



DIAGNOSIS OF THE SITUATION OF MATERNAL DEATH

Diagnóstico da situação de morte materna

Diagnóstico de la situación de muerte materna

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ABSTRACT

Objective: To analyze the situation of the diagnosis of maternal death in Paraíba, Brazil, according to sociodemographic variables and causes of maternal death. **Methods:** This is a retrospective study conducted through the Mortality Information System (SIM) of the Paraíba State Department of Health (SES / PB). We used the TabNet tool to collect data, and the sample comprised the deaths of women of childbearing age, residing in the state, from 2006 to 2016. In the statistical analysis, Software R and statistical tests were used. **Results:** It was found that the maternal death rate had an index of 49.15 / 100,000 lb (live births), reaching 88.77 / 100,000 lb. Of the 355 maternal deaths of residents, 341 occurred in Paraíba, concentrating in Campina Grande (132; 38.7%) and João Pessoa (123; 36%). Besides, 329 (93%) deaths occurred in the hospital environment. The predominant deaths were due to direct obstetric causes, with 277 cases (81.9%) associated with the color of women. Regarding the causes of death in Chapter XV of ICD-10, 87 (24%) occurred due to hypertensive disorders during pregnancy. **Conclusion:** The study identified a high rate of maternal mortality from direct obstetric causes in Paraíba, concentrating the highest percentages in the black/brown population and the causes related to hypertensive disorders.

Descriptors: Maternal Death; Obstetric Nursing; Epidemiology.

RESUMO

Objetivo: Analisar a situação do diagnóstico de morte materna na Paraíba, Brasil, segundo variáveis sociodemográficas e causas de óbito materno. **Métodos:** Trata-se de um estudo retrospectivo realizado por meio do Sistema de Informações de Mortalidade (SIM) da Secretaria de Estado da Saúde da Paraíba (SES/PB). Os dados foram coletados pela ferramenta TabNet e a amostra compreendeu os óbitos de mulheres em idade fértil, residentes no estado, no período de 2006 a 2016. Na análise estatística foi utilizado o Software R e testes estatísticos. **Resultados:** Constatou-se que a razão de morte materna apresentou índice de 49,15/100.000 nv (nascidos vivos) alcançando 88,77/100.000 nv. Dos 355 óbitos maternos de residentes, 341 ocorreram na Paraíba, concentrando-se em Campina Grande (132; 38,7%) e João Pessoa (123; 36%). Além disso, 329 (93%) óbitos ocorreram no ambiente hospitalar. As mortes predominantes foram por causas obstétricas diretas, com 277 casos (81,9%) associados à cor das mulheres. Em relação às causas de morte do capítulo XV do ICD-10, 87 (24%) ocorreram por transtornos hipertensivos na gravidez. **Conclusão:** O estudo identificou um alto índice de mortalidade materna por causas obstétricas diretas na Paraíba, concentrando os maiores percentuais na população de cor preta/parda e nas causas relacionadas aos transtornos hipertensivos.

Descritores: Morte Materna; Enfermagem Obstétrica; Epidemiologia.



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RESUMEN

Objetivo: Analizar la situación del diagnóstico de muerte materna en Paraíba, Brasil, según las variables sociodemográficas y las causas de óbito materno. **Métodos:** Se trata de un estudio retrospectivo realizado a través del Sistema de Informaciones de Mortalidad (SIM) de la Secretaría de Estado de Salud de Paraíba (SES/PB). Se recogieron los datos con la herramienta TabNet y la muestra incluyó los óbitos de mujeres fértiles, que vivían en el estado, en el período entre 2006 y 2016. Para el análisis estadístico se utilizó el Software R y pruebas estadísticas. **Resultados:** Se constató que la razón de la muerte materna presentó el índice de 49,15/100.000 nv (nacidos vivos) alcanzando 88,77/100.000 nv. De los 355 óbitos maternos de residentes, 341 se dieron en Paraíba, concentrándose en Campina Grande (132; 38,7%) y João Pessoa (123; 36%). Además de eso, 329 (93%) óbitos se dieron en el ambiente hospitalario. Las muertes predominantes fueron de causas obstétricas directas con 277 casos (81,9%) asociados al color de las mujeres. Respecto las causas de muerte del capítulo XV del ICD-10, 87 (24%) se dieron por trastornos hipertensivos en el embarazo. **Conclusión:** El estudio ha identificado un alto índice de mortalidad de causas obstétricas directas en Paraíba con los mayores porcentajes en la población de color negro/pardo y las causas relacionadas con los trastornos hipertensivos.

