

Maternal and Perinatal Mortality Surveillance and Response (MPMSR) in Rohingya Refugees Response, Cox's Bazar, Bangladesh

Annual Report 2022

Supported and implemented by:

Health Sector Cox's Bazar

Sexual and Reproductive Health Working Group (SRH-WG)

Community Health Working Group (CHWG)

Maternal and Perinatal Mortality Surveillance and Response (MPMSR) in Rohingya Refugees Response, Cox's Bazar, Bangladesh

Annual Report 2022

Foreword

On behalf of UNFPA I am pleased to present, in this report, the findings of our collective efforts on Maternal and Perinatal Mortality Surveillance and Response (MPMSR) for the Rohingya Refugees Response in Cox's Bazar, Bangladesh.

Introduced in 2019, this system was established with the primary aim of ensuring greater accountability and improved quality of care for women and newborns. Its overarching objectives are to effectively document and fortify data related to maternal and perinatal mortalities, and to offer actionable recommendations for interventions that can enhance care, quality and mitigate future mortality.

I wish to express my heartfelt gratitude to the Government of Bangladesh for their commitment to addressing the complex needs of the Rohingya refugees. Under the leadership of GoB, essential healthcare services including critical maternal and perinatal care are ensured for this vulnerable population.

I would further like to express my deep appreciation to our Health Sector partners in strengthening healthcare infrastructure and reporting systems, enhancing access to quality reproductive and maternal healthcare services, and ensuring the safety of mothers and newborns. The dedicated advocacy and initiatives of the Sexual and Reproductive Health (SRH) Working Group have equipped women and girls with much-needed information on reproductive health. Additionally, the ongoing efforts of the Community Health Working Group in raising awareness, building trust, and delivering essential health education and services to Rohingya communities have played a pivotal role in nurturing health-seeking behaviors, making them a bridge connecting us to the communities we serve.

This annual report serves as a vital tool in assessing the progress made and the challenges we continue to face. It reflects the culmination of our collective efforts, our shared vision for a brighter, healthier future, and our unwavering commitment to the principle that no woman or child should have to face preventable death or suffering during childbirth.

Together, let us continue our work to deliver a world where no mother dies of preventable maternal death, every pregnancy is wanted and every childbirth is safe – even in very challenging circumstances.

Kristine Blokhuis
Representative, UNFPA Bangladesh

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Abbreviations

ANC	Antenatal Care
APH	Antepartum Hemorrhage
BEmONC	Basic emergency obstetric and newborn care
CBS	Community-based surveillance
CEmONC	Comprehensive emergency obstetric and newborn care.
CHW	Community health worker
CHWG	Community Health Working Group
CME	Continuous Medical Education
COVID-19	Coronavirus disease 2019
EBS	Event-based surveillance
FBS	Facility-based surveillance
EPMM	Ending preventable maternal mortality
EWARS	Early Warning, Alert and Response System
ICD10MM	International classification of diseases, tenth revision, maternal mortality
MPDSR	Maternal Death Surveillance and Response
MPMSR	Maternal and Perinatal Mortality Surveillance and Response
PPH	Postpartum hemorrhage
RAMOS	Reproductive Age Mortality Study
SDGs	Sustainable Development Goals
SRH WG	Sexual and Reproductive Health Working Group
UHC	Upazila Health Complex
UH&FPO	Upazila Health & Family Planning Officer
UN	United Nations
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
VA	Verbal autopsy
WHO	World Health Organization
WRA	Woman of reproductive age
1E	1 East
1W	1 West
2E	2 East
4 EXT.	4 Extensions
8E	8 East
20 EXT.	20 Extensions

Executive Summary

The Maternal and Perinatal Mortality Surveillance and Response (MPMSR) system is the one of the quality improvement tools to reduce the maternal and perinatal mortality, thus improving the maternal and perinatal health. In Rohingya refugee camps, MPMSR started in 2019. The aim of the annual report is to capture and document the latest status of maternal and perinatal mortality in the camps for tracking, monitoring and establishing evidence based implementation plans for maternal and perinatal health services in the camps. Continuous mortality review and audit is provided by the MPMSR, which links the quality improvement procedures and the health information system at all levels, from the local to the national level.^{3,4}

In 2022, MPMSR report showed that 83 maternal deaths were reported in the system, of which 44% were due to haemorrhage, and 31% to hypertensive disorders during pregnancy. Majority of them occurred at the facility level which was 71% of all deaths. There was decreased reporting by partners through the Events Based surveillance (EBS) at the facility level was 56% in 2022 whereas reporting through community-based surveillance (CBS) was 95% in 2022. Both of the surveillance systems are run by the EWARS-WHO which is one of the sources of reporting and notification of maternal deaths.

Delays due to preference for the informal healthcare provider, lack of knowledge and motivation, difficulty in referral and surgical consent counseling, lack of medical equipment and medicines, and incomplete documentation on the referral form and other documents were the major avoidable factors that contributed to these maternal death events.

Meaningful discussions among stakeholders on MPMSR generated key actionable recommendations to improve maternal and newborn quality of care. Among these included; equipping health workers with practical skills in emergency obstetric and newborn care service delivery, and intensifying training on skills to prevent and manage complications such as post-partum hemorrhage and hypertensive disorders in pregnancy.

