"Sharp Downward, Blunt Upward": District Maternal Death Audits' Challenges to Formulate Evidence-based Recommendations in Indonesia - a Qualitative Study

Ratnasari D Cahyanti (rcahyanti@fk.undip.ac.id)
Obstetrics and Gynecology Department, Faculty of Medicine, Diponegoro University

Widyawati Widyawati
Pediatric and Maternity Nursing Department, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada

Mohammad Hakimi
Obstetrics and Gynecology Department, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada

Research Article

Keywords: maternal death, audit and review, evidence-based recommendation

DOI: https://doi.org/10.21203/rs.3.rs-537544/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Background: Indonesia, the largest archipelago globally with decentralized health system, is faced with a stagnant high maternal mortality ratio (MMR). The disparity factors among regions and inequities in access have deterred the local assessments in preventing similar maternal deaths. This study explored the challenges of district maternal death audit (MDA) committees to provide evidence-based recommendations for local adaptive practices in reducing maternal mortality.

Methods: A qualitative study was conducted with four focus-group discussions in Central Java, Indonesia, between July and October 2019. Purposive sampling was used to select 7-8 members of each district audit committee. Data were analyzed using the thematic analysis approach. Triangulation was done by peer debriefing and reviewing audit documentation.

Results: The district audit committees had significant challenges to develop appropriate recommendations and action plans, involving: 1) lack of information to facilitate an accurate review; 2) no explicit clinical standard available; 3) poor support from key hospital decision-makers, and 4) insufficient skills of district health officers to organize standard MDA. The district audit committees tended to associate maternal death in lower and higher-level health facilities (hospitals) with mismanagement and unavoidable cause, respectively. These unfavorable cultures discourage transparency and prevent continuing improvement, leading to failure in addressing maternal death's local avoidable factors.

Conclusion: A productive MDA is required to provide an evidence-based recommendation. A strong partnership between the key hospital decision-makers and district health officers is needed for quality evidence-based policymaking and practice to prevent maternal death.

Background

The World Health Organization (WHO) launched the maternal death surveillance and response (MDSR) program in 2013 for strengthening the follow-up action of maternal death reviews (MDR) to prevent future preventable maternal deaths (1, 2). This program uses a continuous-action cycle of identification, quantification, mandatory notification and review of causes and avoidable factors of maternal death followed by recommended action and monitoring (3, 4). Through this cyclic process, MDSR mirrors the steps of a typical audit or quality improvement cycle. As an integral part of MDSR, MDR is of strategic importance for evidence-based policy making in local contexts to reduce preventable maternal death (4–6).

In Indonesia, the MDR is commonly called a maternal death audit (MDA) and has been implemented since 1994. A national guideline adopting confidential enquiry of maternal death (CEMD) was implemented in 2010 and revised in 2015. This guideline sets outlines for the reporting of maternal and perinatal deaths, implementation of death review and action recommendations as a socio-accountability of the local government. In 2016, the Ministry of Health of the Republic of Indonesia initiated the implementation of more proactive maternal death surveillance and launched the guideline for this maternal death surveillance to improve identification and reporting of maternal death (7, 8). Despite the implementation of MDA, the MMR in Indonesia remains higher than those of neighboring countries in the ASEAN region (9). In 2015, The Inter-Census Population Survey (SUPAS) reported that MMR in Indonesia was 305 deaths per 100,000 live births, which was significantly higher than that of the Millenium Development Goals (MDGs) target of 102 per 100,000 live birth. The MDR conducted by the Expanding Maternal and Neonatal Survival (EMAS) program and the Indonesian Society of Obstetrics and Gynecology (POGI) in 2014 reported that 90% of the leading causes of maternal death were preventable (10, 11).

There has been accelerated efforts to reduce maternal mortality including delivering antenatal service, training and expanding health facilities in basic and comprehensive Emergency Obstetrics Care (EmOC) services, strengthening public health systems, promoting community health insurance and mobilizing community awareness. However, there have been challenges to ensure timely treatment and adequate care for obstetric complications at health facilities associated with the disparity factors among regions including geography, ethnicity, and cultural norms (11–14). In Indonesia, with decentralized health systems, the full mandate of authority to provincial and district levels proposes the effort for quality improvement of maternal health services in each district (15). The system brings to offer solutions for those challenges, it is crucial to identify local challenges by conducting a local assessment instead of national reviews in order to support faster policy changes (16, 17).

This present study is an effort of local assessment by exploring the district maternal death audit committees' views and experiences in formulating evidence-based recommendations and action plans. Recently, no studies have rigorously highlighted the key challenges to develop evidence-based recommendations for local adaptive practices to reduce preventable maternal mortality in the national decentralized health system settings.

Materials And Methods

Study design
This was a qualitative study which involved district maternal death audit committees in focus group discussions (FGDs).

**Study setting**

The study was conducted in four districts (Brebes, Pekalongan, Kendal and Grobogan) with high numbers of maternal deaths in Central Java, Indonesia. Central Java constitutes around 15 percent of Indonesia's population and is one of the provinces with a high MMR (18). In 2015, the final year of MDGs, this province contributed 12.87% (619 cases) to the total number of national maternal death (4,809 cases) (10, 19). To reduce maternal death, the public health office of Central Java has conducted an annual program to provide supervision and financial assistance for district MDA with external reviewers from the POGI as national obstetrician-gynecologists (OB-GYN) experts.

