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Maternal mortality in the Paraíba state between the years from 2004 to 2014

RESUMO | Objetivo: analisar a mortalidade materna no estado da Paraíba entre os anos 2004 a 2014 e descrever as causas da mortalidade materna. Método: Estudo descritivo, documental, retrospectivo, quantitativo. Foi realizada uma pesquisa no banco de dados do Departamento de Informática do Sistema Único de Saúde, no ano de 2017, e os dados foram coletados anualmente e estudados, Resultados: Verificou-se maior número de óbitos em mulheres com idade entre 30 a 39 anos (40,3%), solteiras (43,7%), pardas (70,2%), com 4 – 7 anos de estudos (19%). Além disso, enfatizam-se como causas de mortalidade materna na Paraíba as Síndromes hipertensivas (32,9%), destacando-se a eclâmpsia (13,6%), em seguida as síndromes hemorrágicas (18%). Conclusão: Há necessidade de criar novas medidas para reduzir a taxa de mortalidade materna na Paraíba.
Descritores: Mortalidade Materna; Morte Materna; Causas de Morte.

ABSTRACT | Objective: to analyze maternal mortality in the state of Paraíba between 2004 and 2014 and describe the causes of maternal mortality. Method: Descriptive, documentary, retrospective, quantitative study. A search was carried out in the database of the Informatics Department of the Unified Health System, in 2017, and the data were collected annually and studied. Results: There was a higher number of deaths in women aged between 30 and 39 years (40.3%), single (43.7%), brown (70.2%), with 4 – 7 years of schooling (19%). In addition, hypertensive syndromes (32.9%) stand out as causes of maternal mortality in Paraíba, highlighting eclampsia (13.6%), followed by hemorrhagic syndromes (18%). Conclusion: There is a need to create new measures to reduce the maternal mortality rate in Paraíba
Keywords: Maternal Mortality; Maternal Death; Causes of Death

RESUMEN | Objetivo: analizar la mortalidad materna en el estado de Paraíba de 2004 a 2014 y describir las causas de la mortalidad materna. Método: Estudio descriptivo, documental, retrospectivo, cuantitativo. Se realizó una búsqueda en la base de datos del Departamento de Informática del Sistema Único de Salud, en 2017, y los datos fueron recolectados y estudiados anualmente.Resultados: Hubo un mayor número de defunciones en mujeres de 30 a 39 años (40,3%), soltero (43,7%), moreno (70,2%), con 4 - 7 años de escolaridad (19%). Además, los síndromes hipertensivos (32,9%) se destacan como causas de mortalidad materna en Paraíba, destacando la eclampsia (13,6%), seguida de los síndromes hemorrágicos (18%). Conclusión: Es necesario crear nuevas medidas para reducir la tasa de mortalidad materna en Paraíba.
Palabras claves: Mortalidad Materna; Muerte materna; Causas de muerte.

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INTRODUCTION

The World Health Organization (WHO) defines maternal death as that which occurs during pregnancy or within a period of 42 days after the end of it, regardless of the permanence or location of the pregnancy, due to some relevant reason with the pregnancy or due to measures similar to it, however not due to accidental or incidental causes. Given this, the Maternal Mortality Ratio assesses the possibility of a woman dying from a cause related to the pregnancy-puerperal cycle. (1)

In 2000, the United Nations designated the Millennium Development Goals whose objective was to reduce the Maternal Mortality Ratio (MMR) by three quarters by 2015. For the reduction of maternal mortality to succeed, the first step would be to distinguish the causes of death and understanding

the needs and deficiencies that lead to poor obstetric outcomes. (2,3,4)

According to the WHO, women in the pregnancy-puerperal cycle die for several reasons, such as: excessive unnecessary interventions, lack of training of the specialized team, the prohibition of abortion, among other factors. (4) In Brazil, in 2012 alone, 1,583 maternal deaths were registered with a Maternal Mortality Ratio of 54.5 per 100,000 live births. (5)

When comparing the year 2000 with that of 2009, Brazil presented an increase of 11.92% in the absolute number of maternal deaths. Ferraz and Bordignon (2012) reported that the Northeast had an increase in deaths of 18.53%, and only the South region achieved a reduction corresponding to 15.76%. Finally, between 2000 and 2004 in Paraíba, 116 maternal death certificates were collected according to the Mortality Information System (SIM - Sistema de Informação de Mortalidade), and 109 deaths were reported by the Paraíba State Health Department (SES - Secretaria Estadual de Saúde). (6,7)

