

Analysis of Maternal Deaths in Suburban of Dakar, Senegal

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Abstract

Objective: Maternal mortality remains a major concern in developing countries. This survey aims to suggest strategic plans that would help decrease maternal and perinatal mortality in the suburbs. It is a descriptive study that shows the different causes of maternal deaths during pregnancy and puerperium period. **Methods:** It is a retrospective descriptive study done between January 1st 2016 and the 31st of December 2018. We have collected information on all deaths due to mortality issues in Five (5) maternity clinics around Dakar. The record shows that teach centre have an average of 4000 deliveries per year. The data collected from the hospital records were inputted using Sphinx software (version 5). These data were analysed using Epi Info software (version 3.5). After analysing these data, recommendations were made to minimize the different causes of maternal deaths. **Results:** We recorded 154 maternal deaths out of 32,420 live births. The direct causes of maternal deaths were a result of preeclampsia and its complications (31.2%), postpartum haemorrhage (24.7%), abruption placentae (20.8%) and obstructed labour (7.8%). The indirect causes were mainly sickle cell disease (1.3%), heart disease (1.3%) and gynaecological cancers (1.3%). Maternal deaths were also associated with fetal loss in 47.4% of 153 maternal deaths, need for blood transfusion 59% while none of the reference structures in the suburbs of Dakar has a blood bank; with a need for admission in intensive care unit was noted as 40%. **Conclusion:** Thus, preeclampsia and its complications are the leading cause of maternal deaths in suburban settings. Timely availability of resuscitation units and liable blood products could drastically reduce maternal deaths from direct obstetric complications.

Keywords

Maternal Mortality, Preeclampsia, Haemorrhage, Emergency Obstetric and

1. Introduction

Maternal and perinatal mortality in low-density areas can be a challenge for some African cities. Dakar is no exception even though there is a drop in the maternal mortality rate in Senegal (236 deaths from maternal births per 100,000 live births) [1]. To be accurate, we did some analysis to know the causes of maternal deaths in the suburbs. A descriptive approach helped us make some recommendations that can aid existing strategies to improve on maternal and perinatal health.

2. Materials and Methods

Suburban of Senegal-Dakar is divided into three (3) sectors which encompass 63.4% of the regional population of Dakar with 2,434,045 inhabitants. These sectors contain three (3) obstetric referral structures (Pikine National Hospital, Youssou Mbargane Diop hospital and King Baudouin Hospital). We conducted a multi-centre of descriptive and cross-sectional study of all cases of maternal death recorded over the past three years (that is from 2016, 2017 and 2018). Each maternal death had been examined to know the root cause. We also studied the socio-demographic characteristics of the patients, the delivery dates and the causes of each death, from the available data in the hospital records. Data were also inputted and analyzed using Sphinx (version 5) and Epi Info software (version 3.5). This work has received the approval of the ethics committee of our institution.

3. Results

3.1. General Characteristics and Causes of Maternal Deaths

The maternal mortality rates were 475 deaths per 100,000 births (154 maternal deaths out of 32,420 live births). Accounting to the study, the minimum age of decreased due to maternal death was 18 years, with an average of 31 years and a maximum of 45 years.

The average parity was 2.9 with a predominance of multiparas (38%). Prenatal follow-up were of poor quality which resulted in 71.5% of the cases and 77% of patient were discharged in these place (Table 1). The record shown that the main mode of delivery was caesarean section (107 cases or 70%). Majority of the deaths occurred in the postpartum period and the average time between childbirth and death was 40 hours.

The median was 12 hours and 77% of these patients died within 24 hours. The direct causes of maternal death (Table 2) were as a result of preeclampsia (31.2%), postpartum haemorrhage (24.7%), abruption placentae (20.8%) and dystocia (7.8%). The indirect causes were sickle cell disease (1.3%), heart disease (1.3%)

Table 1. Distribution of deceased women according to general characteristics (n = 154).

	Number	Percent
Mode of admission		
Evacuated	119	77%
Coming by herself	35	28.3%
Age groups		
Age < 20 years	5	3.2%
Age between 20 - 34 years	104	67.5%
Age > 34 years	45	29.3%
Departmental addresses		
Département of Pikine	100	65%
Département of Rufisque	26	17%
Département of Guédiawaye	14	9%
Other départements	14	9%
Period of death		
During pregnancy	6	3.9%
During childbirth	10	6.4%
In the immediate postpartum	98	63.7%
In the late postpartum (after 48 hours)	40	26%
Becoming a child		
Alive	81	52.6
Stillborn fresh	64	41.6
Macerated stillborn	3	1.9
Discontinuation in the first trimester	6	3.9

Table 2. Distribution of maternal deaths by cause (n = 154).

