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Maternal death review process in Gujarat: A case study

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Abstract
Introduction- Maternal Death Review is an important strategy to improve the quality of maternal healthcare and reduce maternal morbidity and mortality. The objectives of this case study are to gain insight into the maternal death review processes; and to identify key gaps and recommendations for improving the implementation of MDR in Gujarat.
Methods- A mixed-method study was conducted in three districts of Gujarat, where quantitative data was obtained from delivery registers, MDR forms, and review minutes. In-depth interviews of all stakeholders at all levels were conducted. Based on the MDR guidelines of India, challenges in the current MDR process were classified in governance, operational, and implementation domains.
Results- The majority of the stakeholders were unaware of the MDR guidelines, and their implementation in the health system. Inconsistency and incompleteness of data reduced the quality of MDR. Likewise, MDR discussions during review meetings were not communicated with other health staff showing an organizational or structural weakness. Poor institutional linkages also affected the implementation and up-scaling of the review process.
Conclusion- The state government has taken an important step as CBMDR to institutionalize MDR in the health system. Still, the MDR process requires continuous efforts, support, and coordination from all the health departments. Governance and operational/implementation failures were identified as major contributing factors in the poor processing of MDR.

Keywords: maternal death review, MDR, challenges, Gujarat

Introduction

Maternal mortality is a critical public health challenge for developing countries. Women die as a result of complications during pregnancy and childbirth, while these complications are largely preventable or treatable if adequate healthcare is provided to all [1]. However, in 2017, 94% of all maternal deaths occurred in low and lower-middle-income countries [2]. The global maternal mortality ratio in 2017 is estimated at 211 maternal deaths per 100000 live births [2] whereas the MMR of India for 2016-18 is 113 per 100000 live births [3].

Each maternal death has a story to tell and shows trends or common factors for which corrective actions may be possible [4]. India has adopted the Maternal Death Review (MDR) as a strategy to bring about a reduction in maternal mortality and morbidity that is clearly described in Reproductive and Child Health–II National Program Implementation Plan document [5 6]. Community-based (CBMDR), facility-based (FBMDR), confidential inquiries, surveys of severe morbidity (near-miss), and clinical audit are different approaches that help in investigating maternal deaths (Table 1) [4]. However, the Indian government institutionalized the MDR process both at the facilities and community level to identify not only the medical causes but also socio-economic, cultural, and gaps in the health system that caused the delay in such deaths [7].

Table 1: Different Approaches to Conduct MDR [4]

Approaches	Definition	Advantages	Disadvantages
CBMDR	Medical causes of death and ascertaining the personal, family, or community factors that may have contributed to the deaths of women who died outside of a medical facility	Communication with family/community to improve maternal health in terms of access and quality of health services	Medical causes, underreporting, and subjective judgments
FBMDR	Qualitative in-depth investigation of maternal deaths at facilities	More detailed information about circumstances surrounding a death that could be avoidable at the facility	Produces a large volume of information that is difficult to understand and synthesize
Confidential inquiries	Systematic multidisciplinary anonymous investigation of maternal deaths occurring at an area/ region/national level	Make recommendations of a more general policy	Lack value if the inquiry concentrates on medical aspects only and not addressing the underlying social/demographic

			context
Near-miss	Any pregnant or recently delivered woman in whom immediate survival is threatened and who survives by chance or received hospital care	Preventable life-threatening events that resulting in death could be reduced to a greater extent	Events can only be identified in health facilities
Clinical audit	Improve patient care and outcomes by the systematic review of care against explicit criteria and the implementation of change	Structured framework for gathering information; less subjective assessment of case management	Limited to the facility in which it is carried out and cannot deal with community issues

An effective review process leads to the strengthening of healthcare, improved accountability for maternal health, and reduction in the burden of maternal mortality [8]. Gujarat, one of the developed states in India, has adopted CBMDR since 2009 [9]. Despite a well-organized MDR structure in Gujarat, an efficient system for the MDR process still does not exist. While most deaths are reported, the process of MDR needs to be improved. Lack of in-depth review results in insufficient aggregated data at the facility, district, state, and national level for evidence generation. Hence, this study aimed to gain insight into the process of MDR, perspectives of key stakeholders, and to identify key lessons for improving implementation of MDR.

Methodology

This case study was conducted using a mixed-method approach. Qualitative data was collected by interviewing stakeholders at the state, district, and facility-level whereas quantitative data was retrieved from health facility delivery registers, maternal death register, maternal death review forms (if any), and meeting minutes (if any). The study was approved by the Institutional Review Board of the Indian Institute of Public Health Gandhinagar, Gujarat.

Three districts of Gujarat were finalized for the study after consultation with the state officials. At the district level, the selection of the blocks/CHCs/PHCs was criterion-based. The primary consideration was to represent diverse geographical and socio-demographic attributes. Additionally, factors like availability of the infrastructure, workload, number of deliveries conducted, and availability of human resources, were also considered. Views and suggestions of district-level health administrators were also incorporated for the selection of health facilities.

