(RESEARCH ARTICLE)

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Maternal mortality study in a level II hospital in guinea from 2016 to 2020

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Abstract

The objective of this work was to study the epidemiological profile of maternal deaths at the Forécariah prefectural hospital from January 1, 2016 to December 31, 2020.

Methodology: this was a descriptive, cross-sectional study with retrospective collection, including women who died before, during or within 42 days after childbirth. Sociodemographic and clinical variables, circumstances and causes of death as well as the process of maternal death reviews (MDR) were studied. The data were analyzed using EPI Info version 7.2 6 software. Central tendency parameters (mean, standard deviation), relative and absolute frequencies were reported.

Results: The maternal mortality ratio was 348 deaths per 100,000 live births. The average age was 31 ±5.65 years. The majority of deceased women were unemployed (67.69%), most of them married (72.31%), and multiparous in 33.85% of cases. Hemorrhages during delivery constituted 52.72% of the direct causes. The effectiveness of reviews of maternal deaths was 10.77% and deaths deemed avoidable represented 98.46%, mainly linked to the 3rd delay in 58.46% of cases.

Conclusion: achieving the goal of sustainable development (SDG 3.1) requires community participation, reorganization of the health system and government involvement.

Keywords: Maternal mortality; Study; Review of deaths; Forécariah Prefectural Hospital; Guinea

1. Introduction

Maternal mortality is defined as the death of a woman during pregnancy or within 42 days of its termination, irrespective of its duration or location, from any cause determined or aggravated by pregnancy or the care it prompted, but neither accidental nor fortuitous. Most of these deaths are avoidable. They generally occur in low- and middle-income countries, especially in sub-Saharan Africa [1]. It is a difficult and traumatic experience for both the community and the nursing staff.

Eight hundred and thirty women die every day worldwide as a result of complications related to pregnancy or childbirth. In 2015, 303,000 women died during or after pregnancy or during childbirth [2]. Forécariah Prefectural Hospital is no exception to this public health problem, notwithstanding the in situ establishment of a maternal death review committee (RDM) for maternal and neonatal death surveillance and response (SDMNR).

The aim of this study was to examine the epidemiological profile of maternal deaths at Forécariah Prefectural Hospital from January 1, 2016 to December 31, 2020.

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2. Material and method

This was a cross-sectional descriptive study with retrospective collection, conducted at the maternity ward of the Prefectural Hospital of Forécariah (PHF) from January 1, 2016 to December 31, 2020, a period of 5 years. The study variables were the maternal mortality ratio, sociodemographic and clinical characteristics, circumstances of death and the maternal death review (MDR) process.

Pregnant women who died before, during and within 42 days of delivery in the maternity hospital were included in the study. Sampling was non-probabilistic, with exhaustive recruitment resulting in 126 cases of maternal death. Data were collected from case files, antenatal contact sheets (CPN) of deceased women, registers, RDM reports, and survey sheets taking into account the different variables.

The data were analyzed using Epi-info software, version 7.2 6, to obtain maternal mortality ratios, central tendency parameters (mean, standard deviation, etc.), and relative and absolute frequencies.

3. Results

The maternal mortality ratio (text 1) in the maternity ward of Forécariah Prefectural Hospital was 348 deaths per 100,000 NV. For clinical characteristics (text 2) we had

The mean gestational age was 34.59±9.68 weeks of amenorrhea (SA), with extremes of 7 and 44 SA. The most common gestational age range was 37 to 40 SA, i.e. 29.23%. There were 81.54% multigestation and 33.85% multiparas, with more than 5 prenatal contacts (35.38%), and no medical or surgical history (72.31% and 69.23% respectively). Therapeutic compliance (folic acid iron and pyrimethamine sulfadoxine) 12.31%, the particularity of the pregnancy was dominated by in utero death in 10.77% of cases and arterial hypertension (AH)10.77%. Delivery by vaginal route was more common (44.62%) than caesarean section (29.23%).

With regard to length of stay and occurrence of death, only one case of death was recorded on arrival (1.54%). Deaths occurring within 24 hours were more numerous (81.54%), while those occurring after 24 and 48 hours were 7.69% and 6.15% respectively. Deaths within 72 hours were also significant, at 3.08%.

