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Research Article

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Strengthening MPDSR Practices to Improve Quality of Care in RMNCAH Services in Tanzania: Innovation of Coordinating National Meetings through Virtual

Aziza Machenje[1]*, Saturini Manangwa[1], Jafari Lutavi[2], Ziada Sella[1] and Sunday Dominico[3]

[1]*Ministry of Health, Division of Nursing and Midwifery Services, Tanzania*

[2]*Muhimbili National Hospital, Reproductive Health and Midwifery, Tanzania*

[3]*Ministry of Health, Division of Reproductive, Maternal, Child and Adolescent Health, Tanzania*

***Corresponding Author**
Aziza Machenje, Ministry of Health, Division of Nursing and Midwifery Services, Tanzania.

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Abstract

Introduction

Maternal and Perinatal Death Surveillance and Response (MPDSR) is among the proven and evidenced-based interventions strongly recommended by the WHO in reducing maternal and perinatal mortality (1). The MPDSR process applies the principles of the clinical audit by ensuring each maternal and perinatal death occurring at any point of care and in the community are identified, notified reviewed by MPDSR teams at facility, council and regional levels to establish the causes, contributing factors and develop actions to -prevent similar deaths. Maternal death reviews have been done in many countries, including Tanzania, to reveal the causes and contributing factors to maternal deaths, with some success and challenges.

In December,2020 Ministry of health established online MPDSR Zoom meeting which comprises with different members includes;- obstetricians, Gynecologists, paediatrician, other experts doctors, nurses and Midwives. The aim was strengthening skills of the maternal and perinatal health to leaders and healthcare providers in MPDSR processes that contribute to reductions in preventable maternal /perinatal deaths and improve the quality of maternal and perinatal health care by identifying gaps and find possible solutions.

Methods

A retrospective review of maternal and perinatal deaths was conducted daily through virtual meetings involving selected cases from specific region where the team included technical experts from Ministry of Health, PO RALG, academic institutions, respective professional associations and health care providers from respective region. National coordination team was responsible in providing schedules for the regions to present cases for discussion where in each meeting there was a chairperson to moderate discussion. The analysis of the cases discussed was done on monthly basis. Data cleaning and descriptive analysis were performed using Excel, with visualizations created to present findings in figures and tables. Descriptive statistics including frequencies and proportions were utilized to summarize the outcomes of the review.

Results

A total of 139 maternal deaths and 38 perinatal deaths were reviewed from 26 regions from 1st January to 31st December, 2024. Majority of Women 68 (49%) died due to postpartum hemorrhage while few of them died due to other causes such as Malaria, sickle cell Anemia and others 1 (7%). Majority of maternal deaths occurred in the health facilities mainly in Regional referral hospital 43(31%) and District hospital 50(36%). Perinatal death discussed were 38 and majority of deaths were due to birth asphyxia 22(58%) and Respiratory distress syndrome 11(30%) while 1(3%) were due to other causes such as Meconium aspiration syndrome, Brain hypoxia and perinatal sepsis. Majority of deaths occurred at Region referral hospital 30(79%). limitation of the competencies among health care workers was revealed to be the main driver to death (80%) followed with inadequate supervision and support from leadership system which affected health care workers negatively in relation to accountability.

Conclusion

Despite the decline MMR and PMR in Tanzania as reported in TDHS (2022), these rates remain distant from the SDG 2030 target. Therefore, there is a critical need to revitalized MPDSR activities throughout Tanzania and improving EMONC services across all levels of care.

1. Introduction

Maternal, Newborn and Child Health Maternal, Newborn and Child Health continue to issues of global and national priority. Global leaders adopted the Sustainable Development Goals (SDG) in 2015 with a third goal requiring reduction of global levels of maternal, newborn and child mortality to not more than 70 per 100,000 live births, 12 neonatal deaths per 1000 live births and child mortality ratio of deaths per 1000 live births. The 2019 report of UN-Interagency group for maternal mortality estimation (UN-MMEIG) capturing trend of 2000-2017 noted that that about 295,000 girls and women die worldwide every year as a result of pregnancy and childbirth, equivalent to maternal mortality ratio of 211/100,000 live births. Maternal and newborn mortality is a significant public health challenge [1]. Each year, there are more than 287,000 maternal deaths, 2.6 million newborn deaths, and 1.9 million stillbirths worldwide. Globally, a woman dies every two minutes from pregnancy-related complications; most of these deaths are preventable when proper care is provided at the right time [2]. The burden of maternal mortality is higher on low- and middle-income countries (LMIC) of Africa and Asia with 66% of the deaths happening in Sub-Saharan Africa (where only 15% of the global population live) and Tanzania among the five countries with largest estimated count of maternal deaths globally.