Descriptores: Muerte Materna; Enfermería Obstétrica; Epidemiología.

INTRODUCTION

The World Health Organization (WHO) considers maternal death and the death of a woman during the period of pregnancy, childbirth or the puerperium, up to 42 days after the end of pregnancy, having as causes the related complications or consequences of this period, excluding the accidental or incidental type. In Brazil, women of childbearing age are those between the ages range of 10 to 49 years⁽¹⁾.

Maternal mortality is a public health problem that highlights the quality of health care, development and the social reality of a population, occurring mainly in developing countries. It is considered an attack on human rights, given that more than 92% of cases are preventable⁽²⁾.

In 2016, WHO implemented the Global Strategy for the Health of Women, Children, and Adolescents, which proposes goals to achieve in 15 years (2016-2030), the Sustainable Development Goals (SDGs). Based on the SDGs, one of the proposed goals is to reduce the global Maternal Mortality Ratio (RMM) to rates lower than 70 maternal deaths per 100,000 live births (lb), aiming to end preventable maternal deaths, considering underdeveloped countries, in which RMM exceeds 500 maternal deaths⁽³⁾.

In the global situation, 10.7 million women died from maternal causes in the period from 1990 to 2015, with a reduction of 43.9% of RMM in that period. Extreme values are indicated in the RMM indices, ranging from 12 / 100,000 lb in developed countries to 546 / 100,000 lb in underdeveloped countries, such as sub-Saharan Africa. WHO estimates that 830 women die of maternal causes every day in the world and considers an RMM of 20 maternal deaths per 100,000 lb to be acceptable⁽⁴⁾.

It is well known that, in developed countries, maternal deaths represent a smaller share in the context of public health, which points to the functionality of quality of life and social development policies^(5,6).

Thus, the quantity of maternal mortality indicates the sociodemographic characteristics of a given region and, therefore, reflects the social divergences of a country, the conditions and the reality of the population's health, which makes this indicator a relevant scientific instrument, liable of modifications⁽⁶⁾.

Brazil sustains 1,655 maternal deaths declared in 2015 and an RMM of 58.4 maternal deaths per 100,000 lb in 2014⁽⁷⁾. Despite efforts, the country did not reach the goal proposed by the Millennium Development Goals, to reduce maternal mortality by 75%, with a reason for 35 deaths per 100,000 lb by 2015⁽⁸⁾.

However, there was a 43% reduction in RMM from 1990 to 2013, which corresponds to a drop from 120/100,000 lb to 69/100,000 lb⁽⁸⁾. In the state of Paraíba, the RMM was 64.26/100,000 lb for 2015 and, in 2016, reached the value of 85.76/100,000 lb⁽⁹⁾.

Another relevant point in the discussion of maternal deaths refers to underreporting, which refers to the omission of information in the death declaration, and to under information, which refers to the error in filling out the death certificate due to lack of knowledge, omitting the cause of death, which makes it difficult to calculate the indicators and limits the quality of health information⁽²⁾.

The notification, investigation, knowledge, and dissemination of deaths must occur, configuring an analysis of maternal death based on the investigation by the maternal mortality prevention committees, allowing the creation and

solidification of strategies to qualify this indicator, improving access and resoluteness of assistance in the pregnancy-puerperal cycle. Consequently, the reduction and coping with this problem.

In this circumstance, the portrait of maternal mortality in Paraíba emerges as a need for knowing the reality regarding the different contexts that intertwine and hinder health care for this public, such as the lack of priority in the application of public resources for health; the dissonance of childbirth care with good obstetric practices and obstetric emergency conditions; the difficulty in accessing quality prenatal care, with timely examinations and referrals.

Thus, it is relevant to obtain information that demonstrates the diagnosis of the situation of maternal death, intending to contribute to the strategies plan aimed at improving health care for women, reducing deaths and social inequities, as well as maintaining the right to life. The objective of the study is, therefore, to analyze the situation of maternal death in Paraíba considering the sociodemographic variables and the causes of maternal deaths.

