

# Maternal Death in the Metropolitan Region of Belém, Pará – Brazil, between 2013 and 2017

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**Abstract—Objective:** The present study aims to identify maternal deaths in the Metropolitan Region of Belém do Pará, Brazil, between the years 2013 to 2017 and to analyze the clinical-epidemiological profile of these women with maternal death. **Method:** This is a retrospective epidemiological, descriptive study with a quantitative approach, conducted in February 2020, with information from secondary data from the Mortality Information System (SIM). **Results:** Between 2013 and 2017, 142 maternal deaths were found in the metropolitan region of Belém, with the highest number of cases occurring in 2013, with a total of 38 maternal deaths. As for the clinical-epidemiological profile, there was a predominance of the age group between 20 to 29 years old, brown race and single marital status. Most deaths occurred during the puerperium, in a hospital setting and cause of death from pregnancy, childbirth or the puerperium. **Conclusion:** In view of this, actions are needed to promote the improvement of living conditions and assistance to women of reproductive age, both in preventing unwanted pregnancies and in preventing complications during the period of pregnancy and the puerperium.

**Keywords**—Maternal deaths, women's health, pregnancy.

## I. INTRODUCTION

Maternal mortality (MM) is defined by the World Health Organization as the death of a woman during pregnancy or within 42 days after the end of pregnancy, regardless of duration or location, due to any probable cause with or aggravated by pregnancy or by measures in relation to it, but not by accidental or incidental causes (WHO, 2012).

Currently, the global maternal mortality rate is about 210 deaths per 100,000 live births. According to the Epidemiological Surveillance Guide for Maternal Death, the reduction in the maternal mortality rate in the world and, especially in Brazil, still represents a major challenge for health and society. Despite advances in decreasing rates, high mortality rates from preventable causes have been observed that affect Brazilian regions in different ways (WHO, 2015; Ministry of Health Brazil, 2009).

In Brazil, there was a reduction of approximately 56% in the maternal mortality ratio, between 1990 and 2015. In 2016, 1.463 cases were recorded, which represented a 16% decrease in relation to the previous year, but it still remains high when compared to developed countries (Ministry of Health Brazil, 2018).

The causes of maternal mortality can be direct, such as: obstetric complications in the pregnancy-puerperal period resulting from injuries, omissions, incorrect treatment or sequence of events in any of these situations and indirect, resulting from pre-existing diseases or during treatment during pregnancy and that were aggravated by their physiological effects (PAHO, 2018).

Maternal death is a strong indicator of a country's socioeconomic conditions and the quality of life of the population, expressing a devaluation and disrespect for life, or that can be translated as a provision of low quality humanitarian assistance. In addition, it indicates a country's "political determination" to carry out "collective and socialized actions" in this segment, constituting an indicator of social inequities (Souza, 2015).

Given this reality, the new Sustainable Development Objetivos which followed the Millennium Development Goals, emerged with the goal of eliminating maternal mortality from preventable causes, between the years 2016 and 2030. In Brazil, the target is reduced to approximately 20 deaths for every 100,000 live births (United Nations, 2015).

Based on the above, the present study aims to identify maternal deaths in the Metropolitan Region of Belém

Pará, Brazil, between the years 2013 to 2017 and to analyze the clinical and epidemiological profile of these women with maternal death.

## II. METHOD

This is an epidemiological, descriptive retrospective study, with a quantitative approach, carried out in February 2020 with secondary data information from the Mortality Information System (SIM), referring to maternal mortality in the metropolitan region of Belém in the State of Pará, between the years 2013 to 2017. The data collected are available for public consultation at DATASUS - Information Technology at the Service of SUS, at the electronic address <http://tabnet.datasus.gov.br/cgi/defthtm.exe?sim/cnv/obt10uf.def>.

SIM is a system of regular data search on mortality in Brazil. From it, it is possible to capture data on mortality, in a comprehensive and reliable way, to subsidize different scales of public health management. Based on this information, it is possible to carry out situation analysis, planning and evaluation of actions and programs in the area.

For this study, data were collected on 142 cases of maternal deaths in the metropolitan region of Belém do Pará, on the SIM website. The metropolitan region covers the municipalities of Ananindeua, Belém, Benevides, Castanhal, Marituba and Santa Izabel, between 2000 and 2017. The following sociodemographic variables (total number of cases; age group; race and marital status) and Epidemiological variables (death during pregnancy or puerperium; place of death; investigated death and cause of death (CID-10).

