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# Maternal Mortality in the Health Delivery System in Kapiri Mposhi District, Zambia

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## Abstract

This article discusses the contribution of identified factors to maternal mortality in the Health Delivery System in Kapiri Mposhi District, Zambia. The article derives its methodology from the use of Qualitative and Quantitative Designs. Qualitative data was analyzed deductively, while Quantitative data was analyzed using Statistical Packages for Social Sciences (SPSS). The article concludes that maternal deaths in Kapiri Mposhi were caused by shortages of health personnel, pregnancy complications, and delayed referrals both at community and health center levels. However, a shortage of EmONC drugs/supplies was not among the causes of maternal deaths. This article recommends that more health personnel be recruited and that the available staff in health facilities be retrained in Basic Emergency Obstetric and Neonatal Care. The study further recommends that an additional ambulance be procured. The study also recommends that community sensitization on encouraging men to get involved in safe motherhood programs be conducted and that sensitization on the importance of facility deliveries should be intensified among women in Kapiri Mposhi District.

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## Introduction

Zambia, just like the rest of the world, grapples with the issue of Maternal Mortality. As such, Maternal Mortality impacts negatively on many Zambians. It does not only deprive the country as a whole of women who could be potential contributors to socio-economic development, but its effects are also felt at the family level, whereby some women considered breadwinners are taken away by death, meaning family welfare in many aspects tends to be compromised. There may be many factors that border around maternal deaths, such as cultural/traditional beliefs, socio-economic

factors, complications in pregnancy, little involvement of men in safe motherhood activities, to mention but a few. However, identification of all of them could have proved futile in this study; hence, the study determined whether identified factors contributed to Maternal Mortality. According to the Ministry of Health National Reproductive Health Policy, January 2005, “administratively, the service delivery institutions, including the first level referral hospital, are managed at the district level under the District Health Management Team (DHMT), while the higher levels of care are managed at other levels.” Therefore, Kapiri Mposhi Community District Hospital is a first-level hospital that attends to cases referred by other health facilities within the district. It may further refer complicated cases that need specialized services to higher levels of care such as Kabwe General Hospital and, at times, directly to the University Teaching Hospital (UTH). In 1992, the Zambian Government embarked on a radical health reform process with a view to building structures that would allow the provision of access to cost-effective quality health care as close to the family as possible. Maternal Health Care is one of the programmes by the Zambian Government of ensuring provision of quality health care. However, one cannot talk of Maternal Health without a mention of Maternal Mortality, which is an important maternal health indicator globally and within Zambia as a whole. Maternal Mortality is a number five (5) Millennium Development Goal that Zambia strives to reduce by three-quarters between 1990 and 2015. The Millennium Development Goals (MDGs) Progress Report of 2008 indicates that, “Maternal Mortality Rate varied from 729 per 100,000 live births in 2001/2002 to 449 per 100,000 live births in 2007.” This shows that a lot of challenges remain to be overcome in Maternal Health, particularly Maternal Mortality. In this vein, Maternal Health policy, therefore, has been put in place to ensure that the problem of Maternal Mortality is addressed. The policy objectives are: To ensure Quality Maternal Health Care; To provide free Antenatal services for women (services that ensure that women are told what to eat, care for themselves, to identify danger signs); To sensitize the community on referrals so that Traditional Birth Attendants (TBAs) can refer patients to health facilities in rural areas, and to some extent, TBAs should call health facilities for ambulances when a woman has difficulties with labour; To train human resources in the management of complicated maternal cases; and to provide PMTCT services and mosquito nets through the program of prevention of malaria in pregnancy. Recognizing the slow progress in reducing maternal mortality, Zambia in 2006 launched the Campaign on Accelerated Reduction of Maternal Mortality in Africa (CARMMA) under the theme: “No Woman Should die while giving rise to life.” CARMMA is a call for Zambia to rededicate and redouble her efforts towards reducing maternal deaths. However, Maternal Mortality continues to be a problem, and some of the identified factors were: human resources shortages, poor drug accessibility, delayed referrals, and pregnancy complications. It was, therefore, imperative to investigate whether these identified factors contributed to maternal deaths in Kapiri Mposhi District.

