ORIGINAL PAPER

Maternal Mortality in Rural Areas of Dodoma Region, Tanzania: a Qualitative Study

Madan Mohan Laddunuri, PhD
Department of Sociology and Anthropology, Dodoma University, Dodoma, Tanzania

Coresponcence: Dr Madan Mohan Laddunuri, Post Box 259
Dodoma university, Dodoma, Tanzania. E-mail madan.phd@gmail.com

Abstract

Background: A major public health concern in Tanzania is the high rate of maternal deaths as the estimated Maternal Mortality Ratio (MMR) is 454 per 100,000 live births (TDHS, 2010). The main objective of the present study was to find out the contributing factors to maternal mortality in rural areas of Dodoma region of Tanzania.
Methodology: The verbal autopsy technique was used to reconstruct "the road to maternal death." A structured 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 of 20 cases, 4 for each district of Dodoma. Data were collected by conducting in-depth interviews with close relatives of the deceased women and those who accompanied the women (neighbours) during the time the illness developed to death.
Results: There was delay in receiving appropriate medical care and that eventually lead to the death of the pregnant woman, due to underestimation of the severity of the complication, bad experience with the health care system, delay in reaching an appropriate medical facility, lack of transportation, or delay in receiving appropriate care after reaching to the hospital.
Conclusion: This study shows that women do try to reach adequate health services when an emergency occurs, but that there are many obstacles that delay this process. Improving accessibility and quality of Emergency obstetric care services in the area is necessary if maternal deaths are to be prevented.

Key words: Maternal death; maternal mortality; maternity care; obstetric services; qualitative study; Tanzania

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 (WHO, UNICEF, UNFPA, 2005). These women die not from a disease, but during the normal, life-enhancing process of procreation and most of these deaths are avoidable. Maternal mortality is not only a health disadvantage, rather it is a social disadvantage, as it puts economic burden on the family, community, governments, and nations (Khan, et al, 2006). 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 (Ministry of Public Works and Government Services, 2004, Ronsmans & Graham, 2006).

Background

Comparatively, a woman in East Africa has 1 in 12 risk of dying due to pregnancy as compared to 1 in 4,000 in northern Europe (Walreven & 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 is 8,500 and the Maternal Mortality Ratio (MMR) has remained high for the last 10 years without showing any decline and currently is estimated to be 454 per 100,000 live births (TDHS, 2010). Since the independence (1961 to 1990) maternal mortality has been on a downward trend, it was 453 to 190 per 100,000 live births. From 1990 onwards the trend reversed to an upward direction (Angela, 2011).

The causes of maternal deaths were hemorrhage (28%), unsafe abortion (19%), eclampsia (17%), other causes (14%), infections (11%) and obstructed labour (11%). The case of maternal mortality illustrates the presence of structural failures in the health-care system, quality of care and particularly the ability to manage obstetric emergencies and access health services (WHO, 2004).

Factors contributing to this trend could be partly due to the economic crisis during that particular period, which led to the weakening of the health system. To cope with that situation the government introduced a cost sharing system. In addition, the government froze employment of health workers. For instance, human resource declined from 67,000 in 1994 to 49,000 in 2001-2002 and this affected staff ratio across main cadres including clinicians and nurses who provide most of maternal health care services. According to the Ministry of Health staff ratio in 1999 available health professionals was 32.1% of the requirement. This was equivalent to 67.9% shortage (MoHSW, 2007). Generally the health system weakened and hence the accessibility and quality of maternal health services delivery worsened.

It is estimated that over 80% of the Tanzanian population live within 5km from a health 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 antenatal clinic (ANC), deliveries assisted by skilled attendants are still low (mean=51%; urban =83%; rural =42%) (URT, 2005). 49% of births 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, 2005).

The main objective of the present study is to find out the contributing factors to maternal mortality in rural areas of Dodoma region, Tanzania.

Methodology

Area of study

Dodoma Region lies at 4o to 7o latitude South and 35o to 37o 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 Tanzanian 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 commonest means of livelihood. Based on the 2002 National Population and Housing Census, the population of Dodoma was 1,735,000 people of whom 48.5 percent are males and 51.5 per cent are females (NBS 2003, UT 2011).