Chapter I: Introduction

In Cox's Bazar Rohingya response, the MPMSR⁵ system was established in 2019 informed by a retrospective Reproductive Age Mortality Study (RAMOS) conducted in August 2018 by UNFPA with the support of CDC, Atlanta and all relevant stakeholders under the umbrella of SRH working group. The findings first showed that a maternal mortality ratio at the Rohingya camps was 179 per 100,000 live births (95% confidence interval of 130-228); one year reported deaths between 2017 and 2018 captured 52 maternal deaths out of 82 pregnancy related deaths. RAMOS findings was the first evidence in the Rohingya camps settings, which triggered the importance of and the need to introduce and implement Maternal and Perinatal Mortality Surveillance and Response (MPMSR).

In March 2019, WHO-Early Warning, Alert and Response System (EWARS) was introduced for notification of mortalities in the purview of community-based surveillance (CBS). A multi-agency coordination mechanism was established under the Sexual and Reproductive Health Working Group (SRH WG) as the MPMSR Sub-Committee to introduce surveillance in the Rohingya response. The system ensures routine identification, notification, review, and analysis of causes and modifiable factors of all maternal deaths, as well as the use of this information to respond with actions that will prevent future deaths. The MPMSR involves qualitative, in-depth investigations of the causes and circumstances surrounding maternal and perinatal deaths. This process is an integral part of quality of care improvement efforts to reduce maternal deaths, as well as preventable stillbirths and neonatal deaths. The MPMSR process relies on the effective identification of reporting and assigning causes of deaths, identifying actions that may contribute to the prevention of further deaths, assigning those actions to particular groups or individuals, designating time frames for completion of those actions, and following up to ensure that those actions have been taken. It is successful because it includes everyone who has a stake in identifying maternal deaths, learning why they occurred, and acting to prevent them in the future.^{7,8,9}

The Objectives of MPMSR in Rohingya Refugee Camps

Goal

- Greater accountability and improved quality of care for women and newborns.

Overall objectives

- To capture and strengthen information on maternal and perinatal deaths, as well as provide recommendations for interventions to improve the quality of care and prevent future deaths.

Specific objectives

1. To collect, analyze, and provide evidence-based remedial recommendations to reduce the rates of maternal and perinatal mortality.
2. Ensure that actions are taken, by monitoring how recommendations are put into action. This improves the responsiveness of those responsible for maternal and perinatal health.

3. To provide programmes with information on the impact of interventions and their influence on maternal and perinatal mortality rates
4. To contribute to research on maternal and perinatal mortality.

Methodology of the MPMSR

Maternal and perinatal mortality review in Rohingya camps follow a six steps mortality cycle that include identification, collection of information, conducting verbal autopsy and facility death review, preparation of the recommendation, implementation of actions and evaluation of the programme for further improvement.

Identification: The first step is to identify cases of maternal and perinatal deaths that occurred within a specified period, such as the weeks/months. This can be done through various methods such as reviewing hospital records, and death certificates, or through a notification system set up by the health system.

Chapter II: MPMSR in Rohingya Refugee Camps, Cox's Bazar

Community-based MPMSR

Community-based Women of Reproductive Age Mortality Surveillance and Response is the ongoing process of identifying, notifying, and reviewing deaths of Women of Reproductive Age (WRA) that occurred within the community. This is normally conducted through door-to-door visits by community health workers (CHWs). Upon identification of any WRA death, the CHW Supervisor notifies the death through CBS. Verbal autopsy is then conducted for all WRA deaths reported through the CBS further classifying them as either maternal or non-maternal deaths within 14 days of notification.

A verbal autopsy is a process of conducting interviews with family members/ close relatives, neighbors as well as community members of the deceased who have first-hand knowledge of the circumstances/ events surrounding the decedent's passing. The purpose of this method is to assess the community-based factors that may have contributed to the death, directly or indirectly.^{11,12}

Verbal autopsies are conducted by a team of trained midwives who use a verbal autopsy tool for documentation and structuring of the interview with the support of respective CHW Supervisors and CHWs.

Facility-based MPMSR

Facility-Based Maternal Deaths Surveillance and Response is the ongoing process of identifying, notifying, and reviewing deaths of mothers and newborns that occurred at health facilities. The mortality review is performed by conducting interviews with the health care providers and, if necessary, members of the patient's immediate family that were with the deceased at the time of death using a structured mortality review form within 72 hours of the mortality.

Chapter III: MPMSR 2022 Annual Performance

Performance of Community-based WRA Deaths Identification and Notification

In 2022, a total of 273 WRA deaths were identified and reported through different surveillance sources including CBS and EBS, as well as through the non-formal surveillance systems including, snowballing, word of mouth, etc.

Of the total WRA deaths reported, 256 (94%) verbal autopsies were conducted. The other cases could not be traced for a verbal autopsy because of inadequate information, and in some cases, the family members of the deceased relocated from their address.