## Methodology

**Study Designs:** The study used qualitative and quantitative designs. These methods compensated for weaknesses in each one of them and took advantage of their strengths. For example, instead of relying alone on oral information from key informants (qualitative), and the researcher felt that the data were biased, the quantifiable data from documents (quantitative) could be used as a counter-check. In other words, the methods were complementary to each other. Some brief explanations of each design are as follows:

- i. **Quantitative Approach:** The quantitative design generated quantifiable results and made it easier to analyze the data. This data was in the form of tables, percentages, and graphs, which made data analysis easier when assessing whether the identified factors contributed to maternal mortality in Kapiri Mposhi District.
- ii. **Qualitative Approach:** This approach offered an in-depth explanation of the phenomenon that was under investigation and generated information related to the mental constructs or thinking of pregnant women, the doctors, midwives, etc. This approach required appropriate skills during the process of collecting and analyzing the data. At times, it required that the content from qualitative instruments had to be categorized and coded, and this facilitated data entry and analysis.

**Sample Size and Sampling Procedure:** The respondents were categorized into four (4) groups:

- The pregnant women who delivered safely in the 12 months prior to the study and within the age range of 15-49 years.
- The relatives of the deceased.
- The Facility Staff (Doctor, Medical Licentiate, Clinical Officer, Nursing Officer, Midwives, Nurses, and the Pharmacist).
- And the Service Providers (District Medical Officer, Medical Officer In-charge, Human Resource Officer, MNCH Coordinator, Health Clinical Officers In-charge, and the Community Representative (a person in charge of maternal deaths in the community)).

The population of Women of Child Bearing Age (WCA) between 15-49 years in the selected three health facilities was 1,024. The total sample size consisted of 100 respondents. These were seventy-six (76) pregnant women attending antenatal services at either static or outreach clinics. Service providers were seven (7). Out of seven key informants, two (2) were health clinical officers in-charge, one (1) District Medical Officer, one (1) MNCH Coordinator, one (1) Human Resource Officer, one (1) Medical Officer in-charge, and the community representative. The facility staff were thirteen (13), while four (4) were relatives of the deceased. The study used both simple random sampling and purposive sampling in selecting the sample. The simple random sampling was used among pregnant women attending ANC services, specifically those who delivered safely in the 12 months prior to the study and were between the ages of 15 and 49 years. Antenatal safe motherhood registers were used to obtain a list of pregnant women who booked for antenatal services at specified dates. The names of pregnant women were then subjected to the Statistical Package for Social Sciences (SPSS), which in turn randomly selected the sample. Purposive sampling was used on key informants with the view that they could provide relevant data for the study. The Maternal Review Reports were reviewed and consulted from the office of the MNCH Coordinator to get the addresses or contact numbers of the relatives of the deceased. And where possible, death registers at selected health facilities where maternal deaths occurred were consulted. The community representatives' contact addresses were thus obtained from the MNCH office, while the other key informants were accessed from their respective workplaces, such as the district community health office, district community hospital, and clinics, respectively.

#### **Cases Eligible for Inclusion in the Study:**

- Only those cases that had been reviewed and qualified as maternal deaths by the District Maternal Mortality Review

Committee, and these were in line with and qualified by the classification of maternal death or suspected maternal death according to the Ninth and Tenth Revisions of the International Classification of Diseases (ICD-9 and 10). “**A Maternal death** is 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 or incidental causes”. (Zoe and Sally 1996:4)

- In addition, the death occurred on the route to or in a health facility (hospital, clinic) situated in Kapiri,
- And/or in the community, and the deceased must have been a resident of Kapiri Mposhi District before death.

**Research Instruments and Data Collection:** Questionnaires consisting of both open and closed questions were constructed and administered to pregnant mothers, relatives of the deceased women, and some selected health staff who worked in contact with pregnant women. In-depth interviews using the interview guide were another mode of data collection, especially for service providers who were knowledgeable about the cases. In addition, interviews with the health facility staff were carried out independently, mostly in their private rooms, and this ensured that privacy and anonymity were observed. In line with this, some selected health facilities where some deceased women sought maternal health care and finally died were visited. In this case, such health facilities had key informants (health center officers in charge and medical officers in charge) knowledgeable about such maternal deaths. In-depth interviews helped the researcher to solicit more detailed information that was not captured in the questionnaires. After study instruments had been developed, the researcher took them to a nearby health facility known as TAZARA Health Centre in Kapiri Mposhi. The purpose of this was to pre-test the data collection instruments under a similar environment.