**Sampling method**

A maximum variation sampling technique was applied to select districts in order to include a wide range of variation in geographical region, regional income, number of populations, and health facility ratio. We mainly selected the members of district audit committees responsible for conducting and organizing regular MDA. Twenty-nine informants participated in four FGDs. The FGD participants included:

- Internal reviewers consisting of two OB-GYN and one midwife.
- A management team from the District Health Office (DHO) consisting of the head of the health service and public health departments with their respective staffs

In the DHO, the head of the public health department serves as a MDA coordinator to organize the district MDA and with her/his team coordinates the data collection, review, supervision and monitoring. With the internal reviewers, the public health and health service departments are responsible to identify contributing factors related to maternal deaths to develop and implement the recommendations.

**Data collection**

The topics of the FGDs were based on the existing literature about related disabling factors of MDA for evidence-based policy making (20–22). The FGD topics were as follows:

- How do you review the causes of maternal death?
- How do you develop recommendations for prevention programs at your district?
- How do you implement the recommendations of MDA at your district?

The FGD guidelines were tested in the pilot study by a researcher (RC) and a research assistant. The results of the pilot FGD were discussed with the other authors for improvements.

The four FGDs were conducted from July to October 2019. The FGDs lasted for 1–2 hours. To ensure their convenience, the FGDs were conducted in a small room meeting at a local café or restaurant based on the agreement between the researchers and informants. The FGDs in Bahasa Indonesia were led by the first author and a research assistant. An observer used field notes to record participants' non-verbal aspects during the FGDs.

**Data analysis**

The FGDs were recorded and transcribed verbatim. The first researcher led and conducted the thematic data analysis to investigate both the manifest and the underlying meanings of the texts focusing on the challenges in developing recommendations and action plans of the MDA. During the coding process, we used key concepts of organizational change to translate CEMD into the implementation of recommendations and persistently identified new information from the data (20). In the first stage of analysis, the meaning units of the transcripts were identified to generate manifest meanings. The manifested meaning units were then coded. The codes were grouped into subcategories or categories based on their meanings (see Table 1). The transcripts of FGDs were analyzed using NVivo 12 software (QSR International, Melbourne).
Table 1
An example of the coding process, from meaning units to subcategories

| Topics | Meaning units | Condensed meaning unit | Codes | Subcategories |
|--------|---------------|------------------------|-------|---------------|
| How do you develop recommendations for prevention programs at your district? | “Sometimes the data obtained using the instruments were not accurate due to data falsification leading to inaccurate recommendations.” | Distrust to the maternal death data by MDA committee due to accuracy concerns (falsification) leading to an inaccurate recommendation | -Accuracy of maternal death data -Data falsification -Distrust data -Inaccurate recommendation | Inaccuracy |
| How do you implement the recommendations of MDA at your district? | “We involved a team of reviewers to develop recommendation to implement, the challenges is that the higher-level of health facilities [the target of recommendation] sometimes do not adhere to all of the recommendation” | The collaboration between officials of DHO and reviewer in developing recommendation, challenges in the implementation of recommendation related to adherence of higher-level of health facilities | -Collaboration -Challenges -Adherence of higher-level health facilities -Recommendation -Adherence concerns to MDA recommendation | Adherence |

Triangulation

Data triangulation of information was used to compare and confirm the discussion issues among members of the audit committees. In addition, peer debriefing was conducted between authors and the external reviewers as representatives from POGI in Central Java with relevant expertise. The researchers also reviewed the audit documentation of maternal death cases in 2018 in each district.

Ethical considerations

Ethical approval No. 102/EC/KEPK/FK UNDIP/2019 for this study was obtained from the Research Ethics Committee, Faculty of Medicine, Diponegoro University, Semarang, Central Java. Permission and approval to conduct the study was obtained from the Government of Central Java and Brebes, Pekalongan, Kendal and Grobogan District Health Offices, Central Java. Prior to the FGDs, the researchers explained the aim of study and topics under discussion, confidentiality of information and informants’ right to withdraw at any time. Written informed consent for audio-recording and using excerpts in publication and reports was obtained prior to the FGDs from all participants. The informants were anonymous during the analysis and presentation of results.

Results

Of 29 informants from four FGDs, most participants (69%) had 1–3 years experience of participating as a member of the district audit committee (Table 2). Most informants were 40–50 years old (55.2%) and had a Master’s degree in Public Health (44.8%). We identified the main challenges to formulate evidence-based recommendations and action plans for the district MDA, including: 1) lack of information to facilitate accurate review; 2) no explicit clinical standard available; 3) poor support from key hospital decision makers; and 4) insufficient skills of district health officers to organize standard MDA. Table 3 shows the data analytic framework of the study.
Table 2
Characteristics of participants