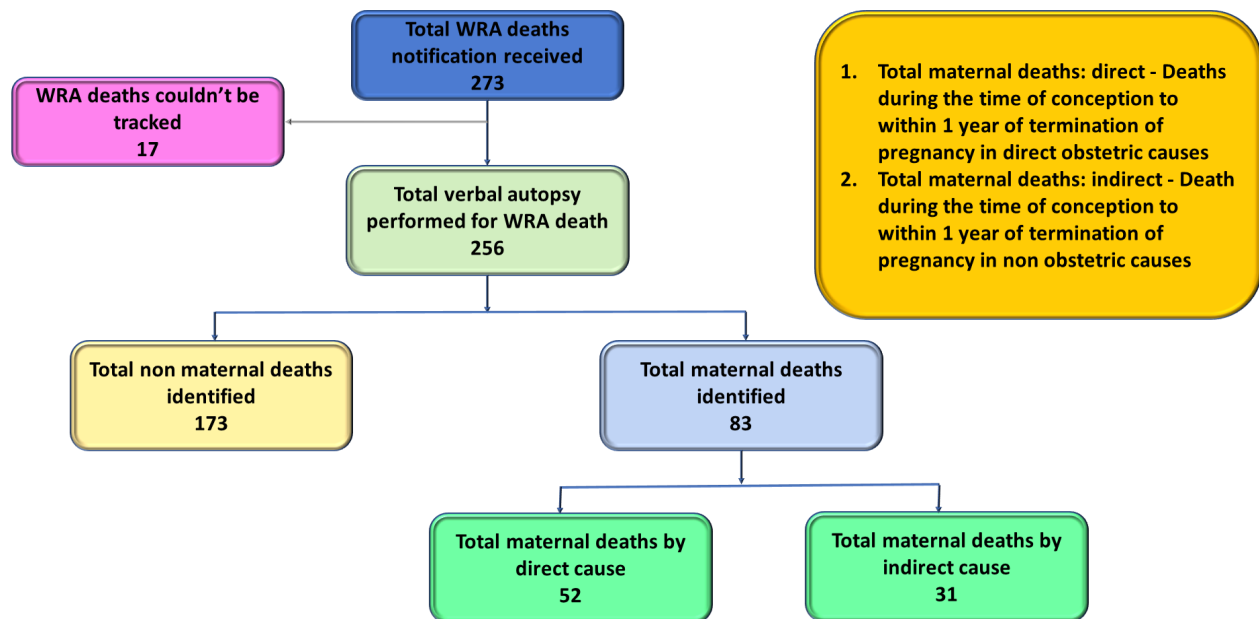


Figure 1: WRA deaths and verbal autopsy in 2022

On average, 85% of total WRA deaths were identified and notified through the CBS in 2022. The monthly CBS reporting for 2022 ranged from 100% (highest) in January to 71.4% (lowest) in July.

Findings of Maternal Deaths

There were a total of 83 maternal mortalities reported in 2022. The average monthly maternal mortality was 7 with the highest being in November (12) and the lowest being in December (4) shown in Figure 2 below.

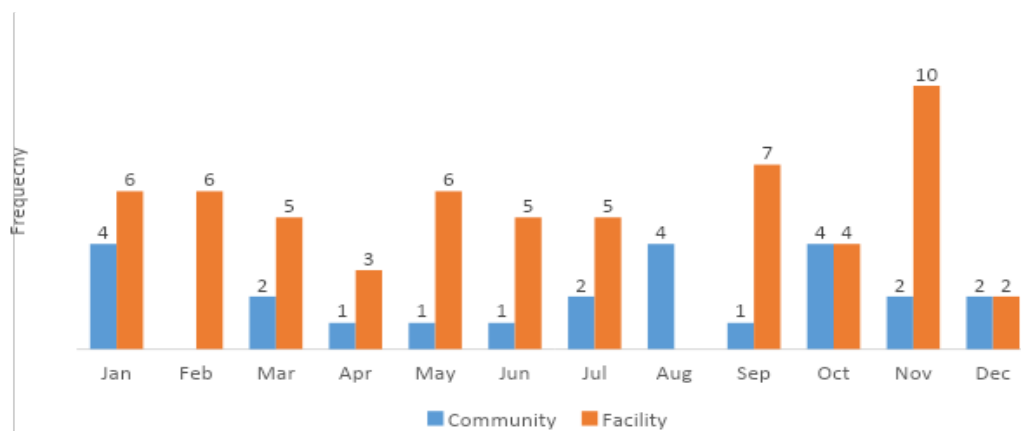


Figure 2: Month wise distribution of maternal deaths in 2022

Based on the verbal autopsy results conducted for WRA deaths in 2022, a total of 83 maternal and 173 non-maternal deaths were identified. Of the maternal deaths, 59 (71%) deaths occurred at health facilities or during referral from the first health facility to another facility while 24 (29%) of the deaths occurred within the community or before admission to a primary health facility.

Camp-wise Distribution of Maternal Deaths

The camp-wise distribution of maternal deaths in terms of community and facility maternal deaths is presented in Figure 3. The highest number of maternal deaths (7) reported in Camp 15, of which 6 were facility based.