**Data Analysis:** The Statistical Package for Social Sciences (SPSS) Version 16.0 was used in the analysis of quantitative data, whilst qualitative data from interviews was analyzed using the deductive approach. Closed-ended questions in the questionnaires were coded. The responses to the open-ended questions were categorized and coded by assigning figures, and this facilitated data entry and analysis. Content analysis was used to analyze responses from the key informants. The SPSS software package was used because it offered some of the following merits: it was user-friendly, it had enough space for a long range of numbers, and mathematical manipulations were dealt with using its in-built functions. It also permitted a variety of ways of presenting data in the form of tables, frequencies, bar charts, and other figures.

## Discussions and Results

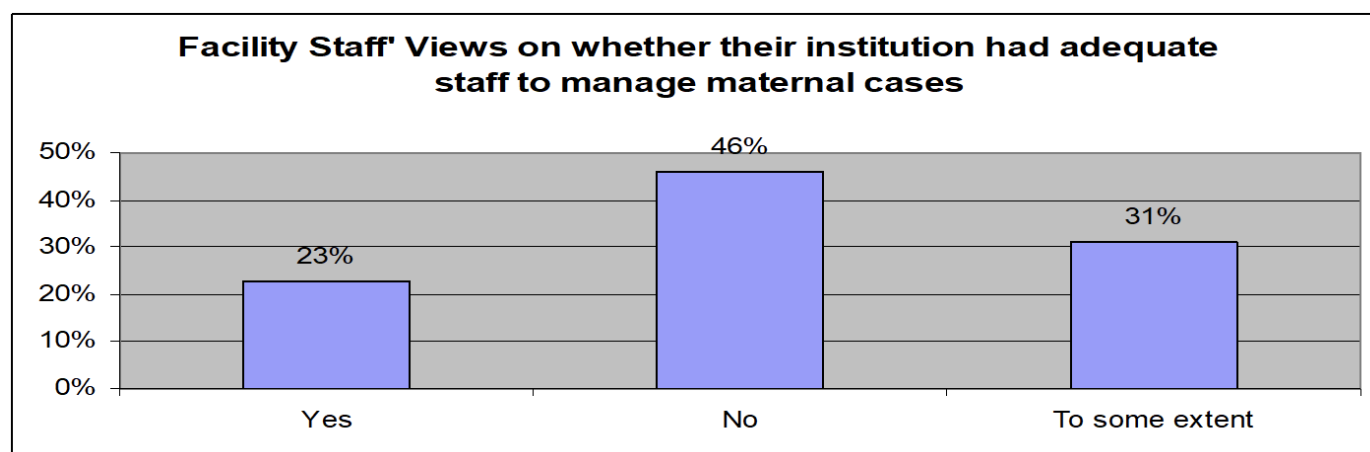
In this study, the reported percentages were derived from calculations on respondents, which were further distributed by sex. Out of the total number of one hundred (100) participants, seventy-six (76) were pregnant women, while service providers were seven (7). The facility staff were thirteen (13), whereas the relatives of the deceased were four (4). Therefore, in percentage terms, seventy-six (76) participants represented one hundred percent (100%) of females, while out of the seven (7), two (2) were females, representing twenty-nine percent (29%), and five (5) were males, representing seventy-one percent (71%). In addition, out of the thirteen (13) participants, four (4) were males, representing thirty-one percent (31%), while nine (9) females represented sixty-nine percent (69%). And the last four (4) participants were all

females, representing one hundred percent (100%).

## Shortage of Staff and Maternal Deaths

Health facilities are supposed to have adequate personnel to conduct deliveries and also to manage those cases that might be complicated. This, in turn, could safeguard the life of the baby and the pregnant woman at large. However, most of the health institutions in Kapiri Mposhi District had a shortfall of relevant staff to conduct such services in question. This was evidenced by the study in the sense that when the facility staff were asked about the adequacy of staff at their institution to manage maternal cases, twenty-three percent (23%) said they had adequate staff, forty-six percent (46%) of them responded that their institution had inadequate staff to manage cases, whereas those who said that to some extent their institution had adequate staff were thirty-one percent (31%).

