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Maternal Deaths after Obstetrical Referral and/or Evacuation to the Obstetrics Gynecology Clinic of the Sylvanus Olympio University Hospital Center, Togo

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Abstract

Introduction: Maternal death or maternal mortality is "the death of a woman occurring during pregnancy or within 42 days of termination, regardless of duration or location, for any specific cause or aggravated by pregnancy or its management, but neither accidental nor fortuitous. Methods: This was a descriptive and analytical cross-sectional study carried out from January 1st, 2021 to April 30th, 2022 at the Obstetrics Gynecology Clinic of the Sylvanus Olympio University Hospital Center (SOUHC). Results: we noted 86 cases of maternal deaths after referral/evacuation *i.e.* a maternal mortality rate hospital of 555 maternal deaths per 100,000 LB. The average age of the patients was 31.1 ± 6.3 years with extremes of 15 and 45 years. In 33.7% of cases our patients were resellers. Multiparas represented 33.7% of the sample, they had performed less than three antenatal consultations. Postpartum hemorrhage was the reference reason in 33.7%. In 74.4% of cases, the patients referred had arrived by taxi. In 87.9% of cases, the patients had died of direct obstetric causes. Immediate postpartum hemorrhage accounted for 44.6% of cases and anemia, 36.4%. There is a statistically significant association between the availability of blood product and the avoidability of maternal death after obstetrical referral and/or evacuation (p value = 0.0188 < 0.05). Conclusion: Determining responsibility for maternal death is not always easy. There is an urgent need to strengthen the policy of reducing maternal mortality in Togo. This remains possible by developing communication strategies and a solid referral/counter-referral system.

Keywords

Maternal Death, Reference, Counter Reference, Togo

1. Introduction

According to the World Health Organization (WHO), maternal death or maternal mortality is "the death of a woman during the pregnancy or within 42 days after the interruption, whatever its duration or location, for any cause whatsoever determined or aggravated by the pregnancy or its management, but neither accidental nor fortuitous" [1]. An obstetrical referral is the mechanism by which a maternity ward directs a patient who exceeds her skills, to a more specialized and better equipped structure (a hospital in general), for adequate care [2].

Medical evacuation is the transfer of a patient from one health facility to another where the care is of a high standard, in an emergency context [2]. According to the WHO, around 800 women die every day from preventable causes related to pregnancy, childbirth or unsafe abortion [2]. The global maternal mortality ratio (MMR) in 2017 was estimated at 211/100,000 live births (LB) [3]. In sub-Saharan Africa, the MMR is estimated at 542/100,000 LB [4]. In Togo, it is estimated at 396/100,000 LB [5], and at least 2 women die every day following pregnancy, childbirth or within 42 days [4]. Apart from known direct and indirect obstetrical causes of mortality, audits of maternal deaths in Togo show that these deaths are also attributable to the non-functionality of the referral and counter-referral system [6]. In the strategic option of strengthening primary health care, the peripheral care unit (PCU) is called upon to serve as a framework for the provision of integrated, continuous and comprehensive care, while the hospital must play the major role of orientation-recourse [6]. It has been noted that the search for this optimal situation of a coherent healthcare system always comes up against problems [7]. For this study, the following hypothesis was put forward: Maternal death after obstetrical referral and/or evacuation would be due to the lack of medical means of transport and blood products in the referral centers. We thought it appropriate to describe maternal deaths after obstetrical referral to the Obstetrics Gynecology Clinic of the SO UHC. More specifically, it was about:

- Determine the MMR after obstetrical referrals to the SO UHC;
- Describe the socio-epidemiological profile of women who died after referral;
- Identify referral patterns and clinical characteristics.