METHODS

This is a cross-sectional research, with observational and retrospective design, and a quantitative approach, carried out through the Mortality Information System (*Sistema de Informações de Mortalidade - SIM*) of the Paraíba State Department of Health (*Secretaria de Estado da Saúde da Paraíba - SES/PB*). Established by the Department of Informatics of Brazil's Unified Health System (*Departamento de Informática do Sistema Único de Saúde - DATASUS*), SIM aims to periodically obtain mortality data covering the whole Brazil, subsidizing managers and researchers to study statistics and plan actions and policies aimed at improving health⁽⁷⁾.

Secondary data, collected through the TabNet of the SIM, available on the SES-PB website, referring to the maternal deaths of residents of the state of Paraíba between the years 2006 and 2016 were used. Late maternal deaths, characterized by occurring in the period above 42 days and below one year after the end of pregnancy, were excluded.

The TabNet tool was used for data processing, and sociodemographic variables and cause of death were analyzed: that is, age, marital status, color, the basic cause of death (direct obstetric, indirect obstetric, abortion), cause of death according to Chapter XV of the International Statistical Classification of Diseases and Health-Related Problems (ICD-10), place of death, municipality of residence, municipality of occurrence, health establishment⁽⁹⁾.

TabNet-SIM is a tabulation tool developed by DATASUS, under the control of the Ministry of Health, which contains data from SUS information systems, which is freely accessible. The SES/PB maintains and updates them periodically, making it possible to view, select and map mortality data quickly and objectively⁽⁹⁾.

In the calculation of the Maternal mortality ratio, the correction factor of 1.76 was used for the Northeast region from 2006 to 2007⁽¹⁰⁾ and 1.17 for the period from 2008 to 2012⁽¹⁰⁾. Besides, in the years 2013 to 2016, the values recommended by SES/PB were used.

To perform the statistical analyzes the software R (R Development Core Team)⁽¹¹⁾ was used, as well as the chi-square tests of independence, Spearman and Kruskal Wallis.

There was a confrontation of the variables, being: deaths due to obstetric causes and age group; deaths from obstetric causes and color; deaths from obstetric causes and place of occurrence; cause of death according to ICD-10 and age group; and cause of death according to ICD-10 and color.

RESULTS

Analyzing the historical series of maternal death in Paraíba in the last ten years, we found indices of the maternal death ratio of 49/100,000 lb in 2006, reaching 85.76/100,000 lb, in 2016.

In the Mortality Information System of the Ministry of Health, in the period from 2006 to 2016, there were a total of 355 maternal deaths of residents in the state of Paraíba, with an increase from 17 (5%) to 53 (15%) maternal deaths, according to chapter XV of the International Classification of Diseases and Problems related to Health - ICD-10, which concerns deaths related to pregnancy, childbirth, and the puerperium.

In order to calculate RMM, cases considered as late maternal death (O96 of ICD-10) and sequelae of maternal cause (O97 of ICD-10) were excluded, making a total of 338 maternal deaths registered in the SIM (Figure 1).