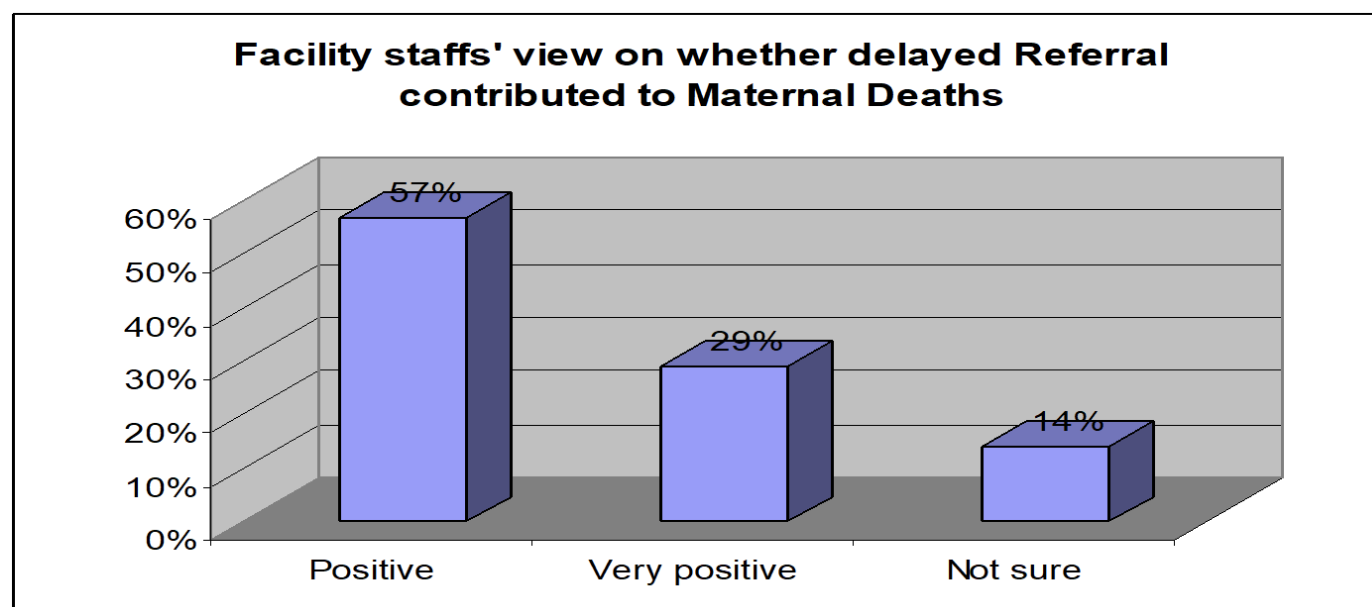
The findings of the study shown in Figure 1 revealed that the majority of the respondents indicated that staff at their workplaces were inadequate to handle maternal cases. These findings were similar to those from Kapiri Mposhi District Strategic Plan (2013), which showed that in 2012, fifteen percent (15%) of the deliveries in the health facilities were done by Traditional Birth Attendants (TBAs). The Classified Daily Employees or the Cleaners conducted thirty-five percent (35%) of the deliveries in the same year, whereas fifty percent (50%) of the deliveries were done by skilled personnel (doctors, midwives, nurses, etc.). This was not a good scenario because eighty percent (80%) of deliveries were supposed to be undertaken by skilled personnel according to health standards. One of the requirements of an effective health service is to have in place a well-devised and operational referral system that will ensure that clients or pregnant mothers are attended to with reduced chances of death.



**Figure 1.** Facility staff's view on human resources availability

Therefore, this section discusses whether the referral system in place contributed to maternal deaths in Kapiri Mposhi District, especially in line with pregnant women's movement for specialized care. Health facilities should have adequate transport (ambulances) to be able to take patients who need specialist care to Zonal Centers or Referral Centers. The communities also must ensure that pregnant women about to deliver are taken to the nearest health clinic where some

preliminary examinations can determine whether there is a need to call for an ambulance to take the patient to a hospital. In addition to the preceding study findings, respondents were asked to state whether they were positive that a delay in the referral system because of such difficulties mentioned above could cause maternal deaths; most of them were positive on this issue, as illustrated in Figure 2 below.