2. Methods

This was a descriptive and analytical cross-sectional study carried out from the 1st January 2021 to April 30, 2022 at the Obstetrics Gynecology Clinic of SO UHC. The study was conducted using a non-probability sampling technique for

all pregnant women, parturients and mothers referred or evacuated to the clinic of obstetrics gynecology at the SO UHC and died during our period of study. Included were the records of pregnant women, parturients and given birth within 42 days postpartum, referred or evacuated to the Clinic of obstetrics gynecology at the SO UHC and died during our period of study. Were not included the records of pregnant women, parturients and given birth within 42 days postpartum, referred or evacuated to the Clinic of obstetrics gynecology at the SO UHC, who died during our period of study and that the family and the accompanying persons refused to be part of study (n = 4). All pregnant women, parturients and those who have given birth from them even at the Obstetrics Gynecology Clinic of the SO UHC and deceased during our study periods were excluded (n = 17). We made a individual survey sheet for each pregnant, parturient or childbirth referred and/or evacuated whose shortcomings have been improved following a preliminary test. The information was collected from accompanying persons and family members present, from the registration book to admission, referral cards, delivery room registers, mother-child pregnancy follow-up notebooks, resuscitation registers gynecological, and the operating room when a death was observed after a referral or evacuation. Data were processed using Epi Info software 7.2.5.0., the entry was made using the World 2010 software. The results expressed with a 95% confidence interval. Fischer's Khi2 test was applied for the comparison of qualitative variables and the Student test for the comparison of means. The significance level chosen was 0.05. The principles of confidentiality and anonymity were respected. We have obtained the verbal consent of the accompanying persons of the pregnant, parturient and deceased births, so we both accepted the refusal (n = 4) and acceptance of the interview. A permission N° 618/2022/MSHPAUS/CHU-SO/DIR/DRH/SERV.PERS was issued to us by the Medical Director of the SO UHC.

3. Operational Definitions

- **Direct obstetric causes:** These are those that result from complications obstetrics during pregnancy, labor and postpartum, interventions, omissions, incorrect treatment, negligence or of a chain of events resulting from pathologies.
- **Indirect obstetric causes:** They result from a pre-existing disease or a condition appearing during pregnancy unrelated to causes obstetrical problems, but aggravated by the physiological effects of pregnancy or by its care.

4. Results

4.1. Epidemiological Aspect

4.1.1. Hospital Frequency

We had recorded 15,502 parturient and giving birth pregnant including 7,874 referred and evacuated, *i.e.* 50.8%, among which we noted 86 cases of maternal deaths after referral/evacuation *i.e.* a maternal mortality rate hospital of 555 ma-

ternal deaths per 100,000 LB.

4.1.2. Sociodemographic Data

The average age of the patients was 31.1 + 6.3 years with extremes of 15 and 45 years. The age group of 30 to 35 years accounted for 32.6%. In 33.7% of cases our patients were resellers (Table 1).

4.1.3. Clinical Data

Risk factors:

Multiparous represented 33.7% of the sample, followed by grand multiparous in 20.9% of cases. In 73.3% of cases, our patients had performed less than three antenatal care (ANC), they had not performed ANC in 15% of cases and had performed more than 4 ANC in 15% of cases.

Reference pattern

Postpartum hemorrhage was the reference reason in 33.7% of cases followed by pre-eclampsia in 24.4% of cases (Table 2).

Means of transport

In 74.4% of cases, the patients referred had arrived by taxi (Table 3).

Causes of death:

In 87.9% (75) of the cases, the patients had died of obstetric causes direct and in 12.1% (11) of indirect obstetric causes. In the causes direct obstetrics, immediate postpartum hemorrhage accounted for 44.6% of cases and anemia accounted for 36.4% of cases of indirect obstetric causes (Table 4).

Table 1. Distribution of patients according to socio-demographic data.

	Effectif	Percentage
Age (year)		
[15 - 20[	06	06.9
[20 - 25[	10	11.6
[25 - 30[	19	22.1
[30 - 35[	28	32.6
[35 - 40[	18	21.0
[40 - 45]	05	05.8
Total	86	100.0
Socio-professional activity	29	33.7
Vendors		
housewife	24	27.9
Hairdresser	14	16.3
student	11	12.8
others	08	09.3
Total	86	100.0

Others (seamstresses, cashiers, Beauticians).