The UN-IGME's Levels and Trends in Child Mortality report of 2021 highlights that the first month of life as the most vulnerable period for child survival, with estimated 2.4 million newborns dying in 2020. The number of newborn deaths is nearly half (47%) of all under-5 deaths that were reported in 2020 and is on the increase. Sub-Saharan Africa has the highest neonatal mortality rate in the world of 27 deaths per 1000 live births and contributes to 43% of the global burden and Tanzania ranking 10th in globally in the absolute count of neonatal deaths. Preterm birth, birth asphyxia, neonatal infection being responsible for majority of the deaths.

Tanzania's Ministry of Health Program data shows that for the past four years maternal deaths count has been declining steadily but slowly from 1,744 in 2018, 1,657 in 2019, 1,640 in 2020, 1,588 in 2021 and 1,477 in 2022, while neonatal deaths declined from 11,524(2018), 9,681(2019), 8,190(2020), 6,741(2021) to 6,342 in 2022. Furthermore Tanzania reports shows that, there is a reduction of Maternal mortality from 556/100,000 in 2015/2016 to 104/100,000 in 2022 {DHIS2, 2022) although the perinatal deaths remains the same.

Several high impact interventions are being implemented to reduce the unacceptably high maternal, perinatal and child mortality. This includes family planning, Respectful Maternity Care, Antenatal Care, Emergency Obstetric and Newborn Care (EMONC), Essential Newborn Care, Care of Small and Sick Newborns. Maternal and Perinatal Death Surveillance and Response (MPDSR) is among the proven and evidenced-based interventions strongly recommended by the WHO in reducing maternal and perinatal mortality [3]. The MPDSR process applies the principles of the clinical audit by ensuring each maternal and perinatal death occurring at any point of care and in the community are identified, notified reviewed by MPDSR teams at facility, council and regional levels to establish the causes, contributing factors and develop actions to prevent similar deaths. Maternal death reviews have been done in many countries, including Tanzania, to reveal the causes and contributing factors to maternal deaths, with some success and challenges. In 2015, Tanzania introduced the Maternal Death Surveillance and Response (MDSR) system in line with recommendations from the World Health Organization (WHO) [4].This is one way to address high maternal and perinatal mortality by developing valuable solutions towards identified gaps and guide national strategies towards improving quality of care. MPDSR conducted on quarterly bases at Region, council and facility levels to identify the gaps and find a solution.

In December, 2020 Ministry of health established online MPDSR Zoom meeting which comprises with different members includes;- obstetricians, Gynecologists, paediatrician, other experts doctors, nurses and midwives.The aim was strengthening skills of the maternal and perinatal health to leaders and healthcare providers in MPDSR processes that contribute to reductions in preventable maternal /perinatal deaths and improve the quality of maternal and perinatal health care by identifying gaps and find possible solutions.

2. Methods

2.1 Study Design and Area

2.1.1 Retrospective Review of Maternal and Perinatal Death was Conducted on Daily Bases through Zoom platform in Tanzania. The meeting included interactive virtual presentation and discussions using Power Point presentation, and participants asking questions through chat box and given opportunity to ask in voice, the presented health facility prepared the narrative summary of care of which the deceased received before death occurred. Specialists engaged in discussion to identify what went wrong and possible solution made to avoid the occurrence of the future death due to the similar situation. The discussion moderated by a chairpersons which are members of national MPDSR steering committee (from professional associations -; AGOTA, TAMA, PAT and SATA) and the secretary of the meeting is Regional Nurse Officer of respective region who prepare a case for that day and these meeting are monitored by the officer from the ministry of health. From 1st January to 31st December, 2023, 205 meeting were conducted and 139 maternal deaths and 38 perinatal deaths and 2 near-miss has been discussed from all 26 Regions of Tanzania, also 26 CME meeting were conducted resulting from gaps identified from discussed cases for the purpose of capacity building.

2.2 Data Collection

Midwife specialist from Ministry of health collected the minutes of each presented case from the Regions secretariat after every discussion. The analysis of the collected data done on monthly bases. Data were collected are underlying cause of maternal or perinatal death, modifiable factors contributing to death, type of facility where death occurred, demographic information's of deceased, and recommendations from each case.

2.3 Data Analysis

Data cleaning and descriptive analysis was done using Excel and visualizations were created in Excel and data presented in the figures and tables. Descriptive statistics were summarized using

frequency and proportions.