Ethics

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

Verbal autopsies as a Data Collection Method

The verbal autopsy technique (Kanne, et al 1992, Chandramohan, et al 1998, Sloan, et al 2001) was used to reconstruct “the road to maternal death” and describe the dynamics of factors that impeded timely and efficient contact with the

health system (Fathalla, 1987). The verbal autopsy questionnaire, after reviewing verbal autopsy forms of the World Health Organization (WHO), was modified slightly by omitting repetitive questions and questions with details of symptoms according to the local conditions of Dodoma region, Tanzania. A structured open-ended questionnaire was developed on the basis of a "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 of two female and one male student who had completed their graduation in the previous year in Dodoma University, Tanzania. 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 of 20 cases, 4 for each district of Dodoma Region (Dodoma Rural, Dodoma urban, Kondoa, Kongwa and Mpwapwa).

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

Analysis

Data were analysed by Thematic Content Analysis (TCA) and it was aiming at identifying, describing and thematisizing the gathered data (Graneheim & Lundman, 2004). The transcripts were read in order to obtain a sense of the whole. Each interview was regarded as a unit of analysis. Meaning units were identified in each interview.

Thereafter, 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

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

The mother in-law of a deceased woman narrated the following:

"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 times our family members and neighbours support the women in delivering, if there was any difficulty in delivery, we used to seek help from the traditional birth attendant. We thought she will deliver this time without any problem".

In another case, a close relative who accompanied a deceased women narrated:

"She did all house hold work like cleaning vessels, sweeping the house, cooking food and even she fed food to her children and herself. We were planning to go collect fire-wood, suddenly she was lying in the room complaining of labour pains. We thought she will deliver without any problem like her last pregnancy. But she did not deliver, then we decided to look for transport to take her to the health centre".

Patriarchal values

Patriarchal values limit women to take decisions to seek health care, decision is taken by husband, in- laws, other relatives lack of authority to take self decision leads to delay in receiving health care.

Neighbours, from those who accompanied deceased women during the time developed illness to death, explained:

"one deceased woman was getting abdominal pain seriously and crying for medical care but her husband has not taken the decision to take her to hospital initially, but while he was seeking help from neighbours and traditional birth

attendant, later he noticed the problem was so complicated and even the traditional birth attendant 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 health care seeking process. In eleven out of the twenty diseased women, did not have the funds when the complication developed. In all those cases, the woman was taken to a medical facility without money and a relative was left behind to raise money in the community. Due to lack of money, there was delay in treatment.

The husband of a deceased woman narrated:
"We did not have money when my wife was getting severe abdominal pain to take her to hospital. In hospitals they charge large amounts, which are unaffordable to my financial capacity. We are living on agriculture and grazing animals, agriculture is also not good since it is semi-desert. We depend most of the time on family members and traditional doctors particularly on delivery issues and that is viable to our economy. When we get severe health complications, we collect money in the community for hospital charges. "

Delay in reaching an appropriate medical facility

After taking the decision to seek medical care, another problem is to reach the hospital in time. Eight out of the twenty cases were delayed in reaching maternity hospitals which are in Dodoma Town, due to lack of transportation and rough roads from their rural and remote areas.

A husband explained:
"We had taken the decision to take my wife to hospital in Dodoma town when we noticed she was bleeding and her condition was serious by the evening, maybe 4 or 5 o'clock. Our village is 8 kilometres away from the main road and the road is in very bad shape, at last we brought her to tarred road to look for transport and 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 hospital."

Lack of appropriate medical facility in health centres which are located rural areas.

A husband narrated:
"I took my wife to the health centre which is near our village. When we reached the health centre nobody was found in the hospital, the facilities were also inadequate for delivery, and 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 in seeking medical care and even primary health care was also not possible. The severity was increasing as time was going by. She died with severe pains when we were on the way to Dodoma town, hence this kind of conditions made us depending on traditional doctors".