| Characteristics                            | N = 29 | %  |
|--------------------------------------------|--------|----|
| **Age**                                    |        |    |
| 30–40 years                                | 3      | 10.3 |
| 40–50 years                                | 16     | 55.2 |
| 50–60 years                                | 10     | 34.5 |
| **Gender**                                 |        |    |
| Male                                       | 12     | 41.4 |
| Female                                     | 17     | 58.6 |
| **Education**                              |        |    |
| OB-GYN                                     | 7      | 24.1 |
| Medical Doctor (MD)                        | 4      | 13.8 |
| Master's degree in Public Health           | 13     | 44.8 |
| Diploma of midwifery                       | 5      | 17.2 |
| **District audit committee members**       |        |    |
| Grobogan                                   | 7      | 24.1 |
| Brebes                                     | 8      | 27.6 |
| Kendal                                     | 7      | 24.1 |
| Pekalongan                                 | 7      | 24.1 |
| **Experience (audit committee)**           |        |    |
| 1–3 years                                  | 20     | 69.0 |
| > 3 years                                  | 9      | 31.0 |
| **Audit committee**                        |        |    |
| Management team                            | 15     | 51.7 |
| Internal reviewer                          | 14     | 48.3 |
| Theme                                                                 | Categories                        | Sub-categories                          | Codes                                                                 |
|----------------------------------------------------------------------|-----------------------------------|------------------------------------------|----------------------------------------------------------------------|
| The lack of information to facilitate accurate review                | Inadequate instrument             | Irrelevant information                   | Irrelevant information from maternal death instruments               |
|                                                                    |                                   | Inadequate forms                         | Inadequate and/or reliable maternal audit forms                      |
|                                                                    |                                   | Incomplete instruments                   | Instruments cannot provide all the necessary information surrounding maternal death |
| Supporting informative data                                          | The need for supporting data      |                                          | The reviewers urged supporting data                                  |
|                                                                    | Collecting additional document    | Collecting data staff providing additional documents in maternal care |                                                                      |
| Inaccurate information                                               | Inaccuracy                         |                                          | Reviewers distrust the data provided by the hospital                |
|                                                                    |                                    |                                          | Unreliable data                                                     |
|                                                                    |                                    |                                          | Accuracy of maternal death data                                      |
|                                                                    |                                    |                                          | Data falsification                                                  |
| No explicit clinical standard available                              | The ignorance of the reviewer      | Clinical experience                      | Review based on clinical experience only                             |
|                                                                    | to use clinical standards to      |                                          | "Medicine is an art" perspective                                    |
|                                                                    | identify the gap                  |                                          | Review based on the belief that medicine is an art                  |
|                                                                    |                                    |                                          | Personal perception                                                  |
|                                                                    |                                    |                                          | Review based on the personal perceptions                            |
|                                                                    |                                    |                                          | Tendency to associate the problem in the lower-level health facility | Reluctant to review the case involved senior colleagues              |
|                                                                    | Personal initiative to use        | An objective review                      | The external reviewers are more objective                            |
|                                                                    | clinical standards for an         |                                          |                                                                      |
|                                                                    | objective review                   |                                          |                                                                      |
| Poor support from key hospital decision makers                       | Lack of commitment to the         | Inadequate support of the management team to the role of audit       | Failure to comply with the terms of agreement of MDA                 |
|                                                                    | implementation of the role of      |                                          |                                                                      |
|                                                                    | audit                              |                                          | DHO needs an advocacy process involved the external review           |
|                                                                    |                                    |                                          | Failure to comply with proactivity in providing information          |
|                                                                    |                                    |                                          | Failure to provide information of maternal death                     |
|                                                                    |                                    |                                          | Challenging communication to obtain data from hospital              |
| Difficult of DHO to implement the recommendation to the hospital    | Lack of recognizance to DHO        | Hospital decision-makers disrespect to the DHO team                     |                                                                      |
|                                                                    | authority                          |                                          |                                                                      |
|                                                                    |                                    |                                          | Poor awareness of DHO of their authority over the hospitals          |
|                                                                    |                                    |                                          |                                                                      |
|                                                                    | Lack of commitment to attend and   | Poor attendance of hospital decision-makers to audit meeting          |                                                                      |
|                                                                    | understanding the audit feedback   |                                          |                                                                      |
| Theme | Categories | Sub-categories | Codes |
|-------|------------|----------------|-------|
|       |            |                | Absence of adapted practice based on recommendation |
|       |            | Adherence      | Collaboration to implement recommendation |
|       |            | Challenges in the implementation | |
|       |            | Adherence of higher-level health facilities | |
|       |            | Recommendation to hospital | |
| Insufficient skills of district health officers to organize standard MDR | Failure to internalize the principles of audit | ‘Blaming culture’, leading to the reduction of a set of review processes into merely a ‘disciplinary process’ |
| Lack of knowledge to program an MDA | Insufficient training of audit committee |
|            | Incompatible education background | |
|            | Lack of training | |
|            | Unnecessary staff rotation | |
| Failed to translate recommendation into policy | Lack of specificity of recommendation |
|            | Absence of cross-sectoral partnership between stakeholders | |
|            | Poor budgeting allocation | |

**The lack of information to facilitate accurate review**

To accurately identify the cause of maternal death and its contributing factors, the district MDA committees are required to obtain relevant information from maternal audit forms. However, these forms are likely inadequate and/or reliable. In terms of inadequate forms, one of the reviewers stated that relying on the available instrument cannot provide all the necessary information surrounding maternal deaths. He explained that the item of antenatal care in the instrument merely provides information on the number of antenatal visits without clarifying in detail about the care provided.

> "Honestly, when conducting a review I cannot get the big picture of the cases using the instruments [maternal audit forms]. We can get the big picture from the chronology of maternal death provided by the caregivers, patient relatives, instead. Sometimes, we contacted the midwife responsible for ANC because MDA often easily concluded with poor ANC. However, the instrument [maternal audit forms] only included the question on the number of ANC [visits]."