**Figure 2.** Facility staff's view on referrals and maternal deaths

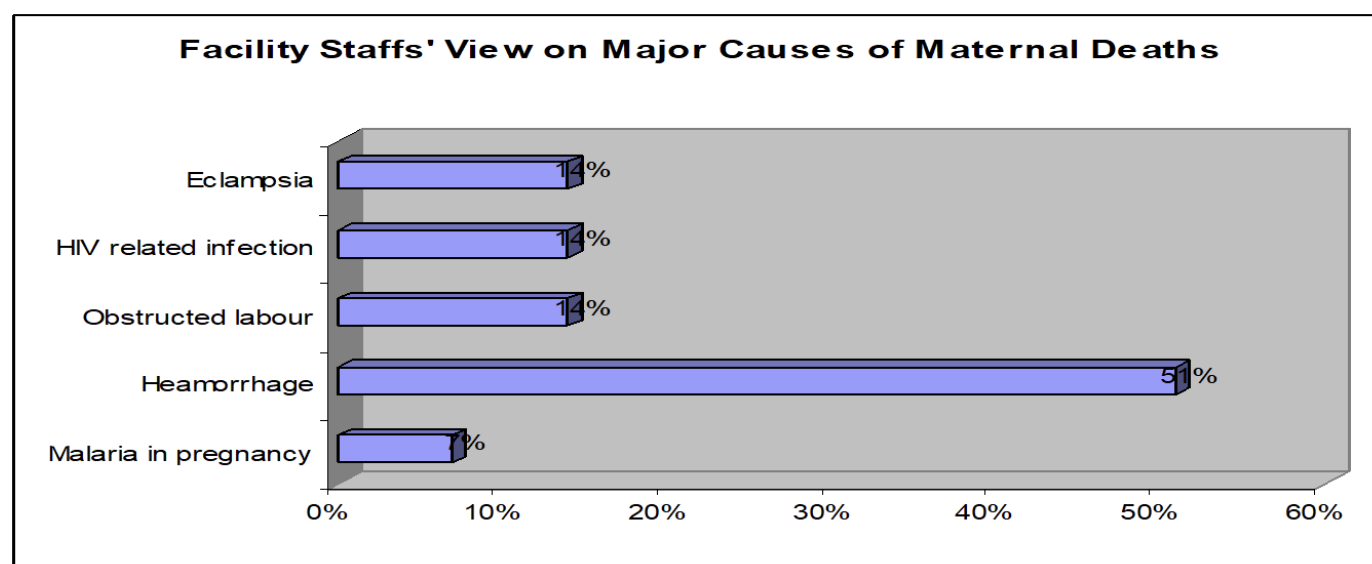
The findings of the study revealed that fifty-seven percent (57%) of the respondents were positive that a delayed referral system contributed to maternal deaths, and twenty-nine percent (29%) were very positive, whereas respondents who were not sure of this issue were fourteen percent (14%). Therefore, some maternal deaths in these findings could be the result of a delayed referral system in the district. Pregnancy complications are common in any society, be it at the family, community, or facility level of care. These conditions require competent health workers to manage. Thus, it becomes vital to determine whether such complications could cause maternal deaths in women. Whenever a pregnant woman has maternal complications, the health workers are obliged to handle such cases with care, and depending on the level of complications, evacuation of such a client to another level of health care could take place.

### Prevalence of Maternal Complications

There are a number of complications common in Kapiri Mposhi District. According to Kapiri Mposhi HMIS (2013), pregnancy complications included sepsis, malaria in pregnancy, obstructed labour, co-infections with HIV/AIDS, hypertensive disorders, haemorrhage, abortions, ruptured uterus, and retained placenta. Therefore, the study determined whether some of these complications could cause maternal deaths.

### Causes of Maternal Deaths in Health Facilities

The major cause of maternal deaths in health facilities was hemorrhage, as revealed by the study. However, HIV-related infections and eclampsia shared the same percentage of the least common pregnancy complications as causes of death. These results are in agreement with the views of the pregnant mothers earlier discussed. The figures below illustrate the findings.