Table 2. Distribution of cases according to the reason for reference.

	Effective	Percentage
Immediate postpartum haemorrhage	29	33.7
Hypertension/Pre eclampsia/Eclampsia	21	24.4
Anemia and pregnancy	11	12.8
Metrorrhagia	08	09.3
Childbirth labor	07	08.1
Respiratory distress	04	04.6
Infectious syndrome	02	02.3
Abruptio placenta	01	01.2
Hemoglobinopathy	01	01.2
Excessive fundal height	01	01,2
Not reported	01	01.2
Total	86	100.0

Table 3. Distribution of cases by means of transport.

	Effective	Percentage
Taxi	64	74.4
Personal car	11	12.8
Motorbike taxi	08	09.3
Ambulance	03	03.5
Total	86	100.0

Table 4. Distribution of cases according to obstetric causes of death.

	Effective	Percentage
Direct obstetrics (n = 75)		
Immediate postpartum haemorrhage	33	44.6
Pre eclampsia/Eclampsia	22	29.7
Uterine rupture	09	12.1
Retro placental haematoma	08	10.8
Hemorrhagic abortion	01	01.4
Ectopic pregnancy	01	01.4
obstétricales indirectes (n = 11)		
Anemia	04	36.4
Anesthésic shock	02	18.2
Covid-19	02	18.2
VIH/SIDA	02	18.2
Hemoglobinopathy	01	09.0

Factors related to death:

In relation to the need for transfusion we found that blood was unavailable in 54.6% of cases and available in 3.5% of cases this difference is statistically significant with a P value = 0.0188. The unavailability of blood product is therefore a predisposing factor for maternal death after obstetric referral to the SO UHC. Among the cases of avoidable deaths 95.9% did not have a venous approach against 58.3% of cases who had them. This difference is statistically significant with a P value = 0.0010 < 0.05. There is a statistically significant association between the availability of blood product and avoidability of maternal death after obstetrical referral and/or evacuation (p value = 0.0188 < 0.05) (Table 5).

5. Discussion

We recorded 86 cases of maternal deaths after referral, giving an in-hospital maternal mortality rate of 555 maternal deaths after referral and/or evacuation per 100,000 NV. This rate is higher than the national norm in 2020 which was 396/100,000 NV [5]. Indeed, the incidence of maternal death varies from one continent to another, from one country to another and from one service to another in the same country [8]. Also, the SO UHC plays its role of national reference centre in the country where complicated cases converge; hence this high rate of maternal deaths after obstetrical referral. The average age of our patients was 31.1 ± 6.3 years with extremes of 15 and 45 years. The age group 30 - 35 years was mainly represented at 32.6%. This could be explained by the fact that this age group corresponds to the peak of fertility, hence the high rate of deliveries. In 33.7% of the cases, they were vendors or sellers, thus having a low socio-economic level. Our results are on line with the World Health Organization's (WHO) asserting that maternal disability and death are most common among

Table 5. Distribution of cases of maternal death after referral obstetrics and/or evacuation according to factors related to death at the CHU SO.

	Preventable death			Value of P*
	Yes (Percentage)	No (Percentage)	Total	
Need for transfusion				
Blood available Blood not	2 (2.5)	1 (12.5)	3 (3.5)	
available	46 (58.9)	1 (12.5)	47 (54.6)	**0.0188**
No need for transfusion	30 (38.4)	6 (75.0)	36 (41.9)	
Total	78 (100.0)	8 (100.0)	86 (100.0)	
Venous access				
Yes	7 (58.3)	5 (41.7)	12 (13.9)	**0.0010**
No	71 (95.9)	3 (4.1)	74 (86.6)	
Total	78 (90.7)	8 (9.3)	86 (100.0)	