(The internal reviewer, 49 years old)

To solve these problems, providing supporting data for evidence-based policy making was urged by the reviewers. They proposed the collecting data staff to provide them with additional documents including the records of the antenatal, intrapartum, and postpartum care provided.

> "...we [are assigned to] add the complete information surrounding maternal death including antenatal care, disease history etc, in a different file compilation, both in soft and hard copy."

(The collecting data staff (management team), 42 years old)

The district MDA committees noted that the other challenges on understanding completed maternal audit forms in referral cases involve several health facilities providing out of sync information surrounding maternal death. Some reviewers also believed that data provided by higher level facilities tended to be unreliable. They also expressed their preference for the maternal death data provided by the staff of lower health facility compared to those of higher level.
"It is easier for us [reviewers], because midwives and primary health care [staffs] are honest, in filling out [maternal audit form]. However, the evaluation [of maternal death cases] is difficult because we are not sure about reliability of the data provided by our colleagues [providers at health facilities].

(The internal reviewer, 45 years old)

**No explicit clinical standard available**

There was a disagreement among the reviewers on how to conduct a MDA review due to no explicit clinical standard available. The majority of the internal reviewers perceived that their own clinical experiences and personal perceptions were the main consensus to identify gaps and highlight deficiencies of the maternity care. For example, some reviewers perceived that a clinical standard or evidence-based guideline is of strategic importance in identifying major gaps between the care that was given and the care that should have been given. However, some considered medication as an art:

I (Interviewer): “How did you analyze a case of maternal death?”

Respondent (R)6: “So far, we did it based on our knowledge.”

R1: “Let me give you in example, in the administration of misoprostol, in the same case, different patients were given different doses, sometimes 2 tablets, 1 tablet, and ½ tablet.”

R3: “Oh, for reviewing the case. I guess..”

R6: “Yes, to determine if there was overdose or not.”

R3: “An explicit standard should have been available.”

R6: “For developing recommendation.”

R3: “When I did my practice in district A, all the Obstetricians did not dare to give misoprostol, they preferred oxytocin for induction of labor.”

R5: “Yes now we give oxytocin. The misoprostol should not have been given to primipara. Yes, even though it is an art too.”

R6: “Art is difficult to audit.”

(FGD1, MDA committee)

Some of the internal reviewers expressed doubts about their findings related to the primary cause of death and contributing events in higher level facilities. They admitted that the seniority of their colleagues in higher level facilities prevented them from giving their objective review. They recalled a common situation when the internal reviewers felt it was inconvenient to reveal the practice deficiencies done by their senior colleagues responsible for the patient's death.

“Well, the problem is, sometimes there are hospitals with senior OB-GYN. He was the main barrier, when he said something, nobody dared to argue, it's difficult. It would have been much easier to identify the truth if an explicit standard had been available.”

(The internal reviewer, 51 years old)

In such situations, the internal reviewers would associate the cause of maternal death under review with the mismanagement of the lower level of health facilities involving midwives and staff of the primary health centers.

“The reviewer tends to blame the health providers at the lower facilities.”

(The management team, 50 years old)

The tendency was described by one informant using an Indonesian proverb (traditional saying) as “… this [tendency] is like "tajam ke bawah, tumpul ke atas" translated into English as “sharp downward, blunt upward”. Furthermore, the informant also gave an example of a case in which the mismanagement of maternal care was attributed to a midwife even though no maternal risk was found in the midwife's initial assessment.

“when there was a maternal death, the review resulted in the failures of the midwife in providing care. I got information from my friends, there were cases in which the patient was managed according to the procedure, this patient did not have any risk but she insisted to be referred to
the hospital, and the patient died there, but the review stated that there was a midwife failure.”

(The management team, 50 years old)

One member of the management team expressed her opinion on the objectivity of external and internal reviewers in conducting MDR. Compared to internal reviewers, external reviewers are perceived to be more objective, because they referred to the national clinical guidelines to provide evidence-based recommendations, for example, the district program of calcium supplementation in high-risk pregnant woman to prevent preeclampsia.

“They, the external reviewers from education center, gave a recommendation based on the national clinical guidelines. It includes the recommendations for calcium administration to prevent preeclampsia. This recommendation is not from us [the internal reviewers].”

(The management team, 44 years old)

In this context, the use of the national clinical guideline in MDR was based on personal initiative. The national MDR guideline does not explicitly require the reviewer to refer to a specific clinical guideline.

Poor support from key hospital decision makers

Health facilities and the district health office (DHO) have a reciprocal relationship according to the Indonesian MDA guideline. The former are responsible to provide information surrounding maternal death and the later are responsible to give feedback. In the implementation, to ensure the strong commitment to achieve successful MDA, the DHO and hospitals entered into a Memorandum of Understanding (MOU). However, there was a failure to comply with the terms of the MOU agreements indicating poor support. One member of the management team mentioned the failure of hospital's decision makers to comply with proactivity in providing information surrounding maternal death. She shared her deeper efforts to obtain the required data including having to physically go to the hospital and conduct correspondence. It was even more challenging to obtain data of maternal death occurring in the hospital outside of the patient's residency area (stated in her family identity card). The absence of mutual communication leads to the failure to comply with the regular audit schedule.

“…There was a maternal death in the town [outside of her residency stated in ID card] in a private hospital. Since January, we have visited and sent letters to the hospital several times. [after seven months] we haven't received maternal death audit forms. I do not know what to do. We have entered into MOU, I cannot think of any other ways to communicate with them [hospitals].