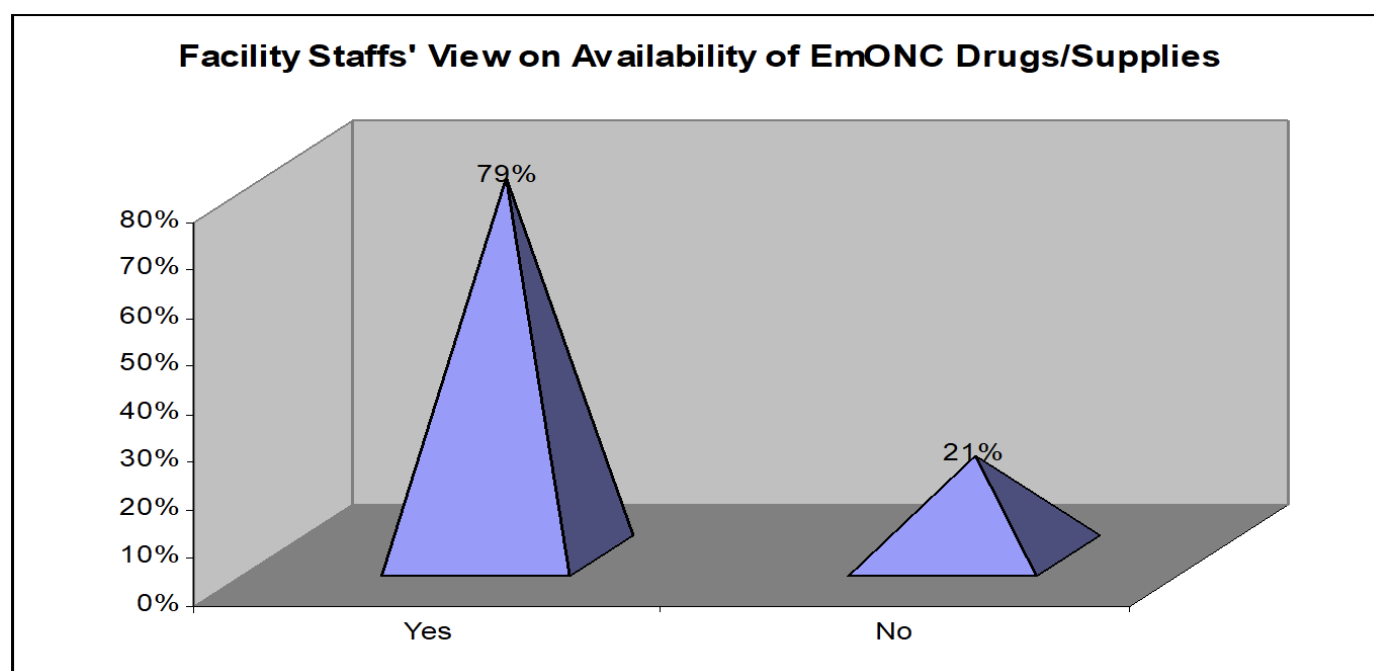


**Figure 3.** Facility personnel's perceived causes of maternal deaths

It was evident from these findings in Figure 3 that malaria in pregnancy accounted for seven percent (7%) of maternal deaths, while haemorrhage was at fifty-one percent (51%). The other causes of death had the same percentage, fourteen (14%) each, and these were obstructed labour, HIV-related infections, and eclampsia, respectively. In this regard, it could be explained that to a larger extent, the complications in pregnancy, particularly haemorrhage, greatly contribute to the deaths of pregnant women in Kapiri Mposhi District. This article further discusses whether a shortage of drugs contributes to maternal deaths. The drugs are not general drugs but Emergency Obstetric and Neonatal Care (EmONC) drugs and EmONC medical supplies. Examples of EmONC supplies could be oxytonics, delivery packs or instruments, delivery beds, anticonvulsants, to mention but a few. Additionally, conducting a caesarean section is part of EmONC. A caesarean section is a common medical procedure in theatres and is an alternative to the normal delivery of an unborn baby. The C/S provides a proxy for women's access to care for pregnancy- and childbirth-related complications (both basic and comprehensive). These drugs and supplies, in context, were thus regarded to be a panacea for the complicated pregnancy cases among women in Kapiri Mposhi District. Therefore, it was of great importance to investigate whether the inadequacy of such drugs/supplies could cause maternal deaths.