It is worth noting that prenatal care is extremely important, as it serves to reduce maternal and neonatal mortality rates. (8) The need for the creation of new policies by the Brazilian state is also perceived, in order to improve and humanize care during the pregnancy-puerperal cycle. (9) These positively excite the individuality of care for women, considering not only the organic, but also the psychosocial. (10)

Given the above, the following guiding question emerged: What are the causes of maternal mortality in the State of Paraíba? Thus, the research objectives were: to analyze maternal mortality in the state of Paraíba between the years 2004 to 2014 and describe the causes of maternal mortality. It is justified that the period of the study referred to the data collected, not having current data at the time of the resear-

ch. However, some more recent results were found and inserted in the relevant topic.

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METHOD

This is a descriptive, documentary, retrospective study with a quantitative approach covering the period from

2004 to 2014 according to the health information available in the database of the Information Technology Department of the Unified Health System (DATASUS). The chosen data collection period was intended to investigate maternal mortality in Paraíba in a longer period of time, as the survey was carried out in 2014, data from the last 10 years for this period were obtained, allowing for a satisfactory temporal analysis. We are currently in the year 2021, but unfortunately the reality has not changed that much. In the results below, some comparative data in this period were explained, in order to update the survey.

Thus, such data are made available online by the Ministry of Health (MH) at http://www.datasus.gov.br. The study data were collected annually and studied in the Mortality Information System (SIM - Sistema de Informação sobre Mortalidade) and in the Live Births Information System (LBIS), which systematically record mortality and survival data through the Death Certificate. The data collection instrument used was built by the researcher and the data were treated statistically. Therefore, they were properly coded and typed in Microsoft Word, Excel and, later, graphs and tables were created to facilitate the description and analysis of data.

RESULTS

In this topic, the data obtained from DATASUS were analyzed. Then, they were distributed in tables and graphs for a better understanding of the theme. Below, in Graph 1, maternal deaths and the MMR in the period from 2004 to 2014 will be shown according to the Metropolitan Region – RIDE.

From the above data, it can be seen that the years 2009, 2010, 2011, 2012, 2013 and 2014 were the ones with the most maternal deaths in Paraíba, with the year 2013 with the highest rate (40 deaths). In relation to Paraíba, it can be

GRAPH 1: Maternal Deaths and MMR between the years 2004 to 2014
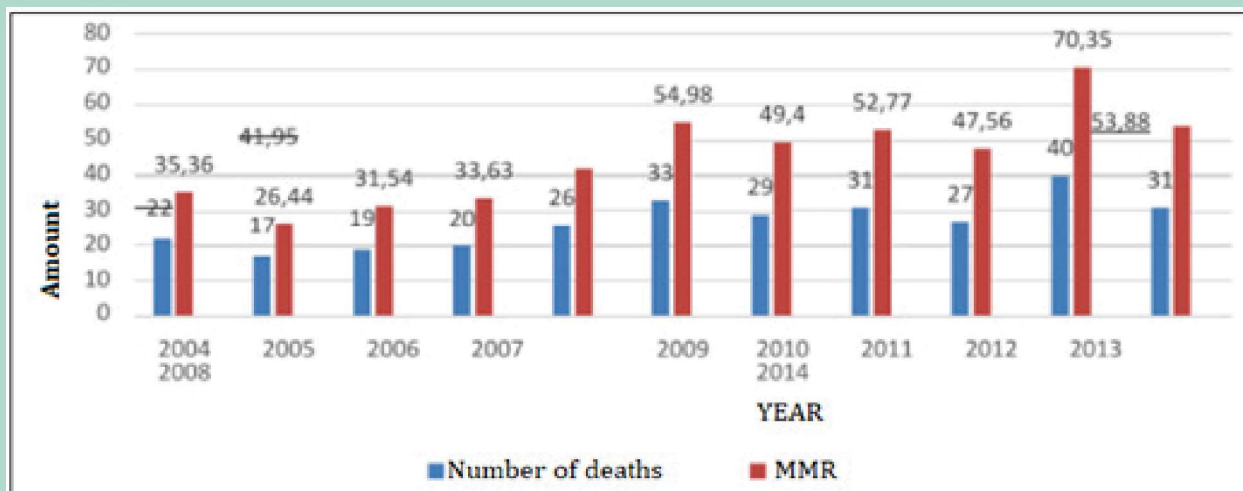
Source: DATASUS, 2017

seen that there has been an increase in the maternal mortality rate in recent years. Below, in table 1, the socio-demographic data of MM cases in the state of Paraíba are described.