(The management team, 45 years old)

Another poor support from the key health decision makers was indicated by their lack of commitment to implement the recommendations. Early commitment can be shown by their presence, while in fact most of the time they were absent or had a representative from the lower range staff to attend the meeting. Thus, there were no two-way discussions between reviewers and the reviewee for the sake of better outcome implementation. The further commitment is indicated by initiating adapted-practice in their work-settings. A reviewer putting himself in the role of the hospital under review admitted that in spite of knowing the problem, the key health decision makers are reluctant to consider strategies and customize them to ensure the implementation of recommendations in their work settings.

“At least we know there has been a delay in site A [for 8 years]. We actually know what to do in half an hour [response time]. The problems, the providers are reluctant to implement the recommendation. For example, in the district hospital there are no health personnel on emergency duty in the operating room....I don't think that the health personnel are available in the operating room at night.”

(The internal reviewer, 45 years old)

The policy makers often assume that translating evidence of the causes of maternal deaths is a linear process. This poor support is amplified by the poor awareness of hierarchy of authority. For example, district health officers were not aware that DHO has a higher authority compared to the hospitals in the organization of the health system. This contributes to non-compliance of hospital's key health decision makers to the recommendations. In fact, some decision makers were disrespectful toward the DHO team. In addition, the district health officers themselves perceived that external reviewers have stronger authority to regulate hospitals. Thus, to prevent disrespectful attitudes, the DHO expressed their need for the presence of the external reviewers to persuade the hospital to implement the recommendations.

“...Sometimes when we report the MDA findings to the hospital, they reject it. I feel I have no bargaining position, that I have no power. I wish I were with the external reviewers, so it can be more objective.”

(The management team, 50 years old)
Insufficient skills of district health officers to organize standard MDA

To achieve the goal of MDA to prevent similar preventable maternal deaths, the concept of CEMD adopted in MDA is intended to avoid the fear of health workers about punitive actions in order to ensure the complete information needed for formulating recommendations. However, these ‘no name, no shame, no blame’ principles were not well internalized. A member of the MDA committee revealed there was a ‘blaming culture’ leading to the reduction of a set of review processes into merely a ‘disciplinary process’. In addition, one member of the management team mentioned one of the examples of punitive actions by reviewers involved revealing personal (health workers) and institutional (health facilities) identities to the public, disrespecting and violating their right to anonymity.

“…I can tell that health facilities under review are concerned with the possibility of publicity. Thus, the data reported to the [District Health Office is not really reliable]…when they get a warning, they would not take it, that’s why it is very important to implement the principles of no name. As we may know, the goal is to offer solutions. However, some of the health facilities showed anger, they perceived us as judge of case to blame.”

(The internal reviewer, 49 years old)

The district MDA committees admitted that lack of internalization was due to lack of knowledge to conduct an evidence-based policy making. The cause of lack of knowledge varied among different members of the MDA committees. For the management team, the main identified cause for the lack of knowledge was insufficient training and/or incompatible education background. After the training on MDA organized by the Central Java Health Office, the members of district MDA committees including the Head of the Public Health Department received the decree for MDA committee appointment. Unlike the previous government official, a newly appointed Head of the Public Health Department admitted that she had never attended training on MDA before she coordinated district MDA.

“The decree of MDA was dated 2016, and I just continue as [coordinator of MDA] and I was appointed [the new Head of Public Health Unit] in the late 2017”

(The management team, 45 years old)

In one of the FGDs, a Head of the Health Service Department self-reported his incompetency because he had no education background in health service management. The head of the Public Health Service as his partner in the DHO confirmed his incompetency indicated by the failure to serve the function as the official government with the authority in the management of MDA in the health facilities. She noted that she personally decided to take over the task of the Health Service Department in regulating health service management in the lower level of health facilities but not in higher level facilities.

I wish [health service] to play this role shows that public health department will not take all the responsibility [including implementation recommendation]. I cannot ensure an optimal outcome because we have no authority [to regulate] hospitals.”

(The management team, 44 years old)

For internal reviewers, the main identified causes of lack of knowledge were insufficient training and/or knowledge related to the MDA guideline (national book). A ‘junior’ internal reviewer admitted that he had not attended any training on MDA. Since the ‘senior’ reviewer tended to hand over his tasks to the ‘junior’, he wished that he had a transfer of knowledge from his trained ‘senior’. Another internal reviewer also admitted that he had no knowledge related to the MDR guideline. In fact, he had no idea about the the publisher and what is covered in the MDR book.

“In the bottom line, there has been no standard in place. My partner and I haven’t attended any audit workshop. After all this time we rely on our clinical expertise. I also asked the input from my colleagues. Honestly, [I do not know] the audit rule, and the guideline for example in our district and neighbouring districts instead of the juniors [the backbone of MDA] few seniors attended the workshop”

(The internal reviewer, 49 years old)

Unlike the management team and reviewers, the community health care teams in public health centers had conducted sufficient trainings. However, there was an overlapping policy or mismanagement of human resources in the district level indicated by unnecessary staff rotation leading to lack of knowledge. It implies that by not having received a specific decree of appointment, the new staff replacing the rotated staff had none of the required knowledge and skills for their new job description.