### Shortage of EmONC Drugs/Medical Supplies and Their Contribution to Maternal Deaths

In regard to the captioned heading, the study found out that the majority of the respondents reported that, although maternal deaths at one point were experienced at their respective health facilities, adequate stocks of drugs were available. This is evidenced by Figure 6.9.2 below.



**Figure 4.** Facility Staff's Perception on Drugs/Supplies

The participants in the study were asked whether their institutions had stocked adequate EmONC drugs at the time maternal deaths were experienced. According to the findings of the study above, seventy-nine percent (79%) of the respondents agreed that their institutions had stocked enough drugs, whereas twenty-one percent (21%) disagreed, though they had strong views that the shortage of EmONC drugs and medical supplies could cause maternal death. The findings are similar to those in a study by Thaddeus and Maine of 1994 that showed that at times there could be shortages of EmONC drugs at health facilities due to inadequate transport infrastructure. Although the study considered the reasons advanced by some respondents, it found out that maternal deaths in Kapiri Mposhi District were not caused by a lack or shortages of Emergency Obstetrics and Neonatal Drugs. This could be explained by the fact that most of the respondents felt that these drugs were always available, but other causes, as discussed in preceding sections, could have contributed to maternal deaths at one point in their institutions.

## Discussions

Kapiri Mposhi District had shortages of human resources in most clinics, and even in situations where qualified personnel were available at a clinic, most of them lacked skills that could be useful in the early detection of complicated maternal cases. Therefore, the shortage of trained staff in most facilities contributed to maternal deaths in the district. This was not a good scenario because eighty percent (80%) of deliveries were supposed to be undertaken by skilled personnel according to health standards. Further, ZDHS (2007) also registered similarities with the study in the sense that, according to ZDHS, only 46.5% of deliveries were assisted by nurses/midwives or physicians, and 53.5% were conducted by non-professionals. These findings clearly indicate that shortages of health personnel contributed to maternal deaths in



the district. Kapiri Mposhi District is centrally located. The district shares health-related issues with other districts like Kabwe, Lusaka, and Ndola. Due to its strategic location, maternal cases that are not managed at the hospital level are referred to the higher level of care in other districts (Kabwe, Ndola, and Lusaka). The distance between these districts, particularly Lusaka and Kapiri Mposhi, poses a challenge where referring pregnant women is concerned. This led to deaths among some women, though not adequately covered in the study. Further, it was observed that the terrain and road networks in the district are in a deplorable state. This makes it impossible for health staff to reach easily their places of work.

In addition, though shortage of drugs was not a cause of death among women in the study, Kapiri Mposhi had an advantage of soliciting essential drugs from other districts due to its strategic geographical location. The central government, in collaboration with Medical Stores Limited (MSL), has been consistently supplying the district with drugs. This also explains why the drugs were available during the study. However, it was observed that most health facilities in the district are far from each other, coupled with poor road networks. Therefore, drug distribution is negatively affected, whereby some health facilities experience drug stockouts.

It is worth noting that Kapiri Mposhi's population is a complex one. In 2013, the district had a population of 284,946 according to CSO. However, it was observed that more than 300,000 people, according to the head count, were actually available the same year. This could be due to the district's population transitory nature. Other than cross-border truck drivers passing through Kapiri on commercial purposes, the meeting point of TAZARA and Zambia railways brings different people who come to either settle or conduct businesses. Although these commercial activities are necessary for the Zambian economy, they largely affect health provision in the district. Therefore, the services provided in health facilities are stretched beyond normal standards because people outside the catchment area utilize the available limited resources. For instance, it was observed that when pregnancy complications and/or the time for delivery occur, some pregnant women traveling on business purposes to other destinations could divert their journey to the district health centers for medical attention. In this regard, drugs meant for the available population are used on women outside the district. What this means is that some pregnant women residing in the district might die once drugs are not accessed at health centers.

Cosmetically, health facilities tend to be stocked well with drugs during times of election. This is to make people believe that things could be better even when the new government is ushered into office. However, immediately after the elections, drug stockouts become a song of the day. Therefore, politics influences drug provision in the district. That is to say, the supply of drugs is greater and more regular during election time, and the opposite is true after elections.