Regarding maternal age, the age group between 30 and 39 years (40.3%) stood out. As for marital status, most deaths came from single women (43.7%). It should be noted that 24.7% of cases of maternal death had their marital status ignored. This is an important variable in which it would be interesting to rethink the ignored marital status. As for maternal education in the study, it should be noted that the highest rate was ignored (47.5%).

Next, in table 2, maternal mortality data in Paraíba will be discussed in relation to the type of death, place, period and if there was death's investigation.

Regarding the type of direct and indirect obstetric maternal death, it should be noted that the direct had the highest rate (86.1%). The year that stands out is 2013 with 31 deaths. While indirect obstetric death is that resulting from a disease that already existed before pregnancy or that developed

TABLE 1: Socio-demographic characterization of MM cases, from 2004 to 2014. [Age, race, marital status and education] João Pessoa, Paraíba, Brazil, 2017 [n =295].

Maternal age	Nº	%
10 to 14 years	5	1,7
15 to 19 years	40	13,6
20 to 29 years	109	36,9
30 to 39 years	119	40,3
40 to 49 years	22	7,5
Total	295	100,0
Marital Status		
Single	129	43,7
Married	90	30,5
Legally Separated	1	0,3
Widow	2	0,7
Ignored	73	24,7
Total	295	100,0
Race		
White	53	18,0
Black	19	6,4
Brown	207	70,2
Ignored	16	5,4
Total	295	100,0
Education		
None	15	5,1

during this period, but which was not caused by direct obstetric causes. Thus, the highest rate of this type of death occurred in 2009 and 2013 with 7 deaths each year. From 2020 to 2021, it remains a public health issue, the Northeast is in fifth place for maternal deaths, according to the published Paraíba State Plan.

According to the data in table 2, it can be seen that the highest death rate was in the hospital (92.9%) and the year that stood out most was 2013 with 37 deaths. While at home there were (2.7%) of deaths, being the year 2004 the one with the most deaths, with 2 deaths. It is also noticed that the highest rate related to the period of death was during the puerperium up to 42 days (34.6%). Also noteworthy is the period during pregnancy/delivery/abortion (27.5%). In relation to the inconsistent period, 13.9% of all deaths had the highest rate in 2007 and 2008, with 10 deaths each year. While ignored with 18.3% of total deaths and had the highest rate found in 2004.

It was also observed that the majority of deaths were investigated (55.3%) with an informed summary form and the highest number was in 2013. Regarding uninvestigated deaths, the years 2006 to 2012 are highlighted and the non-applicable period emphasizes up in 2003 to 2005, both remained with 13.2%.

Below, in table 3, maternal deaths in Paraíba will be discussed in relation to the International Classification of Disease - ICD 10.

In addition, hypertensive syndromes (32.9%) stand out as causes of maternal mortality in Paraíba, highlighting eclampsia (13.6%), followed by hemorrhagic syndromes (18%), highlighting postpartum hemorrhage (6.1%) and puerperal infection (10.5%).

The lowest number of causes of death, where fewer women died over these ten years, were not described in the table, but will be described below:

1 - 3 years	44	14,9
4 - 7 years	56	19,0
8 and more	40	13,6
Ignored	140	47,5
Total	295	100,0

Source: DATASUS,2017.

TABLE 2: Characterization of MM cases [Type of death, location, period, investigation]. João Pessoa, Paraíba, Brazil, 2017 [n=295].t

Type of death	Nº	%
Direct	254	86,1
Indirect	38	12,9
Not specified	3	1,0
Total	295	100,0
Place		
Hospital	274	92,9
Residence	8	2,7
Other health establishment	1	0,3
Public ways	5	1,7
Others	7	2,4
Total	295	100,0
Period		
During pregnancy/delivery/abortion	81	27,5
During puerperium up to 42 days	102	34,6
No pregnancy or puerperium	12	4,1
During puerperium, from 43 days to 1 year	5	1,7
Inconsistent period reported	41	13,9
Not specified	54	18,3
Total	295	100,0
Investigated death		
Death investigated, with summary record informed	163	55,3
Death investigated, without summary record informed	54	18,3
Uninvestigated death	39	13,2
Does not apply	39	13,2
Total	295	100,0

Source: DATASUS, 2017.

labor and delivery complicated by umbilical cord abnormality, complications from anesthesia during childbirth, venous complication in the puerperium, maternal infectious and parasitic diseases classifiable elsewhere, but complicating pregnancy/delivery/puerperium, other abnormal products of conception, complication anesthesia administered during pregnancy, perineal laceration during childbirth, each with 1 death (0.3% each).