From the collected data, a descriptive analysis of the studied population was performed, the data are arranged in tables, using statistics related to the median and standard deviation of the selected variables. The use of open data is available to the public and is available for consultation on the DATASUS - SUS Service Information Technology website, without the need for an estimate by the Research Ethics Committee.

## III. RESULTS

Between 2013 and 2017, 142 maternal deaths were found in the metropolitan region of Belém, with the highest number of cases occurring in 2013, with a total of 38

maternal deaths. As for the location with the highest number of cases, the municipality of Belém stands out with 92 deaths, which corresponds to 65% of the total deaths.

Table 1 shows the total number of maternal deaths in the metropolitan region of Belém between the years 2013 to 2017.

*Table 1: Distribution of the number of maternal deaths in the metropolitan region of Belém, Pará, Brazil, between the years 2013 to 2017.*

COUNTIES	n= 142					TOTAL	%
	2013	2014	2015	2016	2017		
Ananindeua	5	5	7	3	5	25	18%
Belém	27	17	16	13	19	92	65%
Benevides	1	1	1	1	1	5	4%
Castanhal	3	3	2	0	0	8	6%
Marituba	1	1	1	1	3	7	5%
Santa Izabel	1	2	0	1	1	5	4%
Total	38	29	27	19	29	142	100%

Source: MS / SVS / Mortality Information System – SIM, 2020.

As for the clinical-epidemiological profile of women with maternal death in the metropolitan area, there was a predominance of the age group between 20 and 29 years old, with 63 cases (44%), 107 were of brown race (75%) and were single (39%). Regarding death during pregnancy or the puerperium, 101 cases (71%) occurred

during the puerperium, 138 cases (98%) were in the hospital, 132 (93%) with an informed summary form and in 132 cases (93%) the cause of death (ICD-10) is related to CAP XV - Pregnancy, childbirth or the puerperium. Table 2 expresses the characterization of the clinical-epidemiological profile.

*Table 2: Clinical-epidemiological profile of women with maternal death in the metropolitan region of Belém, Pará, between the years 2013 to 2017.*

VARIABLES	Total n = 142	
	Nº	%
<b>Age</b>		
15-19	18	13%
20-29	63	44%
30-39	52	37%
40-49	9	6%
<b>Breed</b>		
White	25	18%
Black	10	7%
Brown	107	75%
<b>Marital status</b>		
Single	56	39%
Married	39	27%
Other	42	30%
Unknown	5	4%
<b>Death During Pregnancy and Puerperium</b>		

During the pregnancy	41	29%
During the postpartum period	101	71%
<b>Place of Death</b>		
Hospital	138	97%
Residence	3	2%
Others	1	1%
<b>Death Investigated</b>		
With informed summary sheet	132	93%
Without plug informed synthesis	1	1%
Death not investigated	9	6%
<b>Cause of Death - CID - 10</b>		
CAP I - Infectious and parasitic diseases	10	7%
CAP XV - Pregnancy, childbirth or the postpartum period	132	93%

Source: MS / SVS / Mortality Information System – SIM, 2020.

#### IV. DISCUSSION

When analyzing the data of this study, it was found that between 2013 and 2017 142 maternal deaths were reported in the metropolitan region of Belém. It was found that the largest number of cases occurred in 2013 with 38 deaths, showing a decrease in following years, reaching a total of 19 deaths in 2016. However, in 2017 the number of deaths increased, reaching 29 deaths.

The municipality of Belém has the highest number of deaths, with 92 cases (65%), the result is similar to a study that evaluated the epidemiological profile and causes of maternal mortality in the State of Pará between the years 2012 to 2016, stating that among 18 municipalities in Pará, the city of Belém suffered 99 deaths. In addition, it showed that among the regions of the State of Pará, deaths are concentrated mainly in the Metropolitan Region, with a total of 254 cases (Miranda, Botelho, Tsuchiyama, Luz, & Veras, 2019).

Despite the significant drop in the number of cases, the state of Pará still faces the high number of maternal deaths. Pará went from 173 deaths in 2015 to 92 in 2016, however, it increased to 119 cases in 2017, which means one death every 3 days. In view of this, the State Secretariat of Public Health (SESPA), with the support of the Pan American Health Organization, signed the Pact for the Reduction of Maternal Mortality, with the aim of reducing maternal deaths by 30% only in first year (SESPA, 2019).

