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Original Research Article

Conclusions of ten years of maternal death surveillance and response in the health district of commune V of Bamako, Mali

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ABSTRACT

Background: The purpose of this study was to report the findings of the local maternal deaths surveillance and response (MDSR) committee in the health district of Municipality V of the district of Bamako.

Methods: It was a retrospective study over a period from January 2009 to December 2017. We have compiled all the findings of the local MDSR committee from the health district of Municipality V. The data was generated from the Local Health Information System (LHIS). We made a simple entry of text and tables using Word and Excel software.

Results: During the study period, the maternal mortality ratio (MMR) was 219/100,000 live births. The study was about 140 cases of maternal deaths that occurred in health facilities. The middle age of the patients was 28.01 years. Most of the deaths occurred in the postpartum period, with 106 cases. In 92.12%, the deaths were from direct obstetric causes (DOC), including hemorrhage 70%, eclampsia 7.85%, obstructed labor 7.14%. Seven deaths (5%) were from indirect obstetric causes (IOC), including anemia 3.57% and malaria 1.73%. In 2.58%, the deaths were from undetermined causes. Deaths were preventable in 80%. The response included, among other things, the notification of cases and the implementation of the recommendations made. In 70% of cases, the recommendations issued were implemented. **Conclusions:** The MMR remains high in Municipality V of the district of Bamako. These deaths were mostly from DOCs, with hemorrhage as the main cause. These deaths were mostly preventable.

Keywords: Review, Maternal deaths, Municipality V

INTRODUCTION

Maternal mortality is "the death of a woman occurring during pregnancy or within 42 days of the interruption, regardless of the duration or location, from any cause determined or aggravated by the pregnancy or its management, but neither accidental nor fortuitous.¹ One of the methods particularly suited to obstetric services in developing countries where maternal mortality in hospital remains very high (around 1% of deliveries) concerns the systematic review of maternal deaths in health facilities or the audit of maternal deaths. It consists in researching qualitatively and thoroughly the causes and

circumstances of deaths occurring in healthcare centers¹. Maternal mortality is considered to be a "sentinel event", the occurrence of which testifies to often cumulative dysfunctions of the healthcare system. In addition to the classic lessons of epidemiological surveillance: number of deaths, MMR and identification of subgroups of women at risk, its study allows, through a precise analysis of the path of each deceased woman, to highlight improvements in the content or organization of care, the correction of which will prevent deaths but also upstream morbid events arising from the same dysfunctions.² Most deaths can be prevented despite the scarce human or material resources. But this requires good information on

which effective interventions can be based. Maternal mortality statistics, often incomplete in low-income countries, are not sufficient to assess practices and identify failures in the health system. Nursing staff in maternity unit, service managers and hospital directors, as well as decision-makers in ministries of health and program management, need information, in real time, which permit to identify what can be done concretely to avoid these unnecessary deaths¹. In this series, we report the findings of the local maternal death surveillance and response (MDSR) committee in the health district of commune V of the district of Bamako/Mali over a period of 10 years.

METHODS

This was a retrospective study over a period of ten years (from January 2009 to December 2017). Were included in this study, any conclusions resulting from the various meetings of the local MDSR of the health district of commune V of the district of Bamako relating to cases of death occurring in healthcare facilities. Any cases of verbal autopsies relating to deaths occurring in the community were excluded in this study. The data was generated from the local health information system (LHIS). Regarding review sessions of maternal death, a multidisciplinary local MDSR committee was made up of seven (7) members, including a president, a vice-president or local opinion leaders, two collectors of data and three others who are collaborators. All maternal deaths that occurred in healthcare facilities were

identified and notified to the chair of the committee, who in turn reported the information to the hierarchy. After the data collected by the data collectors, the president first ensured the completeness of the information, then an invitation letter (including the date of the meeting, the place and the agenda) was addressed to the various members of the committee. A collector read the summary of the case (s). Then the president led the discussions in order to: identify the causes of maternal death and likely dysfunctions observed; specify avoidability, time and conditions of avoidability; make relevant recommendations and organize the response which was either immediate, periodic or annual. The success of maternal death reviews and response depends on the degree to which recommendations and follow-up are implemented. We did easy entry of text and tables using Word and Excel software.

RESULTS

During the 10-year study period, we recorded 100,882 LB against 221 registered and notified maternal deaths, with a MMR of 219/100,000 LB. Out of the 221 maternal deaths, 81 occurred in the community and were not included in this study. The study was about 140 cases of maternal deaths that occurred in healthcare facilities. The middle age was 28.01 years with extremes of 14 years and 44 years. These included multiparous patients in 60% of cases, without prenatal check-up in 54%. Most of the deaths occurred in the postpartum period, or 106 cases (76%).

Table 1: Obstetric and medical causes of maternal deaths.

Obstetric and medical causes of maternal deaths	Cause of maternal death	Preventable	%
Obstetric causes, Direct, N=129 (92.12%)	Hemorrhage	98	70.00
	Eclampsia	11	7.85
	Obstructed labor	10	7.14
	Unsafe abortion	06	4.28
	Infection	04	2.85
Obstetric causes indirect, N=7 (5.3%)	Anemia	05	3.57
	Malaria	02	1.73
Undetermined N=4 (2.58%)	-	04	2.58
Total	-	140	100

Twenty-seven deaths or 19% occurred in the ante-partum and 7 deaths (5%) in the post-abortion.

Table 2: Avoidability of maternal deaths.