Other causes that had 2 deaths each (0.7%) are: unspecified HIV disease,

HIV disease resulting in infectious and parasitic diseases, assistance provided to the mother for other known or suspected fetal problems, mental disorders and associated behaviors. And with 3 deaths each (1.0%): obstetric death due to NS, maternal care due to other complications related predominantly to pregnancy.

DISCUSSION

According to CIA World Factbook (11), in 2010, Brazil had a maternal mortality rate of 56 deaths per 100,000 live births. Estonia has the best MM rate, which is two deaths for every 100,000 live births. Although the mortality rate has remained at an average of 50 per 100,000 live births in recent years in Brazil, according to WHO data(12) there has been a decrease in maternal mortality in the world. And in Brazil there was a 43% reduction compared to the 90's. Thus, the WHO says that there has been a significant drop in Brazil and in the ten Latin American countries since the 90's.

Likewise, WHO (12) says that there was a 64% reduction in Peru, 61% in Bolivia and Honduras, 57% in the Dominican Republic, 56% in Barbados, 49% in Guatemala, among other Latin countries. Although there has been a reduction in maternal mortality, it is still necessary to improve in relation to developed countries.

With regard to single marital status, it is noteworthy that some mothers may have a non-formalized marital relationship, with the relationship broken, or are faced with an unplanned pregnancy, and there are several situations that can influence the option. Thus, it is believed that single women, widows and legally separated constitute a vulnerable group. (13)

In the study by Ferraz and Bordigon (13) it can be seen that in the regions of Brazil, the North region had the highest number of maternal deaths in single women (57.23%) and for married women the highest proportion was the South region (39.22%). According to Botelho et al., (14) in the State of Pará most women were single with 66.06%.

According to the study, it can be seen, in general, that in Paraíba the brown color had the highest number of maternal deaths (70.2%). According to Ferraz and Bordignon (2012), the highest rate of deaths was the brown race (67.7%) in the north region, followed by the northeast region (55.99%). In the study by Botelho et al., (14) conducted in Pará, 78.59% were brown, corroborating the research results. Marinho (6) states that the risk of maternal mortality in the state of Paraíba was higher in non-white women, configuring an important demonstration of social inequality.

According to the aforementioned authors (6) Brazilian maternal deaths had the highest record in the brown race (42.2%). It is noteworthy that there are differences in Brazilian regions where in the South region, for example, it is predominantly white (76.54%), followed by brown (10.38%). When comparing data from other regions of

TABLE 3: Maternal deaths according to Category ICD-10 per year. João Pessoa, Paraíba, Brazil, 2017 [n=295].

ICD-10 CATEGORIES	Nº	%
Hypertensive syndromes		
Eclampsia	40	13,6
Preeclampsia	33	11,2
Gestational hypertension	11	3,7
Pre-existing hypertension	7	2,4
NS Maternal Hypertension	6	2,0
Total	97	32,9
Hemorrhagic syndromes		
Postpartum hemorrhage	18	6,1
Ectopic pregnancy	12	4,1
Abortion	7	2,4
Placenta previa	6	2,0
Detachment	5	1,7
Antepartum and intrapartum hemorrhage	5	1,7
Total	53	18,0
Other significant causes		
Puerperal infection	31	10,5
Other CE maternal diseases	26	8,8
Other NCE complications of labor/delivery and postpartum	25	8,5
Obstetric embolism	18	6,1
Urinary tract infection	11	3,7
Other obstetric traumas	7	2,4
Uterine contraction abnormalities	6	2,0
Causes in Fewer Numbers	21	7,1

Caption: *NCE: not classifiable elsewhere *CE: classifiable elsewhere *NS: Not Specified

Source: DATASUS, 2017.