“…..we have annual refreshing training, however, this year we don’t have one. The staff of public health center’s problem is unnecessary rotation. The head of the district health office keeps rotating the staff including those who have been appointed as [a collecting data staff] of MDA”
The MDA committee's lack of knowledge had an impact on the institutionalization of recommendations. The MDA committee had failed to internalize the principle of adherence to the action plans and advocacy strategy. In fact, the MDA committees highlighted that the MDA merely concludes with the identification of the causes of maternal death. It is difficult, if not impossible, to implement the recommendations due to the lack of specificity.

"Most of the time I am not sure what to recommend"

There has been a shift in the main contributing factors of maternal deaths from delay in deciding to seek care and reaching a health facility (demand-side barrier) to delay in receiving quality care (supply-side barrier). A reviewer perceived that the MDA program does not achieve its goal because the head of district office failed to translate the recommendations into policy-making. Another head of the Public Health Department expressed her concerns over the absence of cross-sectional partnership between stakeholders (public health program and health service program) to implement the recommendations. A reviewer revealed a supply-side barrier due to poor job description sharing leading to failure in translating recommendations into implementation.

"I have no authority to find whether [head of] district health office implements the recommendation. My responsibility as the coordinator of MDA team is merely to give a recommendation and I have played my part."

The management team also recognized another challenge due to the implementation of recommendations. It requires an extra budget allocation to enable them to effectively provide an action to prevent similar preventable maternal deaths. In this setting, the management team connected the problem of poor financial support and the need of extra budget for effective preventive measure. They further exemplified that the extra budget was allocated for data collection of maternal deaths occurring in the hospitals outside of patients' residency area. In fact, the perceived lack of financial support should be viewed as poor budgeting in which more financial resources are allocated for data collection and the review process than originally intended.

"I wish we had financial resources [to implement] the recommendation. Another challenge is when maternal deaths occurred in the [hospital] outside of patients’ residential area, this requires extra time and cost."

Discussion

In Indonesia's decentralized health system, with its many disparity factors among regions, it requires extra effort of local assessment to identify the contributing events of maternal deaths, which can drive local evidence into specific actions (12, 13, 22). This implies that the failure to present an evidence-based recommendation is contributing to the event of similar preventable maternal deaths. This study presented the findings on the challenges of providing evidence-based recommendations associated with obtaining accurate data surrounding maternal deaths, reviewing the care provided against evidence-based criteria, and building a mutual partnership between the key hospital decision-makers and district health officers.

Even though the maternal audit guideline in Indonesia emphasizes the importance of the internalization of ‘no name, no shame, no blame’ principles, but there is no statement to provide information concerning the importance of explicit clinical standards of good practice to evaluate the appropriateness of care (7). The absence of clinical consensus leads to the subjectivity and different ways of practice and preference in the review. Some external reviewers expressed their preference to use national guidelines. However, this practice was based on their personal initiative not the consensus. The absence of clinical standards allows the personal interest of reviewers to affect the review findings, including their reluctance to attribute maternal death to deficiencies in the care provided by their colleagues, especially their seniors. This reluctance in disclosure has also been discussed in a study of the validation of potentially avoidable perinatal deaths conducted in New Zealand (23). In this present study, the reviewers were reluctant to identify deficiencies of health personnel of higher facilities who were identified as the reviewer's colleagues and tended to shift the 'blame' to the lower-level facilities. As mentioned in the proverb by one of the informants, this phenomenon can be described as “sharp downward, blunt upward”.

The failure to provide evidence-based recommendations impacted on developing an unfavorable environment of maternal death audits at the district level. The MDA tended to become a vicious circle rather than an action cycle of maternal deaths in higher-level facilities. Our study implies that the vicious circle of the MDA consists of ignorance of cases, reluctance among the actors of health facilities to disclose
confidential medical information, subjectivity in analyzing cases, and lack of support to implement quality improvement in health facilities. Otherwise, in lower-level facilities, the MDA action cycle was attributed to ‘the punitive actions’ as perceived by some informants. This situation was aggravated by the lack of available MDA forms to provide all the necessary information to set-up an evidence-based recommendation. This finding is different from that of other studies showing that the challenges to obtain complete data were due to inadequacy rather than shortage of maternal death forms (24) and the failure of health staff to fill out the forms accurately and completely (25, 26).

Although there were barriers in formulating evidence-based recommendations in the implementation of MDAs at the district level, the government of Central Java has applied the MDG Acceleration Framework (MAF) in 2013. This initiative framework has been acknowledged by the UN bodies as the first “provincial MDG action plan with clear targets, indicators, timeline and budget requirements”. The concepts elaborated in the MAF, including the principles of evidence-based policy making, represent the action cyle of the MDA that begins with the analysis the barriers in the implementation of priority interventions in accordance with the conditions of the study setting. This roadmap accommodates the decentralized health system with measurable objectives to improve access and service quality (18).

In this study, the concept of MAF in the action cycle of maternal death review has not been institutionalized by the DHO in the district level. This is likely due to several challenges faced by the district government leaderships. First, lack of knowledge of DHO officials and staffs was associated with no training due to unnecessary rotation (24, 25). Nevertheless, the Ministry of Health has conducted trainings following the revision of the MDA guideline. Parallel with these findings, several studies also showed lack of knowledge due to no training but not unnecessary rotation (24, 25). Second, there is an absence of a specific guideline facilitating the translation of recommendations into implementation. This supports the findings of the review by Pattinson and Bergh in 2008, highlighting that recommending solutions for the policy problems does not necessarily lead to implementation (20). In the study setting, the national guideline provides general recommendations without specific strategies to ensure the outcome achievement at the local level. These deficiencies lead to some inappropriate actions of the DHO to improve the access and service quality of maternal health. From the view points of cross-sectoral collaboration, to solve the bottlenecks of the delays of maternal deaths, the DHO required external support to advocate the key policy reforms and overcome identified constraints of maternal health in the region.