- During data cleaning, the classification and grouping of causes of maternal and perinatal deaths was done collectively by MOH Midwife expert guided by the WHO application of ICD-10 to deaths during pregnancy, childbirth, and the puerperium (ICD-MM) and during the perinatal period (ICD-PM) respectively.
- The ICD-10 coded causes of maternal deaths were further assigned into the nine groups of causes during pregnancy, childbirth and the puerperium as per the ICD-MM. Lastly; the nine groups were categorized into direct or indirect causes of maternal deaths.
- For perinatal deaths, the ICD-10 coded causes of deaths were further assigned into the six groups for Antepartum related causes, seven groups for Intrapartum and eleven groups for neonatal causes of deaths as per the ICD-PM

3. Results

The report showed that, majority of Women 68 (49%) died due to postpartum haemorrhage while few of them died due to other causes such as Malaria, sickle cell Anemia and others 1 **(7%). Majority of maternal deaths occurred in the health facilities mainly in Regional referral hospital 43(31%)** and District hospital **50(36%)** limitation of the competencies among health care workers was revealed to be the main driver to death (80%) followed with inadequate supervision and support from leadership system which affected health care workers negatively in relation to accountability. **as shown in table one and figure 1 below.**

S/N	Causes of death	TOTAL
1	Post Partum Hemorrhage (PPH)	68(49)
2	Eclampsia	18(13)
3	Anaesthetic complication	13(9.1)
4	Ruptured uterus	10(7.2)
5	Severe anemia	7(5.0)
6	Abraptio placenta	6(4.3)
7	Sepsis	5(3.6)
8	Aspiration pneumonia	2(1.5)
9	Drug accedent	2(1.5)
10	Peripartum cardiomyopath	2(1.5)
11	Acute Kidney Injury (AKI)	2(1.5)
12	Severe malaria	1(0.7)
13	Multi organ failure	1(0.7)
14	Sickle cell anemia	1(0.7)
15	Pulmonary embolism	1(0.7)
	TOTAL	**139(100)**

Table 1: Pregnancy Related Causes of Death N= 139

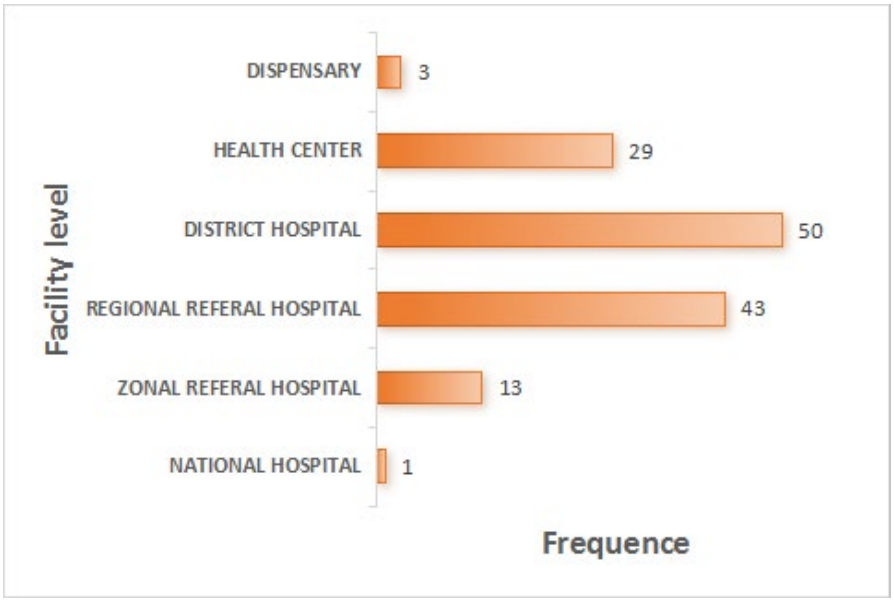

Figure 1: Shows a Place of Death for Maternal N=139

Perinatal death discussed were 38 and majority of deaths were due to birth asphyxia 22(58%) and Respiratory distress syndrome 11(30%) while 1(3%) were due to other causes such as Meconium aspiration syndrome, Brain hypoxia and perinatal sepsis. Majority of deaths occurred at Region referral hospital 30(79%). See table 2 and figure 2 below.

S/N	Causes of death	Total Number of death (%)
1	Birth asphyxia	22(57.8)
2	Respiratory Distress Syndrome (RDS)	11(28.9)
3	Meconeum Aspiration Syndrome	1(2.6)
4	Brain hypoxia	1(2.6)
5	Perinatal sepsis	1(2.6)
6	Severe pneumonia	1(2.6)
7	Gangrenous gastrochisis	1(2.6)
	TOTAL	**38(100)**