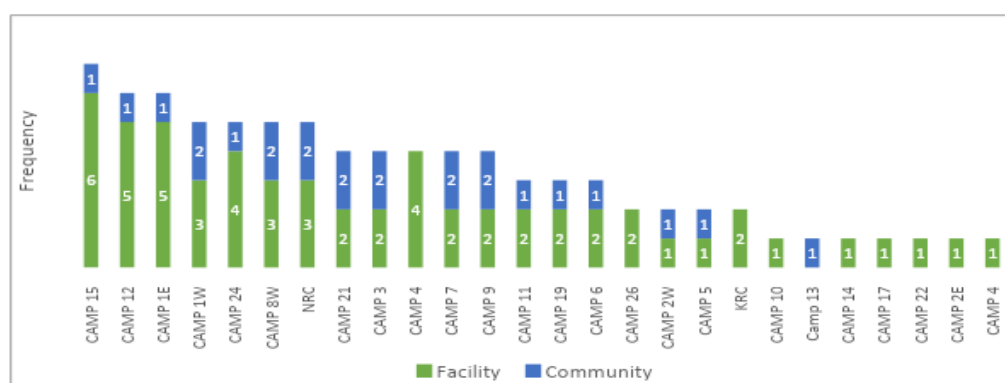
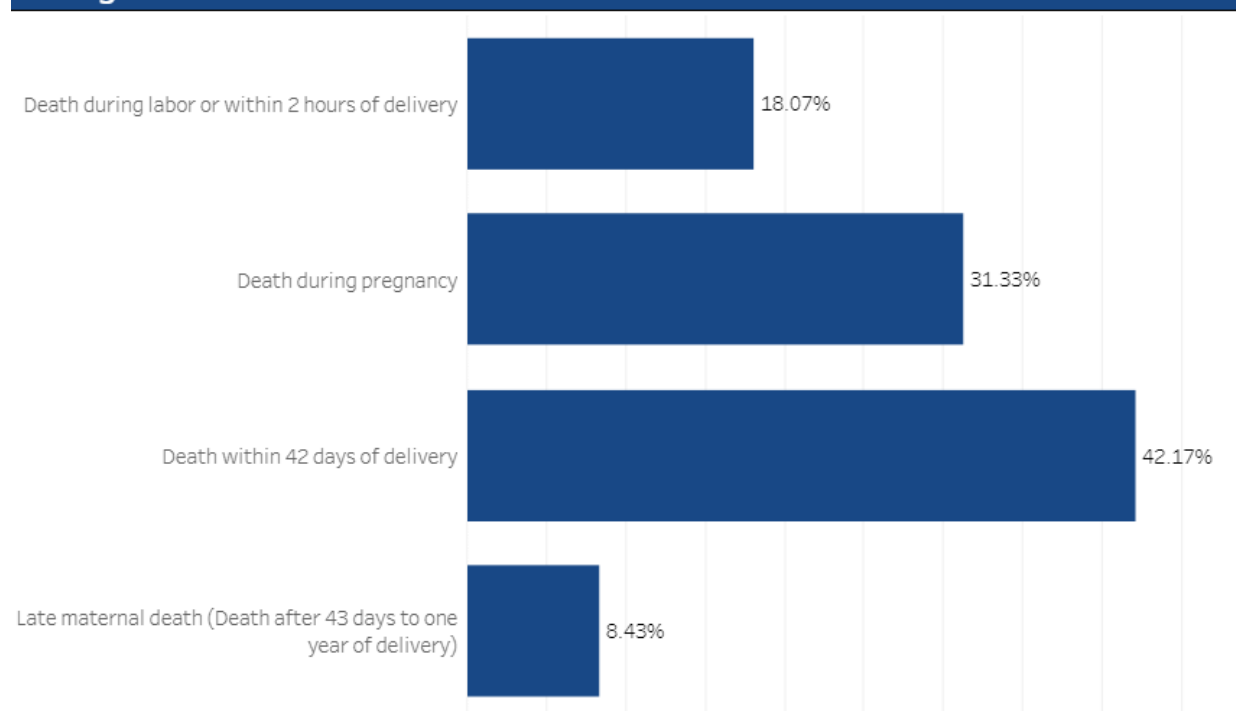


Figure 3: Camp-wise distribution of maternal deaths in 2022

Timing of Maternal Death

42% (highest) of all maternal deaths were within 42 days of delivery, followed by 31% of deaths during pregnancy, 18% of deaths during labor, and 9% were late maternal deaths as indicated in the table below.

Timing of Maternal Deaths



Late maternal deaths are defined as maternal deaths from 43 days up to one year after delivery from causes directly related to pregnancy or indirectly precipitated by the effect of pregnancy. In 2022, all late maternal deaths were for mothers aged 25 years and above, and 100% of them happened at health facilities. Over half of all late maternal deaths were due to non-obstetric complications such as cardiac disease or pre-existing hypertension.

Causes of Maternal Deaths

After a verbal autopsy and facility-based maternal deaths reviews/ audits of the 83 maternal deaths, 63% of deaths were classified as direct maternal deaths ($n = 52$), and 37% as indirect maternal deaths ($n = 31$). Causes of maternal deaths using the ICD-10MM classification are presented in Tables 2 & 3 and Figure 4.