Forging ahead, establishing a workable design of maternal death audits to provide a local framework for local problem-solving is an important step for quality improvement. A decentralized health system in Indonesia, with regional capacity disparities, providing local evidence-based recommendations of MDR can be implemented to be the gold standard for understanding the true burden of maternal mortality at the district level. In addition, the decentralized system requires extra effort to ensure outcome achievement, such as the implementation of mentoring programs at the district level. To meet their specific needs, evidence-based policymaking at the district level can be intended to reduce preventable maternal mortality in their region.

**STRENGTHS AND LIMITATIONS**

The strengths of this study are that it evaluated the challenges in the implementation of the national program in a decentralized system to reduce maternal mortality. Therefore, our findings represent the actual experiences of the MDA committees at the district level to identify the local contributing factors of maternal deaths and translate the general national recommendations into specific solutions. Our sample selection specifically included the districts that have been conducting programs to reduce maternal mortality, such as training of basic and comprehensive obstetrics and neonatal care to personnel of public health centers and referral hospitals, and mentoring programs to the health facilities from government organizations and different non-government organizations.

One of the limitations is that the MDA committees were recruited primarily from districts in rural areas. Therefore, the findings may not be transferable to MDA committees in urban settings. In Central Java, there are three municipalities with educational centers (universities) providing external reviewers for maternal death audit process. However, this study did not delineate the special concerns of these settings which may or may not face the same challenges to develop evidence-based recommendations through standardized reviews of maternal deaths.

**Conclusions**

In this study, the district MDA committees recognized the challenges to provide evidence-based recommendations for adaptive practices in reducing maternal mortality. Despite the challenges to develop and deliver these outcomes, the internal reviewers recognized the importance of a clinical standard or evidence-based guideline to identify major constraints in the care that has been provided. The barriers to develop this quality evidence in policy-making and practice were reflected in the requirement of an internalized principle of MDA and strong partnership between the key hospital decision makers and district health officers to provide relevant information surrounding maternal death and translate
the recommendations into appropriate actions. An MDA at the district level should stimulate the local evidence-based policy making, as well as ensure transparency in the adaptive practice and strengthen the health system.

Further research is needed to develop these efforts to institutionalize a workable MDA at the district level. To be successful, the process needs the continuous adaptation and supervision to implement best practices of MDA to become a sustainable prospect. For better transparency, development of adequate maternal audit forms is needed to provide accurate information for the evidence-based recommendations. Outcomes of such research should be used to strengthen the good quality of maternal death reviews and audits in order to assist in identifying the best evidence to inform policy decisions.

**Abbreviations**

MMR: Maternal mortality ratio;

MDA: Maternal death audit;

WHO: World Health Organization;

MDSR: Maternal death surveillance and response;

MDR: Maternal death review;

CEMD: Confidential enquiry of maternal death

SUPAS: Inter-census population survey

MDGs: Millennium development goals;

EMAS: Expanding maternal and neonatal survival;

POGI: Indonesian Society of Obstetrics and Gynecology

EmOC: Emergency obstetrics care;

FGDs: Focus group discussions;

OB-GYN: Obstetrician-gynecologists;

DHO: District health office;

MOU: Memorandum of understanding;

**Declarations**

**Acknowledgements**

The authors would like to thank: The Government of Central Java, District Health Officials and staffs and the MDA committees at Brebes, Pekalongan, Kendal and Grobogan and the head and members of Indonesian Society of Obstetrics and Gynecology (POGI) branch Semarang, Central Java who participated in this study.

**Funding**

There is no received a grant from any funding agency

**Availability of data and materials**

The datasets generated and/or analyzed during the current study are in Bahasa language and are not publicly available due to confidentiality of the participants, but the data can be made available upon request to the authors.

**Contributions**

RC contributed to conceive the study idea, wrote the protocol, lead the collecting and data analysis, interpret data, write and review the manuscript. WW contributed to develop a protocol, improvements of FGD guidelines, interpret data and revised the manuscript. MH
contributed to develop a protocol and study design, interpret data, and revised the manuscript.

**Competing interest**

The authors declared that they have no competing interest.

**Consent for publication**

Not applicable

**Ethics approval and consent to participate**

The study was approved by the Research Ethics Committee, Faculty of Medicine, Diponegoro University, Semarang, Central Java (No. 102/EC/KEPK/FK UNDIP/2019). All the study methods were conducted in accordance to 7 (seven) WHO 2011 standards. Written informed consent was obtained from participants of the study.