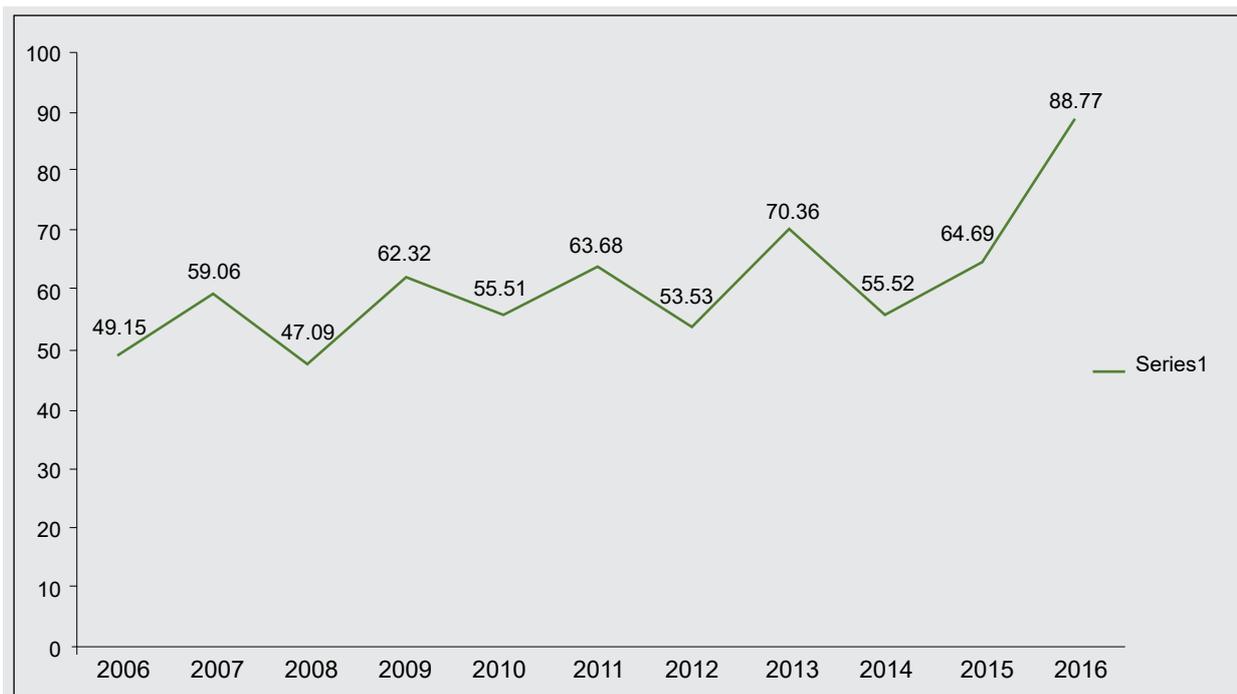


Figure 1 - Growth curve of the Maternal Mortality Ratio. Paraíba, Brazil, 2006 to 2016.

Source: Sinan / Epidemiological Surveillance - Paraíba Health Department

Of the 355 maternal deaths of residents registered in the SIM, 341 occurred in Paraíba, however, 12 women residing in Paraíba died in Pernambuco, one in Rio Grande do Norte and another in São Paulo during these 10 years. When analyzing deaths according to the municipality of occurrence, it appears that the highest incidence occurred in Campina Grande (132; 38.7%) and João Pessoa (123; 36%).

Regarding the municipality of residence, it is observed that, during this period, seven women living in the municipality of Bayeux died and only one of them died in the city, that is, the other six died in other municipalities.

Of the 355 maternal deaths identified, 284 (80%) were in the 20 to 39 age group, 132 (37%) were single, and 267 (75%) were brown. About the place of death, 329 (93%) occurred in the hospital environment, most of which in public hospitals in the cities of João Pessoa and Campina Grande.

Maternal deaths were analyzed according to obstetric causes (direct, indirect and abortion) and causes of Chapter XV of ICD-10: pregnancy, childbirth, and the puerperium. In the SIM, there were a total of 338 deaths from obstetric causes (direct obstetric cause and indirect obstetric cause), with a higher frequency of deaths from direct obstetric causes (277; 81.9%) and less frequently from abortion (Table I). Concerning the causes of Chapter XV of the ICD-10: pregnancy, childbirth, and the puerperium; there were a total of 355 maternal deaths of residents in Paraíba between 2006 and 2016.

Table I - Distribution of maternal deaths of residents of Paraíba according to obstetric causes. Paraíba, Brazil, 2006 to 2016.

Cause of death	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	p-value*
Direct	15	19	24	27	25	26	26	32	27	29	27	277	<0.001
Indirect	2	1	1	5	3	6	0	8	5	9	21	61	
Abortion	0	0	1	4	1	1	4	2	3	1	1	18	
Total	17	20	26	36	29	33	30	42	35	39	49	356	

Source: Sinan / Epidemiological Vigilance - Paraíba Health Department; * Kruskal-Wallis test

The difference between the distributions of frequency of death over the years is evident when the types of death are compared. When confronted with deaths from obstetric causes, direct and indirect obstetric causes, and death from abortion and indirect obstetric ($p = 0.2488$ and $p = 0.2773$, respectively), there was no significant correlation.

When analyzing deaths from obstetric causes concerning the age group, the highest percentages of death was for the group of direct obstetric causes, with a total value of 74.16%, being the age group “older than 30 years” the most representative.

Deaths due to abortion had the lowest percentages, with a total value of 5.29%, with “less than 19 years” being the least representative age group (Table II).

Therefore, there is no statistical association between the age group and deaths from obstetric causes, that is, they are independent categories.

When comparing the same deaths with the “color” variable, the highest percentages of death were for the black/brown group, with a total of 79.41%, with an association between this variable and deaths from causes obstetric (Table III).