Facility based maternal deaths; Obstetric hemorrhage was the most common cause of direct maternal deaths which accounted for 39% of all facility based maternal deaths, 29% were due to obstetric hemorrhage and 20% of these deaths were due to hypertensive disorders

Community based maternal deaths: For community based maternal deaths, the commonest cause of maternal deaths were the non-obstetric complications which account for 58% of all maternal deaths that occurred in the community, 17% of all maternal deaths were due to hypertensive disorders and 13% were attributed to obstetric hemorrhage.

Table 2: Maternal deaths due to direct causes in 2022

Causes of direct maternal deaths according to ICD- 10 MM classification			
Causes	Number at community	Number at facility	Total
Obstetric hemorrhage	3	20	23
Hypertensive disorders in pregnancy childbirth and the puerperium	4	12	16
Other obstetric complications	1	5	6
Pregnancy with abortive outcome	2	3	5
Pregnancy-related infection	0	2	2
Unanticipated complications of management	0	0	0
Total	10	42	52

Table 3: Maternal deaths due to indirect causes in 2022

Causes of indirect maternal deaths according to ICD- 10 MM classification			
Causes	Number at community	Number at facility	Total
Preexisting cardiac problem	5	5	10
Pre-existing respiratory problem	4	3	7
Preexisting other chronic diseases	2	5	7
Coincidental	1	1	2
Other	2	3	5
Total	14	17	31

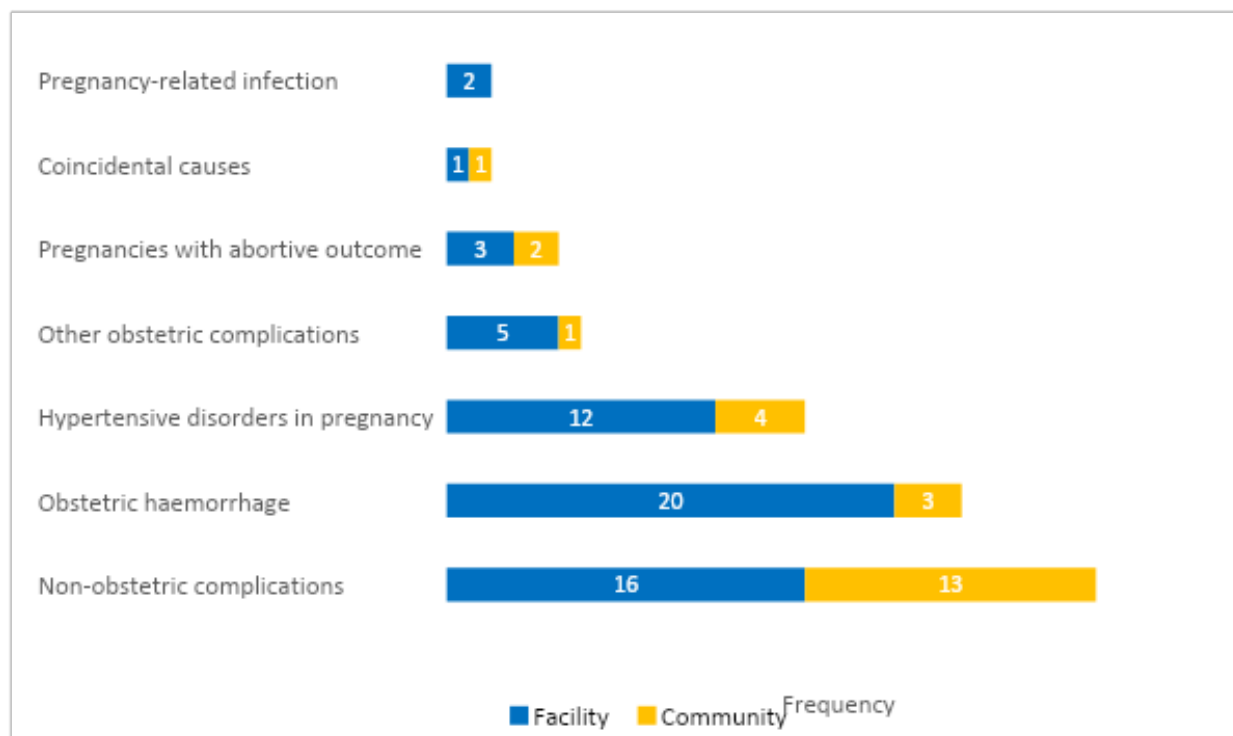


Figure 4: Causes of maternal deaths in 2022 (ICD-10MM classification) (n = 83)

Performance of Community-based Maternal Mortality Surveillance

Twenty-four (24) maternal deaths occurred within the community of whom 46% died during the transfer from the community to a first health facility. Thirty-eight percent (38%) of all the mothers that died within the community were aged 25-29 years. Thirty-three percent (33%) of all community-based deaths died during pregnancy while 21% died during labour or within 2 hours of delivery, and 46% of deaths were in the postnatal period. Of the mothers that died in the community, 88% had home deliveries. Fifty percent (50%) of all the mothers that died within the community had received at least 3 or more antenatal care visits.