Seeking care at more than one medical facility

In Tanzania and in Dodoma region in particular, almost every village is well-connected to health centres, but most of the health centres are not well-equipped in providing maternity health services, such as consultation by gynaecologists and trained nurses, providing medicines and other infrastructures (facilities). Many pregnant women come to health centres seeking care but are referred to hospitals which are in Dodoma town. Due to this, there is delay in getting care. All of the twenty women visited more than one medical facility during the care seeking process.

The husband of a 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 delay 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, the doctor told us that there is extensive bleeding from the pregnant woman, the condition is serious and to bring a minimum of three bottles of blood, then

the possibility to save the pregnant women from the bleeding would increase. Immediately we rushed to find blood bottles but unfortunately blood bags were not available. At last my daughter's blood group matched with the deceased woman's. My daughter donated her blood but that was not enough. We went to find blood containers from another laboratory in the town and in the mean while we received the sad news".

Husband of 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 finished. I found blood donors from my relatives and friends. Since it was 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 said:
"The pregnant women was brought to the hospital on the 12th at around 1.00 pm. Due to lunch hours staff was not available up to 3 o'clock .We got Doctor consultation at 3.30 pm, the doctor saw her and diagnosed her and sent her for medical examinations like blood tests. We were waiting for the reports until the afternoon of the next day. No action was taken by the doctors up to the 14th late in the evening [52 hours later] when they took her to the operating theatre for caesarean section. Due to the delay the patient was dead in the theatre within half an hour and death occurred because of professional negligence with no doctor being present when required."

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

Husband of deceased women narrated:
"We went to one hospital in Dodoma town and initially we met councillors to take idea to whom to consult and where to pay money like etc, but we waited for 45 minutes due to heavy crowd. We paid money in the counter for the doctor consultation for that also we spent more than 45 minutes of time due to heavy crowd again. Then main doctor consultation was not possible immediately due to doctor was in the operation theatre and other junior doctors were in the ward rounds .we got doctors consultation next day morning and doctor wrote some medical tests. Patients are more than doctors and supporting staff, this situation reducing people's health seeking behaviour in hospitals and patients facing troubles while treatment".

Discussion

High rate of maternal death is one of the major public health concerns in Tanzania. Most of maternal deaths are caused by factors attributed to pregnancy, childbirth, and poor quality of health services. More than 80% of maternal deaths can be prevented if pregnant women access essential maternity care and are assured of skilled attendance at childbirth as well as emergency obstetric care.
In Tanzania, from 1961 to 1990, maternal mortality ratio had been on a downward trend from 453 to 200 per 100,000 live births. However, since the 90's there has been an increasing trend to 578 per 100,000 live births. Current statistics indicate that maternal mortality ratio 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 and it could be fatal to a woman with obstetrical complications

Delay in deciding to seek medical care

Delay in deciding to seek medical care is influenced by many factors. This study revealed factors such as patriarchal values, bad experience with health care system, financial constrains, long distances to maternity hospitals, and failure to recognise the 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 risk signs (Kowalewski, et al, 2000). Bad experience with the health system will mostly lead to reluctance or non-utilization of health care services. Poor provider attitude towards patients has been identified as a major

factor to low utilization of services in Kigoma (Mbaruku & Bergstrom, 1995).

Delay in reaching an appropriate medical facility

Long distance 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 indicates that about 75% of the population living in rural Tanzania and only 38% of the rural population has reliable access to transport with a mean distance of 5.4km to public transport services and 75% of the time that women spent walking long distances (National Transport Policy, 2003). Improvement in rural connectivity through the development of effective rural transport systems would have a significant effect in reducing maternal mortality in Tanzania.

Health centres are strategically located in Tanzania and 80% of the population live 5 kilometres to health centres, but accessing them does not necessarily mean receiving appropriate care (MoHSW, 2007). Sometimes going to health centres can delay further attempts of accessing adequate health care. Up-grating of health centres to fully functional basic obstetric emergency units could reduce the delay caused by long transportation time. To avoid delay in reaching maternity centres, must keep ambulance for emergency purpose.

Delay in receiving appropriate care after reaching the hospital

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

Conclusion

The present study aimed at shedding light upon some of the factors which contribute to maternal deaths in rural areas of Dodoma region. The study revealed that women do try to reach adequate health services when an emergency occurs, but that there are many obstacles that delay this process. Improving accessibility and quality of Emergency Obstetric care services in the area is necessary if maternal deaths are to be prevented.