Brazil, it can be seen that the Northeast region had the highest reference to ignored schooling (39.14%). (13)

In the aforementioned study, the authors found that, in Brazil, the education level of cases of maternal deaths registered as ignored education (33.9%), from 4 to 7 years (23.87%) and 5.71% without any type of educational level. In the study of Botelho (14), which was carried out in Pará, they reported that women with 4 to 7 years of schooling (34.46%). Direct obstetric death is one that occurs because of complications in the pregnancy-puerperal cycle. (14) The study (14) corroborates the survey data as it found a higher number of deaths in the hospital (91.66%).

Although home birth is little practiced in urban areas, it is nowadays associated with official birth statistics. In 2009, birth certificates issued by obstetric nurses began to be recognized and placed in SINASC. (15)

It is important to highlight that the birth must take place in a place where the woman feels safe, cared for and planned, it can be at home, in a center or in the maternity hospital, as long as it is a woman's decision. Scientific evidence states that, for low-risk pregnancy, planned home birth can be an alternative that occurs in a natural, humanized way, with quality, safety for women and children, with trained obstetric nurses who use scientific knowledge, associated with technical practices contributing to assistance for pain relief and help in the process of labor evolution. (16)

The presence of family members providing psychological support reduces tension and anxiety by providing psychological support. Thus, this type of delivery is important for women, although it is still a great challenge. Nurse-assisted home births consent to the health policy, but its practice still needs specific resolutions that guarantee women's access to the health system during childbirth and puerperium. (16)

According to Chavaria (17) hypertensive causes (eclampsia and pree-clampsia) were the first cause of death among the categories analyzed, and black race/color had 35.3% of death causes, followed by brown race/color

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with 26.7%. In developed countries, such as the United States, it is mentioned that around 18% of maternal deaths come from complications of hypertension distorted by pregnancy. (18)

Between 2001 and 2010, the main cause of death was hypertensive, with 244 maternal deaths, while 112 were

due to hemorrhagic causes. In this study, the age group with the highest incidence of deaths from hypertensive causes was 20 to 34 years old, corresponding to 142 (58.20%) and for hemorrhagic causes it was 58.93% (n=66). (19)

According to Peixoto (20) puerperal infection accounts for one third of deaths in developed countries. According to the same author, this infection happens between 1% and 4% of normal births and 3% to 15% of cesarean surgery.

In Brazil, according to Dias et al., (21) direct obstetric causes account for 66.7% of maternal deaths and its essential causes are: hypertensive diseases, hemorrhagic syndromes, abortion complications and puerperal infections, which are heavily influenced by socioeconomic factors. Pre-eclampsia and eclampsia remain among the top three causes of maternal mortality and morbidity worldwide. Pre-eclampsia increases fetal risks and has been relevant to the increased risk of neonatal death, stillbirth, premature birth, among others.

In Paraíba, maternal mortality remains an important public health problem. In 2017, the state's MMR was higher than the average index presented by Brazil, but lower than that of the Northeast Region (Table 14), occupying fifth place among the states in this Region. (22)

The reality in Paraíba, from the year 2014 onwards, has been changing, 282 maternal deaths were registered in the Mortality Information System, which makes us reflect as a percentage of 3% of the total deaths of women of childbearing age (WCA) for defined causes. Unfortunately, the reality of the year 2020 is that maternal deaths have been occupying fourth place in the ranking of causes of death in WCA in Paraíba. (22)

Still in the period from 2019 onwards, it was seen that the types of

obstetric causes, those that have a direct effect on pregnancy, childbirth and the puerperium, continue to be responsible for approximately 66% of all maternal deaths. When related to indirect causes, there was also an increase, directed to maternal infections and pre-existing chronic diseases, complicating maternal health and leading to death.(22)

It is necessary to consider that the actions in primary care are also relevant to prevent health problems throughout the pregnancy-puerperal cycle, because, in the maternity unit, there is more focused care at the time of childbirth and puerperium, with primary care being responsible for tracking diseases and actions to prevent women's health. (23)

CONCLUSION

The present study demonstrates that there was a general increase in the number of maternal deaths in the last years studied here, which were between 2004 and 2014. It should be noted that these data refer to maternal deaths in Paraíba.

It is perceived that it is essential to improve care for these women with more qualified and trained professionals to try to solve this situation, more active family planning preventing unwanted pregnancies, adequate prenatal care, a team prepared for obstetric emergency care, the death certificate needs to be correctly filled out, in addition to being reformulated in order to have more transparency in the information and make it possible to see where it could improve care. It is also essential that there is greater vigilance on the part of the team with the women to find out if they are frequently participating in prenatal activities, in addition to always seeking more humanized care.

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