Performance of Facility-based Maternal Mortality Surveillance

There were a total of 59 maternal deaths that occurred at health facilities of which 14% died during referral from the first health facility to another health facility.

Of all the facility-based maternal mortalities, 33 (56%) facility maternal deaths were reported through the EBS-EWARS system, and 26 facility maternal deaths were identified through other sources (CBS, FBS [Facility-based surveillance], and snowballing) which were not reported in the EBS. Of these 33 EBS-reported facility maternal deaths, facility-based maternal death audits were conducted for only 26 deaths, resulting in a 79% completion rate for all EBS-reported deaths.

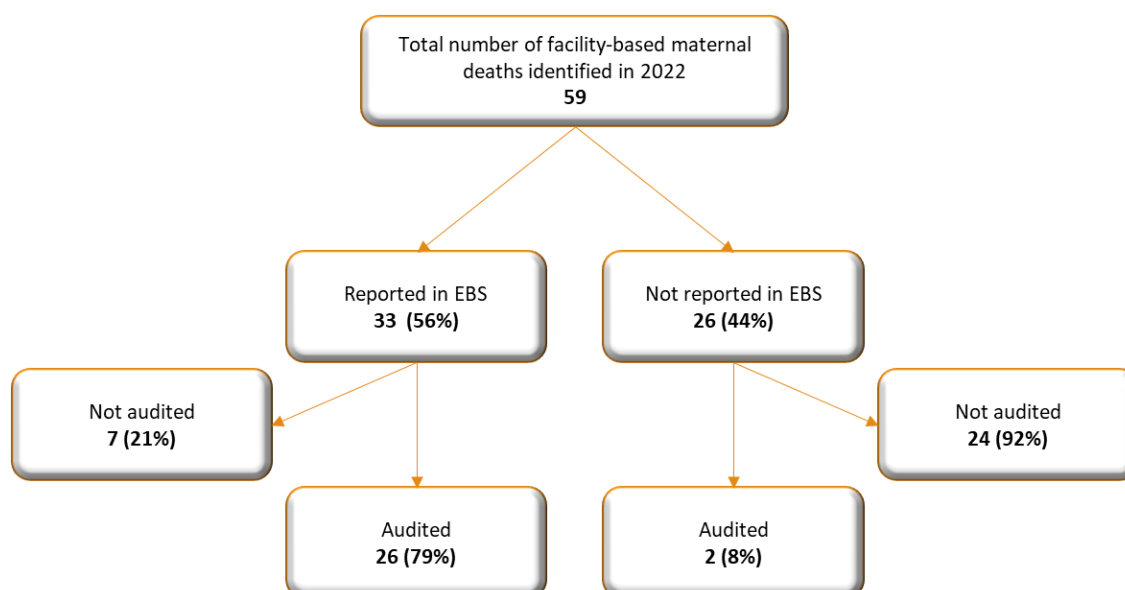


Figure 5: Performance on facility-based maternal mortality in 2022

Identification and Notification of Facility-Based Maternal Deaths by Months

Maternal deaths at facilities are identified by the clinical doctors and notified by the clinical coordinators, doctors, or other reporting officers in the EBS-EWARS. After receiving the EWARS-EBS notification, deduplication is done by the EWARS team at WHO, and the MPMSR Sub-Committee ensures every death is made unique before analysis.

The month of November had the highest number of facility maternal deaths ($n = 10$) and the month of December had the lowest number ($n = 2$) giving a monthly mortality average of 5.

Figure 6 shows the monthly distribution of facility maternal deaths and the number of reports received in the EBS during 2022.

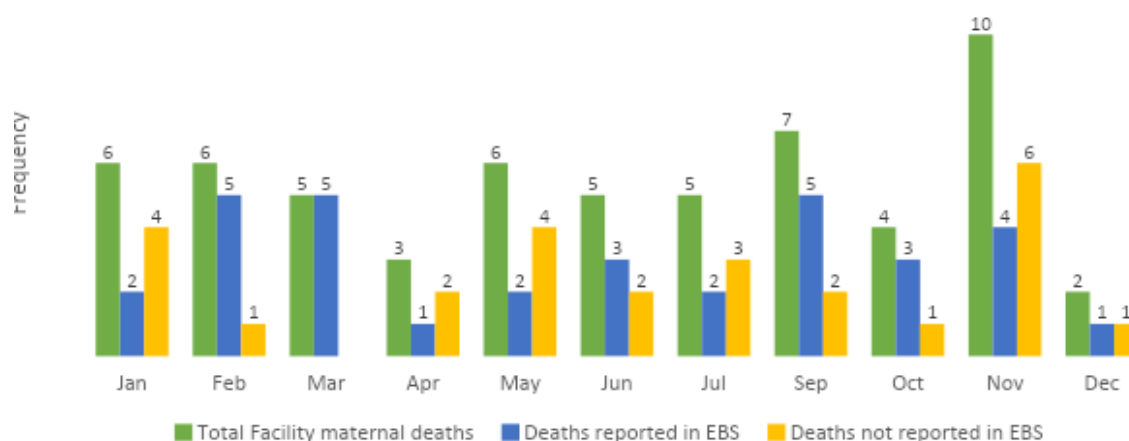


Figure 6: Monthly distribution of facility maternal deaths and the number of reports received in the EBS in 2022