Table II - Distribution of maternal deaths classified according to obstetric causes and age group. Paraíba, Brazil, 2006 to 2016.

Age Range	Direct obstetrics		Abortions		Indirect obstetrics		Total		p-value*
	n	%	n	%	n	%	n	%	
Under 19	41	12.05	1	0.29	10	2.94	52	15.3	0.6129
20 to 29 years	99	29.11	10	2.94	24	7.05	133	39.12	
Older than 30 years	119	35.0	7	2.05	29	8.52	155	45.58	
Total	259	74.16	18	5.29	63	18.52	340	100.00	

Source: Sinan / Epidemiological Vigilance - Paraíba Health Department; * Chi-square test of independence

Table III - Distribution of maternal deaths classified according to obstetric causes and color. Paraíba, Brazil, 2006 to 2016.

Color	Direct obstetrics		Abortions		Indirect obstetrics		Total		p-value*
	n	%	n	%	n	%	n	%	
White / yellow	49	14.41	4	1.17	5	1.47	58	17.06	0.0758
Black / brown	201	59.11	12	3.52	57	16.76	270	79.41	
Uninformed	9	2.64	2	0.59	1	0.29	12	3.53	
Total	259	76.16	18	5.29	63	18.52	340	100.00	

Source: Sinan / Epidemiological Vigilance - Paraíba Health Department; * Chi-square test of independence

Regarding the distribution of maternal deaths due to obstetric causes according to the place of occurrence, being subdivided into a hospital environment and an extra-hospital environment, approximately 96% of registered deaths occurred in hospitals and, of the 346 women, 270 died of direct obstetric death or abortion, corresponding to 78.03% of the total. Thus, the hypothesis of independence between the obstetric cause of death and the place of occurrence is not rejected. Therefore, there is no relationship between these variables at any level of significance adopted.

As for the health facilities where the deaths occurred, it was found that the largest number is in public hospitals, but this does not exempt attention to the considerable percentage of deaths in private hospitals. In the municipalities of occurrence, João Pessoa and Campina Grande, 69.2% of deaths occurred in public hospitals and 30.3% in private hospitals.

Regarding the distribution of causes of maternal death according to Chapter XV of the ICD-10: pregnancy, childbirth, and the puerperium, 87 (24%) deaths of residents of Paraíba were related to hypertensive disorders during pregnancy, childbirth, and the puerperium, specifically O13 (gestational hypertension without significant proteinuria), O14 (gestational hypertension with significant proteinuria), O15 (eclampsia) and O16 (maternal hypertension NE). There were also 57 (16%) deaths related to O85-O86 (puerperal infection - other puerperal infections) and O88 (embolism of obstetric origin); and 44 (12.4%) deaths corresponding to O99 (other diseases of the mother, classified elsewhere, but which complicate pregnancy, childbirth, and the puerperium).

In the same period, when analyzing the causes of death in the municipalities of occurrence, João Pessoa and Campina Grande, it was found that the highest concentration of maternal deaths was related to hypertensive syndromes, with 18%, associated with edema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium (O13-O16).

Regarding the distribution of maternal deaths according to cause (ICD-10 3D) and age group, we have that the highest proportions of death are for the ages of 30 to 49 years, ranging from 6.22% to 18.67% for causes O85, O86 and O13, O14, O15, O16, respectively. The lowest percentages of death are observed between the ages of 10 to 19 years, ranging from 1.91% for causes O88 and O72 (Postpartum hemorrhage) to 7.17% for causes O13, O14, O15, O16 (Table IV). Thus, there is evidence that there is no association between the causes (ICD-10 3D) and the age group.

The highest frequency of death was registered in the category of black/brown women, corresponding to 82.18% of the total of 202 self-declared colored. Regarding the causes of death, the highest percentage, 41.59%, referred to deaths from gestational hypertension without significant proteinuria, gestational hypertension with significant proteinuria, eclampsia or maternal hypertension NE. Additionally, there was no significant difference between color and causes of death according to ICD-10 3D (Table V).

Table IV - Distribution of maternal deaths classified by cause (3D ICD-10) and age group. Paraíba, Brazil, 2006 to 2016.

