetric care services in the area is necessary if maternal deaths are to be prevented.

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Ethics
Written consent was received from the respondents who participated in this study.

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