Causes of maternal death	Number	Percentage
Direct causes		
Preeclampsia/eclampsia	48	31.2%
Immediate postpartum haemorrhage	38	24.7%
Abruptio placentae	32	20.8%
Dystocia/uterine rupture	12	7.8%
Complications of abortion	4	2.6%
Pulmonary embolism	3	1.9%
Puerperium infections	3	1.9%
Ectopic pregnancy	1	0.6%
Pregnancy vomiting	1	0.6%
Anesthetic complications	1	0.6%
Placenta previa	2	1.3%

Continued**Indirect causes**

Ovarian tumor	2	1.3%
Pregnancy vomiting	1	0.6%
Heart disease and pregnancy	2	1.3%
Homozygous sickle cell disease	2	1.3%
Hyperthyroidism	1	0.6%
Adrenal insufficiency	1	0.6%
Liver cancer	1	0.6%
Total	154	100%

and gynaecological cancers (1.3%). Maternal deaths were also associated with fetal loss in 47.4% of the cases.

3.2. Conclusion of Maternal Death Audits

From the facts listed above, we concluded that only 30% of deaths can be categorized as inevitable as they resulted from unforeseeable complications or due to chronic diseases. Other deaths could have been avoided if these patients were diagnosed at an early stage and therapeutic procedures carried out as soon as possible. We found that the major part of these complications (77%) had occurred in peripheral structures managed only by midwives with few therapeutic means at their disposal, whereas an emergency caesarean need were effective in 61.6% of these cases. Due to these situations, 40% of them were hospitalized in an intensive care unit (**Table 3**) and a need for blood transfusion was necessary in 59% of the cases.

Table 3. Distribution of maternal deaths according to the unmet need for blood transfusion and hospitalization (n = 154).

Causes of maternal death	Number	Percentage
Need for transfusion		
Immediate postpartum haemorrhage	38	24.7%
Abruptio placentae	32	20.8%
Dystocia/uterine rupture	12	7.8%
Ectopic pregnancy	1	0.6%
Placenta previa	2	1.3%
Complications of abortion	4	2.6%
Need for hospitalization in intensive care		
Preeclampsia/eclampsia	48	31.2%
Pulmonary embolism	3	1.9%
Anesthetic complications	1	0.6%
Heart disease and pregnancy	2	1.3%
Homozygous sickle cell disease	2	1.3%

Continued

Hyperthyroidism	1	0.6%
Adrenal insufficiency	1	0.6%
Pregnancy vomiting	1	0.6%
Puerperal infections	3	1.9%
Other		
Ovarian tumor	2	1.3%
Liver cancer	1	0.6%
Total	154	100%

Thus, maternal deaths were particularly as a result of lack of labile blood products, fewer resuscitation units, and lack of experienced midwives faced with uncontrollable situations.

4. Discussion

4.1. Causes of Death

The causes of maternal deaths were mainly haemorrhages (44%) and preeclampsia (36%) and these results were identical to those found by one of our experienced medical practitioners [2], and others from the sub-regions [3] [4] [5] [6].

However, considering the abruption placentae (13.7%) as a complication of preeclampsia, we came to conclude that the latter is the leading cause of maternal deaths from our study. Rafanomezantsoa [7] in Madagascar and Foumane in Cameroon [3] reported the same findings.

Another issue concerning obstructed labour and uterine rupture was cited in this section. Uterine rupture and obstructed labour are two very distinct direct obstetric complications, whereas in many cases of uterine rupture are secondary to obstructed labour. Taking this into account, then obstructed labour should come third among the causes of maternal deaths.

Deaths linked to an ectopic pregnancy are on the decline; this observation can be explained by the popularization of ultrasound. The diagnosis and treatment of patients as a result of complication of abortions also contribute as part of the causes of maternal death. We can say that they have regressed increase in contraceptive prevalence, but also with the new methods of abortion, are less dangerous, using misoprostol.

4.2. Avoidability of Maternal Deaths

Maternal death can occur at any time during pregnancy or after childbirth. Childbirth is by far the most dangerous period; however, this maternal death is often unpredictable and need easy access to emergency obstetric care in the event of pregnancy complications.

Under this subject, many shortcomings are noted in under developed countries. Qualified medical personnel are in short supply in our societies, not to

mention the lack of continuous training to improve on skills. Furthermore, maternity hospitals that do not have a blood bank might find it difficult to treat severe anaemia within a short period of time.

We should also take into consideration the inadequate maternal resuscitation units in suburbs. Facts have shown that the need for hospitalization of these patients in an intensive care unit was 93% and transfusion of labile blood products were 52% of the cases.

The availability of labile blood products can be a result of several reasons like the construction of blood transfusion centres in each referral structure, to facilitate and enhance blood donation.

4.3. Implications for Practice and Research

The causes of death in the nursery schools, in the suburbs of Dakar are mainly represented by preeclampsia and haemorrhages.

Construction of a blood bank and resuscitation units in referral structures could considerably reduce maternal deaths.

5. Conclusion

To minimize this situation, there is definitely a need to establish resuscitation units in these areas and a labile blood product near the reference structures.

Conflicts of Interest

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

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