Data collection

In three districts, a total of 20 CHCs and PHCs were visited for data collection. All the respondents were healthcare professionals based in a public setting only and gave their consent in writing before inclusion in the study (Table 2). Interviews were undertaken by a team of two interviewers; one interviewer engaged and conversed with the interviewee and the other took notes of the interaction. Interviews were recorded using a digital recorder unless the interviewee denied it. Written notes and audio recordings of the interviews were then transformed into structured transcripts. Interview duration ranged between 30-90 minutes.

Table 2: Description of Respondents

Designation	Total number of Interviewees
State Level	
Health Consultant- NHM	2
Districts and Facilities	
CDHO	3
ADHO	1
CDMO	1
RCHO	1
THO	9
RMO	1
Superintendent	3
MO	21
Gynecologist	1
Staff Nurse	7

1. **Survey tool:** Four separate sets of open-ended questionnaires were prepared based on the designation and responsibilities of the health personnel. All the questions were focused on collecting primary data, experiences, and perceptions of the interviewees.
2. **Data Analysis:** Information on the forms and transcripts were entered into an excel spreadsheet for cleaning, coding, and analysis. Descriptive and content analysis was used to analyze the quantitative and qualitative data. Based on MDR guidelines India, the findings were arranged into the following domains:

a. **Governance:** direction and decision-making functions executed by governments/higher authorities of healthcare, health system organization, and inter and intra organizational relationships

b. **Operational and Implementation:** Knowledge to practice, & protocol adherence.

Results and Discussion

Quantitative Findings

Quantitative analysis was done to ensure consistency between reported data, responses from interviewees, and also to validate published evidence. Table 3 represents the data from the year 2016 to 2020 for reported number of maternal deaths and reviews conducted at selected districts. It can be assumed that the estimated number of maternal deaths [10 11 12] may be reported appropriately, yet the review process is hampered at the district level. This data represents a desirable standard for reporting and publishing maternal deaths to improve the quality of the review process.

Inconsistency and poor quality of documentation; improper record-keeping systems; inadequacy in the maintenance of electronic data and not conducting FBMDR at private hospitals were found to be main issues related to the MDR process.

Table 3: Reported and estimated number of deaths and maternal death reviews conducted from 2016-2020

Year	Reported No. of Maternal Deaths	MDR conducted
District 1		
2016-17	72	-
2017-18	69	8
2018-19	59	4
2019-20	28	-
District 2		
2016-17	17	15
2017-18	30	30
2018-19	19	13
2019-20	30	20
District 3*		
2016-17	32	-
2017-18	30	-
2018-19	26	-
2019-20	NA	-

Note: *Data cannot be formulated for one district due to the unavailability of information on maternal deaths, hence estimated number of maternal deaths were reported.

Qualitative Findings

Each person involved in the review process needs to have a good understanding of MDR in general. In most cases, the MDR forms were incomplete or partially filled, or cause of death written as "others" that gives little/no information about how or if obstetric care was delivered or delayed. Although reviews were conducted, relevant information was not recorded as per available guidelines.

Governance

Figure 1 presents the current MDR in the state of Gujarat that consists of five steps: (a) Verbal autopsy to identify the cause of maternal deaths, (b) Data collection from facility registers within 24 hours of maternal death, (c), (d), and (e) analysis to identify the causes of death including preventable factors during review meetings and corrective actions/recommendations are made to implement changes to prevent the similar deaths in future.

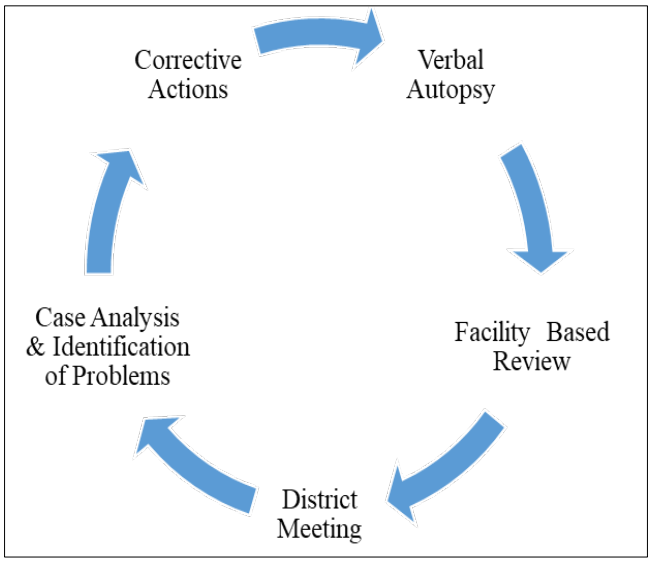

Fig 1: Cycle of Current MDR System in Gujarat and its Districts

Administration

Based on analysis, it was observed that all the departments work in coordination with each other. All review activities are then coordinated and reported by a primary informant to higher authorities for further processes like investigation and supervision. This whole process including the involvement of bottom to top authorities provides the foundation for conducting the entire review process. Analysis of the information suggests the weak review system at the district level. The system of identification and scrutinizing the exact cause of maternal death at the district level depends on the interest and efficiency of respective health officers. For example, if the staff who conduct MDR are prone to falsification of data, the entire MDR process is fundamentally compromised [13].