Avoidability	N	%
Avoidable	112	80
Unavoidable	28	20
Total	140	100

In 129 cases (92%), deaths were from DOC dominated by: 98 cases (70%) of hemorrhage, 11 cases (7.85%) of eclampsia, 10 cases (7.14%) of obstructed labor, 6 cases (4.28%) of unsafe abortion and 4 cases (2.85%) of

infection. Among the 7 cases (5%) of maternal deaths from IOC, we recorded 5 cases (3.57%) of anemia and 2 cases (1.73%) of malaria. In 4 cases (2.58%), the deaths were from undetermined causes. Obstetric causes of maternal deaths are shown in (Table 1). Deaths were preventable in 112 cases (80%). This avoidability of maternal deaths is reported in (Table 2). Deaths could have been avoided during treatment in 60 cases (53.70%); at diagnosis in 26 cases (23.20%); on admission in 14 cases (12.50%) and during treatment follow-up in 12 cases (10.60%). The conditions of avoidability included: should blood products were available in 67 cases (60%); should monitoring had been correct in 19 cases (17%); should the referral was made

on time in 15 cases (13.40%); if the treatment had been correct in 6 cases (5.10%); if the diagnosis was correct on admission in 5 cases (4.50%). The response consisted in the notification and implementation of the recommendations made, all deemed relevant. In our study the implementation rate was 70%. These recommendations were intended to correct the various dysfunctions identified in the health structure and which contributed to maternal deaths. The (Table 3) groups all the recommendations made and implemented or not.

Table 3: Recommendations made implemented or not.

Recommendations issued implemented	Implementation	
	Yes	No
Provide ongoing training on PPH management	+	
Train staff in labor management (proper use of oxytocin, judicious use of the partograph)	+	
Revitalize the local blood products management committee		+
Have essential drugs available at the hospital pharmacy		+
Set up an archiving mechanism for medical records and other care materials		+
Improve the referral system for obstetric emergencies	+	
Strengthen patient monitoring, especially in the postpartum period	+	
Train staff in the prevention and treatment of infection.	+	
Train staff in the prevention and treatment of eclampsia.	+	
Train staff on the concept of refocused ANC	+	

DISCUSSION

We recorded a maternal mortality ratio of 219/100,000 LB. MMRs at continental scales have been reported in the literature. Thus, the ratio was 900/100,000 LB for sub-Saharan Africa in 2005.³ In France, the MMR was 10.3 deaths per 100,000 LB for the period 2010-2012.⁴ The MMR in developing countries in 2015 was 239 per 100,000 LB, compared to 12 per 100,000 in developed countries. There are disparities between countries, within countries, between low-income and high-income populations, and between rural and urban populations.⁵ In our study, like that of Fomulu and al, these were young patients with a mean age of 28.01 years.⁶ Most of the deaths occurred in the postpartum period, in 76% of cases. In 19% of cases, death occurred in the pre-partum and in 5% of cases, after unsafe abortion. Fomulu and al reported 55.9% of maternal deaths occurring in the postpartum period. In our study, the DOCs were pointed out in 92% of the cases, the IOCs in 5% of the cases and

the deaths were of undetermined causes in 2.58% of the cases.⁶

According to data provided by the health information system (HIS) of the democratic republic of Congo (DRC) in 2018, the main causes of maternal death were hemorrhage (56%); eclampsia (23%); sepsis (13%); abortion (8%).⁷ Many other authors have reported in their series that hemorrhage, especially postpartum, was the leading cause of maternal death.^{1,2,8-12} Say and al reported that in addition to severe hemorrhage, especially postpartum, infections (usually after delivery); high blood pressure (HBP) during pregnancy (preeclampsia and eclampsia) and unsafe abortion are also responsible for maternal deaths.¹² Dreyfus and al reported 12 cases of maternal death related to hypertensive complications.¹³ Le Gomez et al found out in their study that maternal morbidity and mortality from sepsis saw an increase.^{14,15} Belinga et al reported 7 cases of maternal death from uterine ruptures out of a total of 73 cases of uterine ruptures, for a uterine rupture case fatality rate of 9.58%.¹⁵

In our study, the preventability was 80% or in 112 cases. Most authors find that the majority of deaths were avoidable.^{2,15-17} In our study, maternal deaths were frequently associated with 4 Too, in other words, too early pregnancies in 17 cases (12.14%), too late in 37 cases (26.42%), too close in 49 cases (35%) and too many in 63 cases (45%). This same observation has been noted by several other authors.^{6,7,13,18} Surveillance of maternal deaths is of little interest in the absence of implementation of the various recommendations made. The response was organized around the notification and implementation of the recommendations made during the various maternal death review sessions and response. These were recommendations that were relevant because they targeted the problems identified within the structure and which have contributed to maternal deaths (prevention and management of postpartum hemorrhage, eclampsia, infection). In 70% of cases, the recommendations made were implemented. The non-application of some of these recommendations (30% of cases) was linked to the extreme mobility of the nursing staff and to the change occurring within the hospital management authority. Strategic interventions aimed at reducing this mortality rate must be based on educating the community about safe motherhood, increasing the standard of living of the population, improving the level of education, more efficient communication systems and transport, accessibility to quality reproductive health services and finally the availability of emergency obstetric care.

Limitations

we had some difficulties as in any retrospective study, among other things, certain information concerning the socio-demographic characteristics of certain patients was

not available as well as the moment of death. But these difficulties had no impact on the results obtained.

CONCLUSION

The maternal mortality ratio remains high in commune V of the district of Bamako. These deaths are mainly from direct obstetric causes including hemorrhage and were mostly preventable. Not all of the recommendations made have been implemented.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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