Cause (ICD-10 3D)	Age group						Total		p-value**
	10-19		20-29		30-49		n	%	
	n	%	n	%	n	%	n	%	
O13, O14, O15, O16	15	7.17	33	15.8	39	18.67	87	41.64	0.7346
O99	9	4.30	16	7.65	19	9.09	44	21.05	
O85, O86	6	2.87	16	7.65	13	6.22	35	16.74	
O88, O72	4	1.91	16	7.65	23	11.00	43	20.57	
Total	34	16.27	81	38.75	94	44.98	209	100.00	

ICD-10 3D: International Statistical Classification of Diseases and Health-Related Problems; O13: Gestational hypertension without significant proteinuria; O14: Gestational hypertension with significant proteinuria; O15: Eclampsia; O16: Maternal Hypertension NE; O85, O86: Puerperal Infection, Other Puerperal Infections; O88, O72: Obstetric embolism, Postpartum hemorrhage

Source: Sinan / Epidemiological Vigilance - Paraíba Health Department; * Chi-square test of independence

Table V - Distribution of maternal deaths classified by cause (3D ICD-10) and color / race. Paraíba, Brazil, 2006 to 2016.

Cause (ICD-10 3D)	Color/Race				Total		p-value*
	White		Black or Brown		n	%	
	n	%	n	%	n	%	
O13, O14, O15, O16	15	7.43	69	34.16	84	41.59	0.3387
O99	4	1.98	39	19.31	43	21.29	
O85, O86	8	3.96	26	12.87	34	16.83	
O88, O72	9	4.45	32	15.84	41	20.29	
Total	36	17.82	166	82.18	202	100.00	

ICD-10 3D: International Statistical Classification of Diseases and Health-Related Problems; O13: Gestational hypertension without significant proteinuria; O14: Gestational hypertension with significant proteinuria; O15: Eclampsia; O16: Maternal Hypertension NE; O85, O86: Puerperal Infection, Other Puerperal Infections; O88, O72: Obstetric embolism, Postpartum hemorrhage

Source: Sinan / Epidemiological Vigilance - Paraíba Health Department; * Chi-square test of independence

DISCUSSION

The study of maternal death is concomitantly related to the development of health in a given location and raises questions about death and the conditions in which it occurred, which highlights the need for assistance and quality

in health. In this opportunity, maternal mortality, perceived as a violation of human rights, is capable of showing a social reality that reflects the socioeconomic level, gender inequality, the quality of care and the existing public health promotion policy⁽¹²⁾.

In Paraíba, the historical series studied had an RMM of 61.79/100,000 lb on average, with linear growth from 2014. Characterized by the study sample, it was observed that the majority (284; 80%) of the women died at young adult age (20 to 39 years) and 54 (15%) deaths occurred in adolescence (10 to 19 years old). The highest occurrence of deaths occurred in the cities of João Pessoa and Campina Grande, since they are cities that concentrate the largest population in the state and, consequently, the highest birth rate.

Results of a study on the incidence of maternal near miss (a term that designates women who “almost died during pregnancy, childbirth and up to 42 days after delivery) revealed, as to age, that the highest incidence was in women aged 35 or more^(13,14). Regarding the number of near miss cases, it showed an index of 10.2 cases per 1000 lb and, for each maternal death, a maternal near miss mortality ratio of 30.8 cases⁽¹³⁾.

Black/brown color was the predominant variable in women who died and is associated with deaths from obstetric causes in the present study, i.e., women with non-white skin are more likely to die from direct obstetric, indirect obstetric and abortion causes than women with white skin, the highest percentage of deaths from direct obstetric causes in black/brown women.

The high maternal mortality in the black population is due to the fragility of care, based on the vulnerability and institutional discrimination experienced, which compromise the insertion of these subjects in public health services and imply the disparity between the death rate in black and white women⁽¹⁴⁾.

It is noteworthy that color may be related to a higher prevalence of hypertensive diseases in the black population, to issues of a discriminatory character before non-white women, the low quality of health care and the difficulty of accessing services, thus being associated with a higher occurrence of maternal death⁽¹⁵⁾.

Single women had a higher incidence in the current study. The literature reports that the presence of a partner during the period of the pregnancy-puerperal cycle represents emotional support for women, security, and support during the process, in addition to being the balance point in decision-making and actions, considering that women are vulnerable⁽¹⁶⁾.