In the study, most deaths among pregnant women in the district were due to a shortage of human resources, post-partum haemorrhage, African syntocinon, and delayed referrals at the community/health facility levels. Other than the preceding causes of maternal deaths, the writer firmly believes that illiteracy levels among people (a state of not knowing where to access antenatal services), lack of mothers' shelters (not having shelters for pregnant women awaiting delivery), and inadequate transport infrastructure at community and health center levels are also potential factors that can contribute to maternal mortality in Kapiri Mposhi District. In view of maternal deaths, civil society and non-governmental organizations

play a pivotal role in supplementing government efforts toward health service provision in Kapiri Mposhi District. For instance, Marie Stopes provides family planning services, while John Snow Incorporated (JSI) strengthens the drug logistics system by ensuring that drugs are made available in health centers. Therefore, these are some of the efforts that NGOs have put in place in their quest to reduce maternal deaths in the district.

## Conclusions and Recommendations

**Conclusion:** The study has concluded that, although Kapiri Mposhi has a number of health facilities that are supposed to be easily accessible to patients, in this case, pregnant women, the facilities have inadequate staff to handle or manage maternal health cases. This has led to the deaths of pregnant women in the district. The study has concluded that most of the available staff in health facilities lack skills in Basic Emergency Obstetric and Neonatal Care. Because of the staff's inability to offer quality primary health care, some maternal deaths were recorded in the district. The study has deduced that most of the health facilities in Kapiri Mposhi District are very far from referral centers. These facilities have no transport and have to call for an ambulance whenever faced with a complicated case or cases. Delays are made at the facility level in this case, since an ambulance may take a longer time to reach the referral center from a referring clinic, resulting in deaths among pregnant women. The study has further concluded that in the community, men are less involved in maternal issues, especially where referrals of pregnant women are concerned. This contributes to delays in the referral system from the community to the health facilities and consequently leads to the death of the majority of women. As discussed earlier, haemorrhage or post-partum haemorrhage was the most notable complication in pregnancy, among others, that led to most maternal deaths in the district. The study has observed that African Syntocinon, a traditional harmful practice in most Kapiri Mposhi communities, led to deaths among some women. Therefore, as deduced, this practice is an indirect cause of complications in pregnancies which, if left unchecked, results in maternal deaths. The study noted that most health facilities in Kapiri Mposhi District were stocked with Emergency Obstetrics and Neonatal Care drugs and/or medical supplies. In the study, the main referral center (hospital) was reported to be well equipped with medical supplies and EmONC drugs. And since drug stock-outs were not recorded in most delivery health facilities, the study has concluded that EmONC drugs/supplies could not cause any maternal deaths, whether at the health center level or hospital within Kapiri Mposhi District, and there were poor medical seeking behaviours among women, especially in rural areas of Kapiri Mposhi communities.

**Recommendations:** The study recommends that more health personnel be recruited and made available in health facilities. There is also a need for the Kapiri Urban Health facility to be given an establishment. This, in turn, will lead to increased health personnel who can handle or manage maternal cases in the district. The study recommends that the available staff in health facilities be retrained in Basic Emergency Obstetric and Neonatal Care. This empowerment with EmONC skills among available health personnel in health facilities should be prioritized while waiting for more to be recruited. Hence, once the staff undergoes such retraining, they will be in a position to make an early detection of complicated maternal cases so as to manage or refer them to higher institutions for specialized management. The study further recommends that instead of having one ambulance, another ambulance be procured. This will ensure that delays

(in referrals) are lessened in picking up patients. The study recommends that sensitization on men getting involved in safe motherhood programs be conducted in communities. Further, educating men on the importance of referrals from communities to clinics be intensified. The study further recommends equipping health personnel with relevant skills in managing complications in pregnancy among women, especially post-partum haemorrhage and other complications related to pregnancy in the district. The study recommends that community sensitization on the importance of delivering at the health facilities by women in the community be intensified. Messages discouraging untrained Traditional Birth Attendants from practicing unsafe methods, such as African Syntocinon, should be communicated in communities. And adequate support to community-based health workers through regular supervision, provision of drugs/supplies, and empowering them with skills to generate income be enhanced. The study recommends that village headmen and their subjects be educated on the importance of encouraging women to seek medical treatment at health facilities, with emphasis placed on their husbands or spouses getting involved by escorting them to health facilities before, during, and after delivery in their respective communities.

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