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MATERNAL MORTALITY OF BLACK WOMEN: EPIDEMIOLOGICAL PROFILE IN ALAGOAS

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MORTALIDAD MATERNA DE MUJERES NEGRAS: PERFIL EPIDEMIOLÓGICO EM ALAGOAS

Jorge Luis de Souza Riscado[1], Nathália Christina Lopes Flores[2], Jairo Calado Cavalcante [3], Yanne Carolline Silva Mesquita[4], Maria das Graças M. M. Taveira[5], Laudemi José de Oliveira[6]

RESUMO

Objetivo: a morte de uma mulher na gestação é um importante indicador de saúde da população feminina. Objetivou-se realizar pesquisa quantitativa com a análise da mortalidade materna dos anos de 2006 a 2015. **Método:** para o cálculo da taxa de mortalidade materna, utilizaram-se os bancos de dados SIM e SINASC, selecionando as cores/raças e gravidez, parto e puerpério. Foram confeccionados gráficos por meio do programa *Excel* e mapas de Alagoas, ilustrando os resultados, com o programa TABWIN. Também foi realizada análise de razão de chances por meio de cálculo *odds ratio*. **Resultados:** em 2010, Alagoas apresentou população composta por (31%) brancas, (8%) pretas e (61%) pardas (população negra de 69%). Em comparação a essas porcentagens, as mortes maternas por raça/cor no ano de 2010 foram de 17% nas brancas, 9% nas pretas e 74% nas pardas (83% negras). Apesar disso, quando estimada a constituição racial do Estado nos dez anos a partir dos nascidos vivos, conclui-se população de (12%) brancas e negras (88%), sendo 1% pretas e 87% pardas, enquanto a porcentagem de mortes para o mesmo período foi de 15% brancas, 80% pardas e 5% pretas (85% negras). No cálculo do risco de morte pelo *odds ratio* no segmento de cada raça/cor, as brancas obtiveram 0,359; pardas, 1,591 e negras, 1,561. **Conclusão:** a cor preta, neste estudo, teve associação não significativa. Em relação à escolaridade, a morte das negras sempre tem elevados patamares, principalmente quando analisados os menores índices de escolaridade. Quanto maior a escolaridade, menores os índices de mortalidade. A 2ª Região de Saúde de Alagoas apresentou as maiores taxas de mortalidade em quatro anos: 2007, 2011, 2012 e 2014. Os números no Estado de Alagoas são bastante alarmantes em um pacto que reverbera em situação de saúde pública.

[1]Doutor. Universidade Federal de Alagoas. Maceió (AL), Brasil.
[2,4,6]Graduandos. Universidade Federal de Alagoas. Maceió (AL), Brasil.
[3]Especialista. Universidade Federal de Alagoas. Maceió (AL), Brasil.
[5]Mestre. Universidade Federal de Alagoas. Maceió (AL), Brasil.

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Palavras-chave: Grupos de Populações Continentais; Mortalidade Materna; Análise Quantitativa.

ABSTRACT

Objective: The death of a woman in pregnancy is an important indicator of the health of the female population. The objective was to conduct a quantitative research with the analysis of maternal mortality from 2006 to 2015. **Method:** To calculate the maternal mortality rate, we used the SIM and SINASC databases, selecting the colors / races and pregnancy, childbirth and the puerperium. Charts were made using the Excel program and maps of Alagoas, illustrating the results, with the TABWIN program. Odds ratio analysis was also performed by calculating odds ratios. **Results:** In 2010, Alagoas had a population composed of (31%) white, (8%) black and (61%) brown (black population 69%). Compared to these percentages, maternal deaths by race / color in 2010 were 17% in white, 9% in black and 74% in brown (83% black). Nevertheless, when the racial constitution of the state is estimated in the ten years from live births, a population of (12%) white and black (88%) is concluded, being 1% black and 87% brown, while the percentage of deaths for the same period it was 15% white, 80% brown and 5% black (85% black). In calculating the risk of death by odds ratio, in the segment of each race / color, white obtained 0.359; brown, 1,591 and black, 1,561**. Conclusion:** Black color in this study had no significant association. Regarding education, the death of black women always has high levels, especially when analyzing the lowest levels of education. The higher the education, the lower the mortality rates. The 2nd Alagoas Health Region had the highest mortality rates in four years: 2007, 2011, 2012 and 2014. The figures in the State of Alagoas are quite alarming in a pact that reverberates in public health

Keywords: Continental Population Groups; Maternal Mortality; Quantitative Analysis.