Table 2: Shows Causes of Perinatal Death N= 38

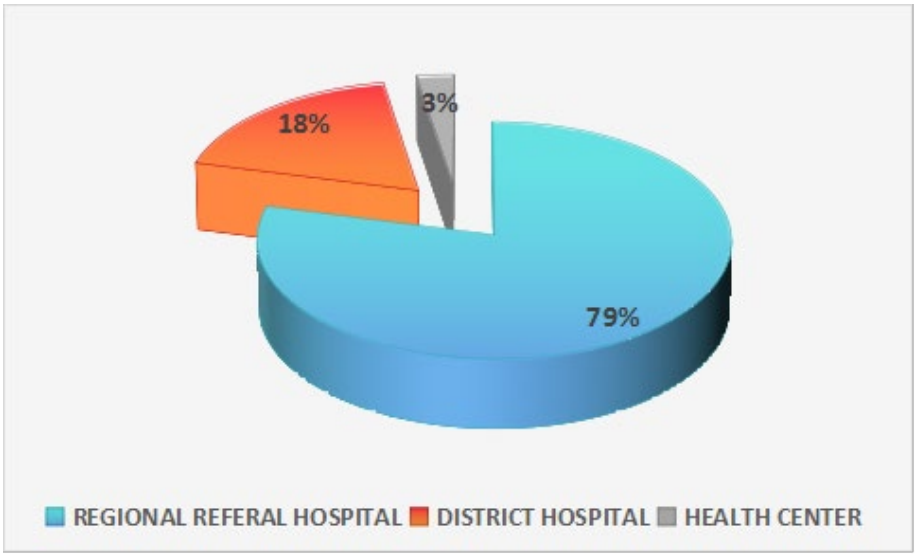

Figure 2: Shows Proportional of Place of Death for Perinatal N=38

4. Discussion

The implementation of the online MPDSR system has shown promising results in enhancing maternal and newborn care in Tanzania. This digital approach facilitates real-time reporting and analysis of maternal and perinatal deaths, allowing for timely identification of trends and issues [5]. The ability to swiftly respond to and address identified issues is crucial for improving care quality and ultimately reducing maternal and perinatal mortality rates [6].

Our findings align with previous studies that emphasize the effectiveness of digital tools in health monitoring and quality improvement. For instance, a study by OJO et al. (2020) demonstrated that online surveillance systems improved the timeliness and accuracy of reporting maternal deaths, leading to more effective interventions and better health outcomes [7]. Similarly, our research found that the online MPDSR system enabled more accurate tracking and analysis of death-related data, which contributed to improved clinical practices and reduced mortality rates in the regions studied.

Despite the positive outcomes, several challenges were identified. One significant issue was the limited access to reliable internet and technological infrastructure in rural areas, which hindered the full implementation and utilization of the online MPDSR system [8]. This limitation underscores the need for improvements in digital infrastructure to ensure equitable access to the benefits of online health systems.

Another challenge was the need for training and capacity building among healthcare providers. Although the online MPDSR system was designed to be user-friendly, initial resistance and difficulties in adaptation were observed, particularly among staff who were less familiar with digital tools [9]. Continuous training and support are essential to overcoming these barriers and ensuring that all healthcare providers can effectively utilize the system.

The impact of the online MPDSR system on maternal and perinatal outcomes was significant. The data indicated a reduction in both maternal and perinatal deaths, correlating with improvements in care quality [10]. This is consistent with the findings of other research, which suggests that effective monitoring and response systems are critical for reducing mortality rates [6,7].

The improvement in outcomes can be attributed to several

factors, including enhanced data accuracy, timely interventions, and better coordination among healthcare providers. The online MPDSR system facilitated more effective communication and collaboration, which is vital for addressing the complex factors contributing to maternal and perinatal deaths [11].

5. Recommendations

Recommendations from the MPDSR committee based on gaps identified in discussions.

1. To strengthening quality of ANC services and to ensure all essential services needed are available.
2. Capacity building to healthcare providers especially nurses and midwives on Emergency obstetric and newborn care (EMONC) services providence.
3. To strengthening and create a good environment for health care provider to consult early to seniors so as to have a good opinions from expertise on caring emergence cases.
4. To continue emphasizing and strengthening team work at all facilities so as to help during emergence.
5. To direct healthcare providers the importance of close monitoring of patients and early referral as per guidelines.
6. To strengthening referral system by using different innovative approach like M-mama.
7. To strengthening supportive supervision on health facilities from facility team, council, regional and national level.
8. To sensitize on early decision making during complication arose in order to ensure a woman receive emergency services timely.
9. To emphasize on close monitoring of post operative patients in order to detect early if there is any complications.
10. To ensure blood and blood products are available in all Comprehensive Emergency obstetric and newborn care (CEMONC) facilities.
11. To train anaesthetist on emergency preparedness and care of emergency obstetric and newborn.

6. Conclusion

Although MMR and PMR have been on decline in Tanzania as shown on report of TDHS (2022), these figures are still far from achieving the SDG 2030 target. Therefore the need to revive MPDSR activities in Tanzania and improving EMONC services at all level of care. Ministry of health cooperate with partners who support maternal and newborn health in sensitization of quality maternal and newborn care at all level of facilities by make sure that all gaps identified in MPDSR discussion are well intervened and follow up plan is well organized under supervision of CHMT and RHMT.

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