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References

WHO, UNICEF, UNFPA, (2005),"Maternal Mortality in 2005", Estimates developed by WHO, Geneva, Available at http://www.who.int/whosis/mme_2005.pdf

Khan KS, Wojdyla D, Say L,(2006) ," WHO analysis of causes of maternal death: a systematic review." The Lancet*;* 367(9516): 1066-1074.

Ronsmans C, Graham WJ. (2006) " Maternal mortality: who, when, where, and why". The Lancet 368(9542): 1189-1200.

Ministry of Public Works and Government Services; (2004)," Special report on maternal mortality and severe morbidity in Canada - enhanced surveillance and the path to prevention". Available at: http://www. phac-aspc.gc.ca/rhs-ssg/srmm-rsmm/index.html

Walreven,G, C.Ronsmans.(2000),"Maternal mortality in Rural Gambia ;levels ,causes and contributing factors "Bulletin of the World Health Organisation, volume 78No5:604-609.

Campbell, O.M. (2006) Strategies for reducing maternal mortality: getting on with what works. www.ncbi.nlm.nih.gov/pubmed/17027735.

TDHS (2010), Tanzania Demographic Health Survey, National Bureau of Statistics, Dar es Salaam, Tanzania and ORC Macro. Available at http://www.nbs.go.tz/takwimu/references/2010TZKeyFindings.pdf

Angela E.S (2011), "Maternal health in fifty years of Tanzania independence: Challenges and opportunities of reducing maternal mortality "Tanzania Journal of Health Research , Volume 13: 1-14

WHO (2004) "Beyond the Numbers Reviewing Maternal Deaths and Complications to Make Pregnancy Safer". World Health Organization, Geneva, Switzerland, available at http://www.ino.searo.who.int/LinkFiles/Reproductive_health_Beyond_the_numbers.pdf.

Ministry of Health and Social Welfare *(* MoHSW) Dar es Salaam, Tanzania (2007), "Primary Health Care Services Development Programme 2007-2017". available at http://www.unfpa.org/sowmy/resources/docs/libra

ry/R222_MOHTanzania_2007_PHC_2007-2017.pdf

URT (2005) National Strategy for Growth and Reduction of Poverty (NSGRP). Vice Presidents Office, United Republic of Tanzania, Dar es Salaam.

TDHS (2005) Tanzania Demographic Health Survey, (2005) National Bureau of Statistics, Dar es Salaam, Tanzania and ORC Macro.

The united Tanzanian website (2011),"Regions,Dodoma" available at http://www.tazania.go.tz/regions.

National Bureau of Statistics**,** Dar Es Salaam "General Report (2003), Population and Housing Census", available at http://www.tanzania.go.tz/2002census.PDF

Chandramohan D, Rodrigues LC, Maude GH, Hayes RJ, (1998) "The validity of verbal autopsies for assessing the causes of institutional maternal death". Stud Fam Plann;29:414-22.

Kane T, el-Kady AA, Saleh S, Hage M, Stanback J, Potter L (1992). "Maternal mortality in Giza, Egypt: magnitude, causes and prevention". Stud Fam Plann 1992; 23:45-57.

Sloan NL, Langer A, Hernandez B, Romero M, Winikoff B.(2001), "The etiology of maternal mortality in developing countries: what do verbal autopsies tell us?", Bull World Health Organ; 79:805-10.

Fathalla M.1987 "The long road to maternal death". People 2;14:8-9.

Graneheim UH, Lundman B(2004), "Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness**".** Nurse Education Today , 24:105-112.

Kowalewski M, Jahn A, Kimatta S,(2000):" Why do at-risk mothers fail to reach referral level? Barriers beyond distance and cost". African J Reproductive Health , 4:100-9.

Mbaruku G, Bergstrom S,(1995) ,"Reducing Maternal mortality in Kigoma, Tanzania**".** Health Policy Plan, 10:71-8.

National Transport Policy (2003) ,http://www.infrastructure.go.tz/index.php/policies