RESUMEN

Objetivo: la muerte de una mujer en el embarazo es un importante indicador de salud de la población femenina. Se objetivó realizar investigación cuantitativa, con el análisis de la mortalidad materna de los años 2006 a 2015. **Método:** para el cálculo de la tasa de mortalidad materna se utilizaron los bancos de datos SÍ y SINASC, seleccionando los colores / razas y el embarazo, parto y el puerperio. Se han confeccionado gráficos a través del programa *Excel* y mapas de Alagoas, ilustrando los resultados, con el programa TABWIN. También se realizó un análisis de la razón de las probabilidades a través de cálculos o*dds ratio*. **Resultados:** en 2010, Alagoas presentó población compuesta por (31%) blancas, (8%) negras y (61%) pardas (población negra de 69%). En comparación con estos porcentajes, las muertes maternas por raza/color en el año 2010 fueron del 17% en las blancas, el 9% en las negras y el 74% en las pardas (83% negras). A pesar de ello, cuando se estima la constitución racial del Estado en los diez años a partir de los nacidos vivos, se concluye una población de (12%) blancas y las negras (88%) siendo 1% negras y 87%pardas, mientras que el porcentaje de muertes para el mismo período fue de 15%blancas, 80% pardas y 5% negras (85% negras). En el cálculo del riesgo de muerte por el *odds ratio*. en el segmento de cada raza/color, las blancas obtuvieron 0,359; pardas, 1,591 y negras, 1,561. **Conclusión:** el color negro, en este estudio, tuvo una asociación no significativa. En relación a la escolaridad, la muerte de las negras siempre tiene elevados niveles comparativos, principalmente cuando se analizan los menores índices de escolaridad. Cuanto mayor nivel educativo, menor el índice de mortalidad. La 2ª Región de Salud de Alagoas presentó las mayores tasas de mortalidad en cuatro años: 2007, 2011, 2012 y 2014. Las cifras en el Estado de Alagoas son bastante alarmantes en un pacto que reverbera en situación de salud pública.

Palabras clave: Grupos de Población Continentales; Mortalidad Materna; Análisis Cuantitativo.

INTRODUCTION

Gradually, Brazil has advanced in some improvements in childbirth and childbirth care, the result of a series of government and society efforts and initiatives. However, reducing maternal and child morbidity and mortality remains a challenge. Although access to prenatal care is practically universal from the perspective of UHS, the quality of this care still requires many improvements.

Although in Brazil, in 2011, the "Stork Network" was implemented, as a strategy of the Ministry of Health, aiming in itself a care network to guarantee women the right to reproductive planning and humanized attention to pregnancy and to children, the right to safe birth and healthy growth and development, a fragility of actions and action by governments is still perceived.

Black women do not have comprehensive and equitable care that prioritizes UHS.[1] Still, other genetic factors, such as predisposition to pathologies, diabetes and hypertension, contribute to the higher risk of pregnancy in black women.[2]

The occurrence of maternal death represents a violation of women's human rights and reflects the lack of access to health services and unfavorable socioeconomic conditions. Considering that maternal mortality is preventable in up to 92% of cases, it is important to monitor the indexes in order to favor the redirection of health policies.