Of all facility-based maternal deaths, 41% occurred within 42 days after delivery while 30% occurred during pregnancy, 17% died during labour or within 2 hours after delivery, 24% of all the facility-based deaths were among young mothers aged 15-24 years. Of those who died at health facilities, 66% had delivered at health facilities while 34% had had home deliveries. Of the mothers who died at health facilities and had delivered at the health facilities, 58.5% were by cesarean section, and 41.5% were delivered by normal vaginal delivery. Of all the facility-based deliveries, 64% had also received at least three antenatal care visits during their pregnancy while 20% of all facility-based maternal mortalities were among mothers with their first pregnancy (primigravida). The causes of mortality among the mothers that died at the health facilities were; obstetric hemorrhage (34%) was the commonest cause of death, followed by non-obstetric complications (29%) and hypertensive disorders (20%).

Death Audit Performance

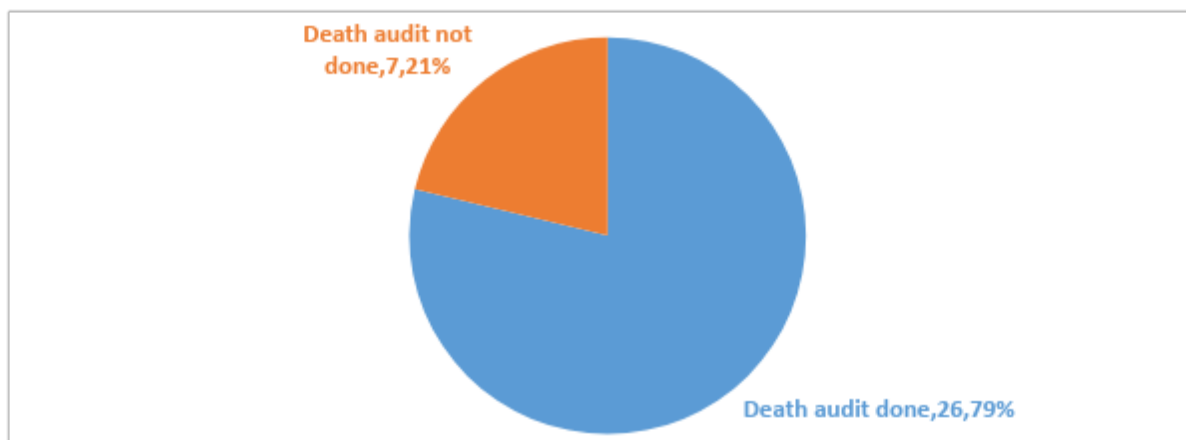


Figure 7: Death audit performance in 2022

Chapter IV: Findings

The three-delay model of maternal death is a conceptual framework that helps identify and address the factors leading to maternal mortality. This model highlights three key delays that contribute to the risk of maternal death in low-resource settings. The first delay is the delay in seeking care, which can occur due to a lack of awareness, cultural beliefs, or socioeconomic barriers. The second delay is the delay in reaching a healthcare facility, often caused by long distances, inadequate transportation, or poor road infrastructure. The third delay is the delay in receiving adequate and appropriate care at the healthcare facility, which can be due to insufficient medical supplies, inadequate staffing, or limited access to emergency obstetric care. Understanding and addressing these three delays is crucial to preventing maternal deaths and improving maternal health outcomes globally. And here in this report all the findings for the maternal deaths are discussed according to this 3 delay model.

The delays that contributed majorly to maternal deaths were mostly delay 1 with the most cited reasons that caused the delay for the mother to seek health care being the preference for informal health care and lack of knowledge/motivation to go to a health facility, and delay 3 with the most cited reasons.

Referral and surgical consent counseling difficulty, lack of medicines and equipment at the health facility and incomplete documentation of the referral documents. Transport crisis is the only reason cited for delay 2 (delay in reaching the health facility). Below is the summary of the delays as reported in 2022.

Delay I: Delay in seeking care

Table 4: Distribution of delay 1 related to maternal deaths in 2022

Delay	Frequenc
Preference for informal healthcare provider	30
Lack of knowledge and motivation	25
The non-supportive family member	7
Indecisiveness to where to seek help	6
Reluctance to get proper ANC checkup	5
Influential family members prevent health-seeking	4
Delay in decision making	2
Previous bad facility experience	2
Non-compliance with the referral	1
Poor birth planning	1

Delay II: Delay in reaching care

Table 5: Distribution of delay 2 related to maternal deaths in 2022

Delay	Frequency
Transport crisis	3

Contributory Factors:

Related to referral

- Establishing communication with CEmONC site is challenging
- Getting consent for referral delays the referral
- Managing blood donor before referral is also a big challenge which is causing delay
- Need of definite referral pathway for SRH patient
- No documentation during the referral results in confusion about the delivery outcome and place of death
- Attending specific CEmONC site before referral to tertiary level hospital
- One of the CEmONC sites is practicing to keep the escorting midwife and pressurize the PHC to manage the blood donor