It was observed that more than 90% of maternal deaths in Paraíba occurred in hospitals, predominantly in the public health system. The existence of services that lack physical structure is notorious; scarcity of material resources; deficient professional qualification; and, above all, neglect and failures in assistance policies for women's health care. Corroborating this, a study concluded that the highest incidence of a maternal near miss is found among women who had difficulties accessing hospital admission, which shows delay in care. Besides, it is not ruled out that the incidence of maternal near miss is related to the structure of services, organization of health care networks and training of health professionals to deal with complications⁽¹⁷⁾.

Thus, the hospital environment, even though it is a place with a greater technological and drug supply, is not the safest place or exempt from the risk of death for women. Most hospital practices portray a hegemonic, medicalizing and technocratic culture that approaches practicality and implies unnecessary obstetric outcomes in childbirth care today⁽¹⁸⁾.

Through assistance models that prioritize excessive medicalization, abuse of interventions, absence of good obstetric practices and scientific evidence, the views and questions about this care during childbirth and its possible consequences for healthy maternal results have been expanded⁽¹³⁾. Thus, the quality of obstetric care goes beyond the valorization of the benefits of technology, which is an essential tool in the complications, when indicated, and the abusive use of interventions, mostly unnecessary and confronting the rights of women.

Besides, 90% of Brazilian pregnant women attend prenatal consultations, which show satisfactory coverage in care, but with little resolution, as most problems could be known and/or prevented. In the present study, according to the historical series from 2006 to 2016, in Paraíba, there were 646,933 births of residents. Of these, 3.5% of pregnant women did not receive prenatal care or were not informed in the Declaration of Live Births. However, 96.5% had three to more than seven consultations in the prenatal period.

Regarding the results of the current research, the great majority of deaths were caused by direct obstetric death and, to a lesser extent, deaths by abortion. Among the causes, according to Chapter XV: pregnancy, childbirth, and the puerperium - ICD-10, the main cause was hypertensive disorders (O13-O16). Sharing this reality is the Brazilian scenario that, among the direct obstetric causes, maternal deaths associated with hypertensive disorders, more specifically classified by the ICD-10 in the group of edema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium (O12- O16), are among the main causes of maternal death⁽¹⁸⁾.

In comparison with the rest of the country, Paraíba presents significant values of death due to puerperal infection (O85-86) and embolism of obstetric origin (O88) which are the second leading cause of maternal death in the state and express neglect in health and disability in prenatal care, childbirth, and the puerperium, since they are preventable causes.

These causes have been highlighted in the Brazilian context of maternal death, second only to hypertensive causes. A study carried out at the Hospital das Clínicas of the Ribeirão Preto Medical School of the University of São Paulo also pointed out as the second main basic cause of maternal death, due to direct obstetric, puerperal infection and embolism of obstetric origin⁽¹⁹⁾.

It is understood that the birth path can influence the maternal outcome and, therefore, expose the woman to several complications, such as the risk for infection and thromboembolism and, consequently, maternal death. It is important to highlight that cesarean surgery, under ideal conditions, should be recognized for its effectiveness in situations where the lives of women and children are at risk⁽²⁰⁾.

Given the causes of death, it is essential to distinguish that direct obstetric death refers to complications in pregnancy, childbirth and the puerperium due to interventions, omissions, incorrect treatments or a series of events of any of these interventions, such as hemorrhages, puerperal infection, hypertension, thromboembolism, and anesthetic accident. Indirect obstetric death, on the other hand, comes from pre-existing or developed diseases during the period of pregnancy which do not come from direct obstetric causes, but which are aggravated by the physiological effects of pregnancy⁽²⁾.

In Brazil, direct obstetric causes are responsible for two-thirds of maternal deaths, highlighting the deficient quality of obstetric care offered in the pregnancy-puerperal cycle⁽²⁾. Other studies have also evidenced this reality^(14,19,21) and characterized striking factors for this, in addition to expressing differences regarding the social level and socioeconomic conditions, such as education and health.

Recognizing the high numbers of maternal deaths is to point out difficulties in the functionality of the health system and, therefore, it is necessary to understand the causes and factors related to deaths to provide advances in women's health care and reduce maternal death⁽²¹⁾.

Deaths due to hypertensive causes, with emphasis on eclampsia and pre-eclampsia, and puerperal infection and embolism, are linked to causes that can be avoided and demonstrate neglect in health, failures in care policies and health weaknesses, ranging from difficulty in accessing specialized obstetric services, absence of vacancies, neglect in the hospital's physical and structural situation, even inadequate care and lack of care in the puerperal pregnancy cycle, deficiencies in prenatal care and family planning⁽¹⁸⁾.