The mortality rate was predominant in the age group between 20 and 29 years, as in a study that characterized

the epidemiological profile of maternal deaths in the reference hospital for high-risk pregnancies, without qualifying the total of 47.3% of maternal deaths in the same age group (Menezes, Bezerra, & Bezerra, 2015). This fact can be explained by the fact that it is the peak of reproductive age and represents the period in which women become pregnant due to greater fertility, thus increasing the number of maternal deaths in this age group considered young (Szwarcwald, Escalante, Rabello Neto, Souza Junior, & Victora, 2014).

Other aggravating factors for cases of mortality in this age group may be the higher frequency of family rejection due to pregnancy, the presence of social and economic restrictions, low schooling and absence of previous gynecological consultations, when comparing the older age groups, or those who can increase maternal morbidity and mortality (Passos et al., 2016).

As for race, the highest maternal mortality rate occurred in women of the brown race. This finding is similar to the study carried out by Carvalho et al (2016), who, when characterizing maternal deaths in a northeastern Brazilian municipality, found that 46% of maternal deaths occurred in women of brown race.

Brown women, as well as black women, are more vulnerable to maternal death, due to factors related to biological predisposition to diseases such as hypertension / pre-eclampsia. In addition to the genetic factor, they are the most prevalent breeds in Brazil, mainly in the state of Pará, which has great indigenous and African influence, being

several times related to social inequalities that influence the difficulties that affect women with access to quality health (Botelho, Silva, Tavares, & Lima, 2013; Santos et al., 2017).

When analyzing marital status, it was found that 39% of maternal deaths occurred in single women. The study by Martins & Silva (2018) in Juiz de Fora - MG, also showed a prevalence of deaths in single women with 57.66%. Note that the presence of a partner can bring safety, speed and access to the most effective and efficient health services, avoiding serious complications that can cause death. Thus, the presence of the partner in the pregnancy-puerperal period can be considered a protective factor in reducing maternal morbidity and mortality (Vega, Soares, & Lourenço, 2017).

As in a study conducted in Bahia (43.1%), deaths in the puerperium prevailed, with a total of 101 cases, totaling 71% (Coelho, Andrade, Sena, Costa, & Bittencourt, 2016). The puerperal period is a phase that requires attention from professionals, with primary care being held two postpartum consultations, in which these professionals must check and guide women as to the appearance of signs and symptoms that may indicate complications, such as fever, pain or infection in episiotomy or cesarean section, intense vaginal bleeding, among others (Brasil, 2012).

The place of death, as in the study by Carvalho et al (2016) (78%), was in the hospital environment with 97% of cases of maternal deaths. This study corroborates that the hospital stay of most women occurred less than 24 hours, which indicates a delay in seeking care. Factors such as the precarious functioning of services, together with the presence of incapacity for a correct diagnosis, upon admission, can lead to the evolution of the case to death (Miranda, Botelho, Tsuchiyama, Luz, & Veras, 2019).

Among the main causes of maternal deaths is the Specific Hypertensive Syndrome of Pregnancy (SHEG), which is highly prominent throughout Brazil. A study by Camacho (2017) found greater emphasis on hypertension, a result that contributed to a percentage of 56.60% of maternal deaths from direct obstetric causes (in 2013, 57.78% in 2014 and 60% in 2015). Data from the Ministry of Health also show hemorrhages, infections, complications of hypertensive syndromes and abortion, in addition to thromboembolic problems and anesthetic accidents, comorbidities in maternal deaths (Brazil, 2009).

## V. CONCLUSION

In this study it was possible to identify that maternal deaths in the metropolitan region of Belém showed a decrease in cases, however it still has high rates. Most of

the pregnant women who died were between 20 and 29 years old, brown race and single. Most deaths occurred in the hospital during the puerperium, and the cause was related to pregnancy.

The decrease in maternal deaths is directly related to the improvement in living conditions and assistance to women of reproductive age, both in terms of preventing unwanted pregnancies and preventing complications during the period of pregnancy and the puerperium. For this, procedures are needed to reduce cases of maternal deaths based on preventive measures, comprehensive family planning, which causes the occurrence of unwanted pregnancies, adequate prenatal care, qualified staff to assist in obstetric emergencies and with frequent use puerperal.

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