In terms of causes of death in the maternity hospital (Text 3), we noted that direct obstetrical causes were more numerous (84.62%) than indirect obstetrical causes (15.38%). Among direct obstetric causes, post-partum haemorrhage accounted for the majority in 52.72% of cases, pre-eclampsia and eclampsia 12.73%, complications of retroplacental haematoma 10.91%, and indirect causes were dominated by suspected acute pulmonary oedema (APO) 60%, suspected heart disease 30% and complications of HIV/AIDS 10%.

Table 1 Sociodemographic characteristics

Sociodemographic characteristics.	Pregnant women who died before. during and within 42 days of delivery N =65	
	N= 65	**%**
Age (years)		
Extreme age (min and max)	20 and 44	
Average age (±and)	31.32(±5.63)	
Median age (Q1 and Q3)	32 (27 et 35)	
Age group		
1. [20-24]	7	10.77
2. [25-29]	14	21.54
3. [30-34]	24	36.92
4. [35-39]	14	21.54
5. [40-44]	6	9.23

Education level			
1.	Primary	3	4.62
2.	Secondary	32	49.23
3.	University	5	7.69
4.	Not stated	25	38.46
Occupation			
1.	No profession	44	67.69
2.	Sales assistant	10	15.38
3.	Public servant	4	6.15
4.	Other	2	3.08
5.	Not stated	5	7.69
Matrimonial status			
1.	Single mothers	0	0
2.	women in couples	47	72.31
3.	Not stated	18	27.69
Place of residence			
1.	Near the hospital	36	55.39
2.	far from the hospital	19	29.23
3.	Not stated	10	15.38
Accompaniment			
1.	Yes	27	41.54
2.	No	0	0
3.	Not stated	38	58.46
Companion (N=27)			
1.	Mari	17	62.96
2.	Family	9	33.34
3.	Third party	1	3.70

Table 2 Circumstances of death in maternity wards

Circumstances of death		Pregnant women who died before. during and within 42 days of delivery	
		N=65	**%**
Period of occurrence			
1.	Early pregnancy	10	15.38
2.	Ante partum	0	0
3.	Intra partum	7	10.77
4.	Immediate postpartum	45	69.23

5.	Late postpartum	3	4.62
Organization of the healthcare system			
Available healthcare personnel doctors/midwives/nurses/others1		65	100.00
Surgical suite (N= 65)			
1.	Available	54	83.08
2.	No available	1	1.54
3.	Not stated	10	15.38
Drugs (N= 65)			
1.	Available	21	32.31
2.	No available	39	60.00
3.	Not stated	5	7.69
Blood and blood derivatives (N= 65)			
1.	Available	0	0
2.	No available	48	73.85
3.	Not stated	17	26.15
Administration of l'HPF (N= 65)			
1.	Informed	2	3.08
2.	No informed	0	0
3.	Not mentioned	63	96.92
Hospital administration support		2	100.00
References and reasons			
1.	Self-referrals	47	72.31
2.	Improved health center	6	9.23
3.	Rural health center	11	16.92
4.	Urban health center	1	1.54
Medical assistance/support (N=18)			
1.	No	17	94.44
2.	Yes	1	5.56
Referral mode (N=18)			
1.	Ambulance	1	5.56
2.	Cab	17	94.44
3.	Individual	65	100.00

Table 3 Maternal death reviews

Maternal death review		Pregnant women who died before. during and within 42 days of delivery N=65	
		n	%
Maternal death review (N=65)			
1.	Yes	7	10.77
2.	No	58	89.23
If so. which session (N=7)			
1.	1er	1	14.29
2.	2e	3	42.85
3.	3e	2	28.57
4.	4e	1	14.29
Time to completion of Maternal death review in Months (N=7)			
1.	1	3	42.86
2.	2	4	57.14
3.	3	0	0
4.	4	0	0
Notion of Delay (N= 65)			
1.	1e Delay	0	0
2.	2e Delay	1	1.54
3.	3e Delay	38	58.46
4.	1 et 3e Delay	0	0
5.	2 et 3e Delay	14	21.54
6.	1. 2 et 3e Delay	12	18.46
Recommendation (N=16)			
1.	Realized	6	37.50
2.	No Realized	10	62.50
Avoidance of death (N= 65)			
1.	Avoidable	64	98.46
2.	No Avoidable	1	1.54

4. Discussion

4.1. Frequency

The maternal mortality ratio (text 1) in our study was 348 per 100,000 NV. A previous study carried out in the same department in 2005 by Bouba Toure and al [3] had reported a ratio of 288 deaths per 100,000 NV. This earlier result was similar to those reported by Tebeu and al [17] in 2015 in Cameroon, which were 287 per 100,000NV. On the other hand, our results were higher than those of Rafamatanantsoa J and al [16] in Antananarivo, Madagascar, which were 290 per 100,000NV, and those of Foumsou and al [4] in Tchad, 273 per 100,000NV This variation in frequency can be explained in part by the study period and population.