However, advances in health policies are not disregarded, such as the implementation of the National Policy for Comprehensive Care for Women's Health; the expansion of the Family Health Strategy; the implementation of the Cegonha Network; improving the ambiance and access to technologies in services; the improvement in the systems for regulating consultations, exams, and hospital beds; the expansion of professional qualification, with the creation of training, specializations and residency programs; nor the international agreements, such as the Millennium Development Goals, when Brazil reached the rate of 64 maternal deaths per 100 thousand births in the Maternal Death Ratio indicator in 2011. And, more recently, the agreement that Brazil signed regarding the Global Strategy for the Health of Women, Children, and Adolescents, having as one of its goals to reduce maternal and neonatal mortality by 2030⁽²²⁾.

Contrary to the problem, since 2011, the Ministry of Health has implemented a model of attention and care for maternal and child health, the Cegonha Network, and has been supported by maternity hospitals in Paraíba. Therefore, the Ministry of Health Ordinance No. 1,262, published in 2014 is highlighted, which establishes the allocation of financial resources from the Ministry of Health to the state of Paraíba to provide the implementation, funding, and qualification of obstetrics services in the state, enabling the Cegonha Network Action Plan⁽²³⁾.

To reinforce the chain of women's rights and guarantee quality and humanized health care, acting on the prenatal, delivery, birth, puerperium and logistical system (regulation) components, the Cegonha Network brings in its policy the possibility of restructuring and improving health care, also proposing professional qualification and the creation of Childbirth Centers^(8,18), still absent in Paraíba. However, even with the implantation and the positive implications foreseen by the Network, the present study did not show results of reduction of maternal death. However, the increase in the number of maternal deaths is partly due to the advance and improvement of the death information system and the investigation carried out by the state's maternal death committees.

Furthermore, there is a need to know the context of the impact of the death of a woman, mother, on the disruption of the conjuncture of the home, as it is, in most cases, the pillar of the family's economic, social, affective and psychological support.

A study carried out with family members of orphaned children finds future implications, among them the susceptibility to social and health impacts, such as school dropout, unemployment, malnutrition and early pregnancy, more incidents on female children due to greater burden of domestic responsibilities. When added to the precarious concentration of income, this susceptibility increases the chances of maternal death and perpetuates a cycle for children who become pregnant at puberty and are more vulnerable⁽²⁴⁾.

Thus, the initiative of research that covers the subjects involved in this problem is fundamental, since the absence of the mother's role in the formation of the individual can cause family disruption and lead to negative and irreversible situations in the orphan's life. The interpretation of maternal death is, therefore, complex and cautious, since the public data comes from existing virtual database systems, susceptible to errors or mistakes in their diet, which limits the researcher as to the reliability and veracity of the information^(22,23). Besides, the scarcity of publications in the Paraíba scenario on maternal death is also a limitation of the study.

Even with recognized advances, it is still necessary to study such problems related to maternal mortality to plan and/or strengthen strategies aimed at health education, family planning, and prenatal care, as these deaths integrate indicators of a social reality that reflects inequality gender, the low quality of assistance, the lack of health promotion policies and professional practice, corroborating obstetric violence and the increase in maternal death.

CONCLUSION

The study identified a high rate of maternal mortality from direct obstetric causes in Paraíba, concentrating the highest percentages in the black/brown population and the causes related to hypertensive disorders.

João Pessoa and Campina Grande stand out with the highest occurrence of maternal death, but these territories are considered poles because they have greater coverage of specialized obstetric services, therefore, they receive many cases of non-residents, contributing to the epidemiological distortion of the death of women outside their place of residence.

CONFLICTS OF INTEREST

The authors state that there were no conflicts of interest in carrying out this research.

CONTRIBUTIONS

Samara Campos Mendes Silva, Edilene Araújo Monteiro, Adriana Gonçalves de Barros, Clarissa Maria Cardoso Guimarães and Solange de Almeida Melo contributed to the preparation and design of the study; the acquisition, analysis and interpretation of data; and the writing of the manuscript. **Waglânia de Mendonça Faustino e Freitas** contributed to the acquisition, analysis and interpretation of data.

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