Lack of clarity/priority and fear of punitive action among healthcare workers to register and report maternal deaths are contributors of poor linkage in the MDR process [14]. However, in one of the surveyed CHCs, punitive action was taken against medical negligence, where a medical officer and staff nurse were dismissed.

Due to political fear, medical officers are less interested to work and afraid of providing care as well [15]. When MDR is perceived as a threat, it could generate false or inaccurate information. Hence, strengthening the health system and a strong political will that supports medical experts to improve their work in identifying gaps could increase their confidence in MDR assessment.

Accountability

A lack of accountability and the collective responsibility at all levels impedes the process of MDR. A gap was found in the conceptual and practical clarity of the MDR. Hence, the first responsibility of the MDR focal person is to provide knowledge of the MDR process to all the health workers. The literature claimed that poor record-keeping may result in underreporting of maternal deaths [16]. The majority of the respondents were unaware of the proper implementation of the MDR process; which resulted in insufficient documentation. For the MDR process to be pragmatic, standards of good practice and availability of good quality records are essential. If records are poorly kept or missed, it is difficult to conduct a review; based on the "if it is not recorded, it did not happen" principle [17].

According to MDR guidelines, regular quarterly meetings with the district-level authorities are necessary to upgrade MDR processes. Likewise, in published literature, the MDR process was found to be hasty at various levels meaning hereby that some maternal deaths are not reviewed, discussed, or supervised with staff at lower levels [16 18 19 20]. In this study, it was found that minutes/findings of meetings were not discussed with the lower-level staff. It is recommended to include all healthcare providers who are part of handling the case in the discussion of maternal death. Such an act will contribute to "multidisciplinary development and ownership of local protocols, and improvement of teamwork" [17].

Participation/Facility Linkages

In a report on the MDR process in Gujarat, the absence of a system of continued linkages and communication between the public health system and private providers was highlighted [21]. Deaths in a private hospital were not reported and process related

to MDR was not followed. Due to the communication gap, the review process remains in want of strengthening. In some instances, corrective actions were not provided in MDR meetings which also reflected MDR as a routine activity. However, a feedback mechanism should be developed to address such issues. Contrastingly, in a few CHCs, well-functioned MDR process was also observed from a lower level to the district level. During interviews, the Techo application was found to be very useful in documenting women's details, including maternal death, and provides notification about progress which ensures total coverage of pregnant women.

Operational and Implementation Factors

One of the issues under the operational and implementation domain was related to the capacity to undertake a quality review at various levels [22]. The perennial shortage and non-competent manpower in healthcare institutions were the most common constraint noted in audits in India [16 18 23]. In all three districts deputation and a dearth of staff leads to multiple responsibilities which in turn adversely affects the MDR process. Due to the overburden of responsibilities and unsatisfactory work situation, respondents reported excessive pressure or stress at work. This could be a reason for the underperformance of staff members to complete MDR and its follow-up in a meaningful manner.

The consequences of the absence of staff for MDR were evident at government facilities, too. Furthermore, unsatisfactory work performance and poor coordination of ASHA/*Anganwadi* Workers was linked to the poor review of maternal deaths. Therefore, task shifting, and mandatory training are potential strategies to optimize healthcare providers' roles [24].

During interviews, lack of knowledge, skills and information about the MDR process among professionals emerged as barriers to efficient MDR. Literature indicates that staff are inadequately trained or poorly briefed about the MDR process [19]. Also, there is limited authority to ensure guidelines are being followed and recommendations are implemented at the block and district level.

Recommendation

- Since institutional births in Gujarat have increased up to 98% [25], hence the confidential review of maternal deaths should be encouraged.
- To identify the underlying causes and improvement of the MDR process confidential inquiry model should be adopted. This type of model provides the full details of maternal death, complete and specifically designed MDR forms along with a copy of the anonymized case records for analysis that ensures positive actions to improve the review process [26].
- A Digital recorder should be preferred to conduct effective MDR meetings. It also makes reviews/recordings to quote accurately and without distortion which allows invaluable insights, care, and actions to improve the MDR process.
- Education and training of healthcare providers by a team of experts to correctly conduct the maternal death review.

Strength: The main strength of this study is mixed methods used and inclusion of perspectives of all levels of stakeholders.

Limitations

- Due to time constraints and multiple responsibilities, many healthcare providers were reluctant to participate.
- Due to a recording device, it could be predicted that many stakeholders were hesitant to discuss and were not expressive about the issues with MDR process.
- At the state level and in one of the districts, the concerned person was not willing to share data or grant an interview. Constant efforts to obtain data were made but no information was shared.
- Insufficient data provided by the facility posed difficulty during data analysis.

Conclusion

The state government has taken an important step as CBMDR to institutionalize MDR in the health system. Still, the MDR process requires continuous efforts, support, and coordination from all the departments. Governance and operational/implementation failures were identified as major contributing factors in the poor processing of MDR. This study attempted to identify potential challenges and provide recommendations to help resolve them in the current MDR system in the state.

Conflict of Interest: None

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