4.2. Socio-demographic characteristics (table 1)

The mean age of the women who died in our study was 31 ±5.65 years, with extremes of 20 and 44 years. The dominant age group was 30 to 34, accounting for 36.92%. The deaths concerned young women at peak fertility. This may be explained in part by the fact that this age group is when women most often give birth. These results are similar to those of Thiam and al [5] in Senegal, who reported 24.7%, Mayi-Tsonga and al [6] in Gabon 19%, and Bouba Toure and al [3] reported 16% in Guinea. Most of the women who died had a secondary education (49.23%). The high literacy rate is very high among girls in Guinea (83.9%) and in secondary school (67.4%) according to EDS [7]. The same observation was made by Bouba Toure and al [3], who put it at 48%, and Mayi-Tsonga and al [6] in Gabon at 84%. However, in Cameroon, Fomulu and al [8] found that 64% of women who died were illiterate.

The majority of women who died had no occupation, i.e. 67.69% of cases. The same trends were observed in Cameroon by Foumane and al [9] at 51.7%. Other authors, such as Bouba Toure and al [3] (80%) in Guinea and Fomulu and al [8] (74.8%) in Cameroon, had higher figures than ours. Unemployment among women in Africa remains a major problem, which could lead to a lack of financial autonomy and an inability to bear the cost of care.

The women who died were living in couples in 72.31% of cases. They had a social relationship in 41.54% of cases, and were accompanied by their husbands in 62.96% of cases.

More than half of the women who died lived not far from the HPF (55.38% of cases). This result shows that geographical accessibility has no significant impact on maternal mortality, since women die because of the 3rd delay.

4.3. Clinical characteristics (Text 2)

The mean gestational age observed during this study period was 34.59±9.68, with extremes ranging from 7 to 44 days gestation. The 37-40 days gestation age group was the most represented, at 29.23%. Death can therefore occur at any age during pregnancy. Early consultation with determination of the seat and quality of the egg can help reduce deaths linked to extra uterine pregnancies (EUP) and molar pregnancies.

The women who died were multigestational in 81.54% of cases and multiparous in 33.85%. Multigestation and multiparity increase the risk of maternal mortality. Health personnel must have a spirit of anticipation and professionalism to manage these cases. Thiam and al [5] 2017, in Senegal, found similar results to ours : multigestation at 52.7% and multiparity at 44.3% and Foumsou and al [4]. However, in the series by Balde O and al [5] in Guinea, large multiparous women were more numerous (66.7%). No explanation was found for this difference. The women who died had made 4 or more prenatal contacts (44.69%). There is therefore a dissociation between the number of prenatal contacts (PNC) and the outcome of the birth. We are unable to judge the quality of prenatal contacts due to missing data in the files.

However, the quality of prenatal contacts was annihilated outside an organized perinatal network, as in our country, due to the absence of a continuum of care. In countries where the system is based on a perinatal network, the impact of prenatal contacts on deliveries can be seen. Follow-up and referral to available skills were organized to ensure continuity of care. The same trend was observed by Fomulu and al [8] in Cameroon, with a rate of 66.6%. Nevertheless, the women who died had no medical antecedents in 72.31% of cases, and no surgical antecedents in 69.23% of cases. Maternal mortality is a tragic situation because it occurs during or after a natural process [11]. It remains an unpredictable event and often occurs in these women with no previous history. This calls for greater vigilance and anticipation in the management of childbirth, through ongoing training of staff.

The particularities of the deceased women's pregnancies included in-utero death (IUD) and high blood pressure (HBP) in 21.54% of cases. These pathologies were recognized as risk factors for maternal mortality. The same applies to delivery hemorrhage (HDD) and eclampsia, which are not always treated efficiently due to the lack of blood and essential drugs.