Delay III: Delay in management

Table 6: Distribution of delay 3 related to maternal deaths in 2022

Delay	Frequency
Referral and surgical consent counseling are difficult	15

Lack of medical types of equipment and medicines	13
Incomplete documentation on the referral form and other documents	12
Lack of accountability by facility and staff	8
Healthcare workers need to brush up on soft skills	7
Delay in decision-making & delayed referral	4
Discharge without any follow-up plan	1

Contributory Factors:

Related to ANC

- Lack of Basic lab items (Reagents and Kits)
- Lack of 24/7 HR to do lab test at PHCC
- Lack of medicine for ANC
- Incomplete history taking
- Taking ANC from different facilities and having several ANC cards
- Ineffective ANC counseling due to absence of influential family member
- Gap in high risk mother tracking and follow up
- Need to brush up the knowledge of health care providers
- Managing blood donor specially for negative group of blood is difficult

Related to service provision

- No blood is available though well established blood bank is there
- Well set up for NICU but not functional due to HR (consultant)
- Missing ANC card and incomplete referral form causing confusion to doctor
- Getting consent for surgical intervention is difficult
- Time to receiving and starting the treatment of a patient sometimes delayed
- Lack of HR at CeMONC site
- Definitive marking for the way to emergency is absent

Chapter V: Key Activities Implemented in 2022

MPMSR has had some achievements this year. These are:

Training of Midwives on How to Conduct Verbal Autopsy:

There were a total of 3 midwives trained on verbal autopsy in 2021. In addition to staff attrition, the number of trained midwives available was inadequate to conduct the verbal autopsies that needed to be conducted in the year with an achievement of 95% verbal autopsies conducted by the end of the year. So, there was a need to train more midwives. In 2022, a total of 76 midwives were trained in September giving a total of 76 midwives trained on verbal autopsy by the end of the year.

Expanding the MPMSR Sub-committee:

By the end of 2022, the sub-committee successfully underwent a full reconstitution process, addressing the challenge of limited members and staff attrition within organizations. This significant achievement has paved the way for an enhanced and improved number of death audits to be conducted throughout 2023.



Establishment of a Referral Network for the Teknaf Region:

One referral group (WhatsApp) was established with the help of the Health Sector and UH&FPO of Teknaf UHC. This group improves the overall referral network as well as the accountability of the organizations. Delay 2 and delay 3 reduced significantly after establishing the group.

Chapter VII: Key Challenges of MPMSR and the Actions Taken to Overcome Them

1. Delayed, inaccurate and incomplete notification/ reporting in EWARS leads to challenges in tracking the deceased and or her family and subsequent death reviews. Several sensitisation workshops on MPMSR have been conducted for service providers to better understand the MPMSR protocols and subsequently mitigate this challenge.
2. Obtaining an adequate quorum of the sub-committee members to conduct regular death audits in a timely way is still a challenge. However, the MPMSR has initiated timely alerts about the deaths and provided audit schedules at least a week before the audit to allow the members to better plan their time and be able to participate in the audits. Follow-up of the recommendations from the MPMSR committee by the different stakeholders is still challenging. However, the task of ensuring that partners implement the different actions as per the MPMSR committee recommendations has been assigned to the different MPMSR sub-committee members for their agencies as well as their partners. This will ease the follow-up and implementation of the recommendations.
3. Internal facility-based maternal mortality review is not happening for all deaths and so an orientation on how to conduct facility death reviews including orientation on the death review tool will be conducted through a workshop.
4. If the available resources are sufficient, a real-time dashboard to update the MPMSR will be developed and kept up to date on a routine basis. In any other scenario, the data from the MPMSR can be incorporated into the SRHR dashboard if there is any way for it to be done practically. The dashboard will have the function of disseminating information to all of the partners and entities involved in the shortest amount of time feasible so that measures can be taken in real-time to reduce the number of deaths that occur during pregnancy and childbirth. This will be accomplished in the most efficient manner possible.

Chapter VIII: Conclusions and Recommendation

MPMSR in Rohingya Refugee camps settings is able to capture maternal deaths, review and analyze the causes of deaths to improve the overall situation of maternal and perinatal health in the camps. The findings show that there are still high trends of maternal mortality in comparison to previous years. Haemorrhage was identified as the major cause of maternal deaths, which happened mostly after the delivery during the postpartum period. MPMSR also identified a higher number of facility deaths compared to community-reported deaths.

The findings clearly show there is an urgent need for improvement of quality of care at the facility level to improve the situation. Moreover, there is also a need to improve the availability of antenatal care at the camp settings, ensuring quality ANC services. Moreover, the findings flagged the importance of early identification of maternal complications and timely referral to higher facilities can improve the situation.

To accelerate the improvement of maternal and perinatal health in the Rohingya refugee camps, it is extremely essential to best utilization of MPMSR findings through the development of action plans and implementation of those recommendations and close monitoring of the progress. Periodic meetings within the SRH working group and cluster on the progress of MPMSR findings are important; more likely, it also suggested having more integration and harmonization with the government facilities and existing district MPDSR committee for better results, particularly focusing on a facility-based MPMSR at the government facilities.

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