**References**

1. Calvello EJB, Skog AP Tenner AG, Wallis LA. Applying the lessons of maternal mortality reduction to global emergency health. Bull World Heal Organ. 2015;93(6):417–23.
2. Mathai M, Dilip TR, Jawad I, Yoshida S. Strengthening accountability to end preventable maternal deaths. Int J Gynecol Obstet. 2015;131:3–5.
3. WHO. Maternal Death Surveillance and Response: Technical guidance information for action to prevent maternal death [Internet]. Geneva: WHO; 2013 [cited 2018 Nov 1]. p. 1–128. Available from: http://apps.who.int/iris/bitstream/handle/10665/87340/9789241506083_eng.pdf?sequence=1
4. Smith H, Ameh C, Roos N, Mathai M, van den Broek N. Implementing maternal death surveillance and response: A review of lessons from country case studies. BMC Pregnancy Childbirth. 2017;17(1):1–11.
5. Salam RA, Lassi ZS, Das JK, Bhutta ZA. Evidence from district level inputs to improve quality of care for maternal and newborn health: Interventions and findings. Reprod Health. 2014;11(Suppl 2):S3.
6. Karlsson LE, Takahashi R. Health Evidence Network Synthesis Report 50: A resource for developing an evidence synthesis report [Internet]. Vol. 50, Health Evidence Network Series. 2017 [cited 2020 Aug 21]. p. 73. Available from: https://www.euro.who.int/__data/assets/pdf_file/0008/347930/HEN50-Web.pdf
7. Kementerian Kesehatan RI. Pedoman Audit Maternal-Perinatal di Tingkat Kabupaten/Kota. 3rd ed. Jakarta: Kementerian Kesehatan RI; 2015. 1–68 p.
8. Kementerian Kesehatan RI. Pedoman surveilans kematian ibu. Jakarta: Kementerian Kesehatan Republik Indonesia; 2016. 1–37 p.
9. ASEAN. ASEAN Statistical Report on Millennium Development Goals 2017 [Internet]. Jakarta; 2017 [cited 2018 Oct 23]. p. 38–9. Available from: https://asean.org/storage/2012/05/ASEAN_MDG_2017.pdf
10. Badan Pusat Statistik. Hasil Survei Penduduk Antar Sensus 2015. Jakarta: Badan Pusat Statistik; 2015. 462 p.
11. Baharuddin M, Amelia D, Suhowatsky S, Kusuma A, Suhargono MH, Eng B. Maternal death reviews: A retrospective case series of 90 hospital-based maternal deaths in 11 hospitals in Indonesia. Int J Gynecol Obstet. 2019;144:59–64.
12. National Institute of Health Research and Development, Ministry of Health Republic of Indonesia UNPF (UNFPA). Disparity of access and quality review of maternal mortality in five region in Indonesia. 2012.
13. Nababan HY, Hasan M, Marthias T, Dhital R, Rahman A, Anwar I. Trends and inequities in use of maternal health care services in Indonesia, 1986–2012. Int J Womens Health. 2018;10:11–24.
14. Mahmood MA, Hendarto H, Laksana MAC, Damayanti HE, Suhargono MH, Pranadyan R, et al. Health system and quality of care factors contributing to maternal deaths in East Java, Indonesia. PLoS One. 2021;16:1–13.
15. Mahendradhata Y, Trisnantoro L, Listyadewi S, Soewondo P, Marthias T, Harimurti P, et al. The Republic of Indonesia Health System Review. Vol. 7. New Delhi: World Health Organization; 2017. 1–12 p.
16. Hadley MB, Tuba M. Local problems; local solutions: an innovative approach to investigating and addressing causes of maternal deaths in Zambia ’s Copperbelt. Reprod Health. 2011;8(1):17.
17. Lewis G. The cultural environment behind successful maternal death and morbidity reviews. BJOG. 2014;121(Suppl. 4):24–31.
18. BAPPENAS. Indonesia MDG Acceleration Framework. Accelerating progress towards improving maternal heath in Central Java. Jakarta; 2013.

19. Dinas Kesehatan Provinsi Jawa Tengah. Profil Kesehatan Provinsi Jawa Tengah Tahun 2015. Semarang; 2015. 17 p.

20. Pattinson RC, Bergh AM. Implementing recommendations arising from confidential enquiries into maternal deaths. Best Pract Res Clin Obstet Gynaecol. 2008;22(3):477–87.

21. De Brouwere V, Zinnen V, Delvaux T. How to conduct Maternal Death Reviews [Internet]. London; 2013 [cited 2017 Nov 7]. p. 22–3. Available from: https://www.figo.org/sites/default/files/uploads/project-publications/LOGIC/VfinalEdited MDR Guidelines final 2014.pdf

22. Lewis G. The cultural environment behind successful maternal death and morbidity reviews. BJOG. 2014;121(Suppl. 4):24–31.

23. Masson VL, Farquhar CM, Sadler LC. Validation of local review for the identification of contributory factors and potentially avoidable perinatal deaths. Aust New Zeal J Obstet Gynaecol. 2016;56(3):282–8.

24. Mathur A, Awin N, Adisasmita A, Jayaratne K, Francis S, Sharma S, et al. Maternal death review in selected countries of South East Asia Region. BJOG. 2014;121:67–70.

25. Lusambili A, Jepkosgei J, Nzinga J, English M. What do we know about maternal and perinatal mortality and morbidity audits in sub-Saharan Africa? A scoping literature review. Int J Hum Rights Healthc. 2019;12(3):192–207.

26. Tayebwa E, Sayinzoga F, Umunyana J, Thapa K, Ajayi E, Kim YM, et al. Assessing implementation of maternal and perinatal death surveillance and response in Rwanda. Int J Environ Res Public Health. 2020;17(12):1–11.