The women who died had given birth vaginally in 44.62% of cases, and vaginally in 29.23%. This can be explained by the high number of vaginal deliveries compared with caesarean sections. Since 1985, the World Health Organization has considered the ideal caesarean section rate to be between 10% and 15%, and it has become increasingly common in both developed and developing countries. When medically justified, Caesarean section can effectively prevent maternal and perinatal mortality and morbidity [12]. Similar results were found by Thiam and al, who reported a 45% rate of natural birth and a 32% rate of caesarean section [5].

4.4. Circumstances of death (table 2)

Women died within 24 hours of admission in 81.54% of cases, and during the immediate post-partum period in 69.23% of cases. Fomulu and al [8]. In Cameroon found that women died in 48.7% of cases within 3 hours of admission, and in 55.9% in the post-partum period

In our study, it was found that staff were available, as was the operating theatre, in 83.08% of cases. During the study period, medication was unavailable in 60% of cases, and blood products and derivatives in 73.85% of cases.

The majority of deaths were due to post-partum hemorrhage. The unavailability of blood and blood derivatives is said to explain this result. This observation is often made in literature from developing countries.

The women who died had come on their own in 72.31% of cases, and 16.92% from doctors' surgeries without medical assistance or support. Cabs were the most common means of transport in 94.44% of cases. The non-existence of a well-structured referral system meant that parturients were referred late and under poor conditions. This lack of organization of the referral system at the three levels of the health pyramid has been noted by Fomulu and al [8] in Cameroon, Thiam and al [5] in Senegal and Mayi and al [6] al in Gabon. In terms of causes of death (text 3), direct obstetrical causes were more dominant at 84.62%. These results corroborate those of Thiam and al [5] (80%) in Senegal, Cheli and al [13] in Tunisia at 81%.

Delivery haemorrhage (DHD) accounted for 52.72% of cases of direct obstetric causes. These results, lower than ours, were found in the series by Balde O and al [14] in Guinea, who reported 46%, Anki and al [15] at 41.1% in Congo, Rafamatanantsoa J and al [16] in Antananarivo, Madagascar 43.3%, Thiam and al [5] at 49% in Senegal and Tebeu and al [17] 29.2% in Cameroon

4.5. Process of maternal death reviews (table 3)

During this study period, the effectiveness of RDMs was 10.77%, and reviews were carried out after 2 months in 54.14% of cases. The low effectiveness of RDMs could be explained by a lack of accountability on the part of HPF managers and health personnel. The audit and review of maternal and perinatal deaths was widely recommended as an intervention to reduce maternal and perinatal mortality and improve the quality of care, and is one of the ways to achieve the MDGs according to Merlin L W and al [18].

The deaths of these women were due to the 3rd delay in 58.46% of cases, and to accumulated 2nd and 3rd delays in 21.54% of cases. It appears that in Guinea, some parturients resort to traditional birth attendants and local doctors' surgeries before going to hospital, a situation that may be explained by shortcomings in the organization of the healthcare system according to EDS [7]. The same observation was made by Balde O and al [14] in Guinea and Sombié and al [19] in Burkina Faso.

Deaths were deemed avoidable in 98.46% of cases in our series. These figures directly implicate the health policies implemented, especially as the 3rd delay was often involved. The same finding was reported in Tunisia by Chelli and al [13], as well as Njah and al [20].

5. Conclusion

Maternal mortality is a major public health problem in Guinea. At the Prefectural Hospital de Forécariah, the effectiveness of Maternal Death Reviews was low and carried out after 2 months. The proportion of recommendations not carried out was higher. Deaths due to 3rd delay and accumulated delays were considered avoidable.

Achieving Target 1 of Sustainable Development Goal 3 (SDG3) would require a participatory approach involving the community, the reorganization of the health system with emphasis on the availability of drugs, blood and blood derivatives, and a well-organized referral system. The improvement of the RDM process, the operationalization of universal health coverage and the involvement of the government would be essential in this process.

Compliance with ethical standards

Disclosure of conflict of interest

The authors reported no conflicts of interest.

Statement of ethical approval

All methods were performed in accordance with the guidelines (Declaration of Helsinki) and regulations relevant to this study. Anonymity was respected throughout the study.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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