*: File Test.

poor, uneducated and rural women [9]. They were multiparous in 33.7% of cases. On the other hand, Leki and al in the Democratic Republic of Congo [10], reported a maternal death rate of 77.8% among multiparous women. In fact, these multiparous women think they have experience in pregnancy and do not feel too embarrassed about monitoring their pregnancy, especially as 73.3% of patients had undergone less than three ANCs; the number of ANCs being one of the quality criteria for ANC. Post partum haemorrhage was the main reason for referral in 33.7% of cases, followed by hypertension/pre-eclampsia in 24.4% of cases. Gueye and al in Senegal in 2020 [11] reported cases of hypertension and its complications in 46.2%, followed by immediate postpartum haemorrhage in 18.7%. Indeed, whatever its rank, post partum haemorrhage constitutes an obstetric emergency and the referral is a determining factor in the occurrence of maternal deaths. In practice, there is an inadequate referral/evacuation system, *i.e.* insufficient communication between the lower level health centres and the referral hospital, with poorly filled in referral forms. In addition, the majority of the medical and social centres do not have ambulances to allow the transport of patients in medical conditions (2nd delay). Thus, much effort remains to be made concerning the referral system in our country. Direct causes predominate (87.9%) over indirect causes. Thus, in order of frequency, the causes of death were represented by immediate post-partum haemorrhage (44.6%), hypertensive causes (29.7%) and its complications. This is often found in the African literature [11] [12] [13]. This alarming finding is linked to the fact that parturients, pregnant and delivered after a long stay in health posts and social medical centres, poorly monitored, were evacuated in a state of shock and sometimes without a venous line, without medical transport to the department (74.4% were evacuated by taxi), whereas the gynaecology-obstetrics clinic does not have its own blood bank. Arterial hypertension (29.7%) is particularly dangerous because of its complications. This high lethality reveals a failure in the quality of ANC. Anemia is a significant risk factor for maternal morbidity. In some cases, the causes of death were not obvious. There are several technical factors (insufficient number of forensic doctors, and the non-institutionalisation of systematic autopsy in our country) and socio-cultural factors (religious, ethnic, cultural...) that block the systematic performance of autopsy. Also, this mecho-legal act is often considered by the parents as a desecration and also the pain of the parents, such as a stab in the heart, they prefer to leave the place and organise as quickly as possible the funeral ceremonies for the one who died while giving life. The absence of a venous approach before any evacuation is a predisposing factor for maternal death after an obstetric referral and/or evacuation to the hospital. In 90.7% of cases of preventable death, 95.9% did not have a venous access compared to 58.3% of cases that did. This difference was statistically significant with a p value = 0.0010 < 0.05. The unavailability of blood product is a predisposing factor for maternal death after obstetric referral and/or evacuation to the SO UHC. There is a statistically significant association between the availability of blood products and the avoidability of maternal death after obstetric referral

and/or evacuation (p value = 0.0188 < 0.05).

6. Conclusion

Determining responsibility for maternal death is not always easy, particularly in the context of daily practice in developing countries where this mortality after obstetric referral and/or evacuation is multifactorial. This work shows that the rate of maternal mortality in hospital after obstetrical referral and/or evacuation, at the CHUSO is very high compared to the national standard. The main causes were hemorrhage and pre-eclampsia/eclampsia for direct ones and anemia for indirect ones. Other factors relating to the patient, the community and the health organization are also involved in the occurrence of her maternal deaths after referral and/or obstetrical evacuation. Has on the verge of achieving the Sustainable Development Goals, there is therefore an urgent need to strengthen the mortality reduction policy in Togo. This remains possible in developing communication strategies and a referral/counter system solid reference.

Limitations of the Study

Verbal autopsy which did not allow access to all information.

- The selection of deaths after referral or evacuation by excluding patients who died but came to the hospital on their own.
- The absence of a systematic autopsy, limited the discovery of the etiologies of some maternal death.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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