Based on this, the reduction in maternal mortality became the 5th United Nations Millennium Development Goal (MDG), with a reduction target of 3/4 between 1990 and 2015, representing 35 deaths or less per 100,000 live births in Brazil.[3] In order to achieve this goal, the reduction in the maternal mortality rate in the country should be 5.5% per year. For effective monitoring of maternal mortality rates, with appropriate assessment of data available in the information systems, the maternal mortality rate is calculated and can be characterized as a sensitive indicator of women's attention and quality of health.[4]

In order to conduct a comprehensive study on maternal mortality in the state of Alagoas, the objective of this research paper is to describe the epidemiology of maternal mortality in the state. As specific objectives, one sought to analyze maternal mortality by black bias and to figure the care of parturient mothers from 2006 to 2015.

METHOD

Initially, deaths were selected from the Mortality Information System (MIS). The option "Data Tab" was chosen, in which tables are obtained by variables. Then, the option "Mortality - 1996-2016 by ICD-10" was selected. Soon after, "Death of women of childbearing age and maternal deaths", selecting the State of Alagoas.

Deaths considered maternal mortality are those that occurred during gestation, delivery or postpartum period up to 42 days, and it is necessary to include information that the postpartum period is restricted to this period of time.[5]

With data on maternal mortality, for the purpose of calculating the rate, data from live births were collected from 2006 to 2015.

Data will be selected from the Live Birth Information System (SINASC). You must select the option "Data Tab", where you get tables by variables.

You must select the option "Live Born - 1994 to 2016" and then "Live Born" and the State of Alagoas. The race variable was selected so that the black population corresponds to black and brown.

With maternal and live birth mortality data, the maternal mortality rate was calculated for each year of the historical series - 2006-2015.

For the calculation, the formula:

$$\frac{\text{Number of death of female residents with causes linked to pregnancy, chilbirth and puerperium in a specific year}}{\text{Number of live births in the same year}} \; x \; 100.000$$

The numbers of live births were used both in general for the analysis of mortality of the years, as well as individually for each race / color.

Data reported by the IBGE 2010 on characteristics of the population of the State of Alagoas - number of individuals by race / color and number of women aged 10 to 49 by race / color - were used and percentages were calculated.

With the information of the Maternal Mortality Rates of the historical series in each Health Region, the Excel program was used to make tables and graphs that illustrate the situation of maternal mortality.

According to the historical series in each Health Region, charts and figures of the State of Alagoas were made that illustrate each of the ten Health Regions

and their rate values with the aid of the TABWIN program, downloaded directly from the online platform from DATASUS.

The odds ratio was calculated. After this step, the probability of death was calculated divided by the probability of the same event not occurring.

Yes (race / color1): Number of deaths (race / color1) / Number of live births (race / color1);

No (race / color1): Number of live births - number of deaths (race / color1) / Number of live births (race / color1);

Relative Risk (race / color1): Yes (race / color1) / No (race / color1).

RESULTS

In the state of Alagoas, historical series from 2006 to 2015, 230 deaths of women between ten and 49 years old due to maternal cause occurred in an average of 23 deaths per year. Total deaths of women of childbearing age in the historical series were 11,703 where maternal mortality is approximately 2%.

The percentage of maternal deaths in ten years was 15% white, 80% brown and 5% black (85% black). In estimating the race of the state population in the period (2006-2015) by the number of live births per race / color, 88% are black (1% black and 87% brown) and 12% white. It was noted that white women died, 15% for an estimated population of 12% and Black died 88% for an estimated population of 85%, however, died whiter in this analysis.

In 2010, according to the IBGE, Alagoas had a population of 3,120,494, 31% white, 8% black and 61% brown (black population 69%). According to the 2010 Census (IBGE), of 1,042,247 women aged 10 to 49 years, 31% were white and 62% black.[6]

The percentage of maternal deaths by race / color in 2010 was 17% in white, 9% in black and 74% in brown (83% black). In direct comparison, it is observed that, for that year, the death rates of black women (83%) were higher than the racial constitution as a whole (69%) and restricted in childbearing age (69%). White women had a death rate (14%) below the racial constitution: 31% of the total population and 31% of women of childbearing age (Table 1).

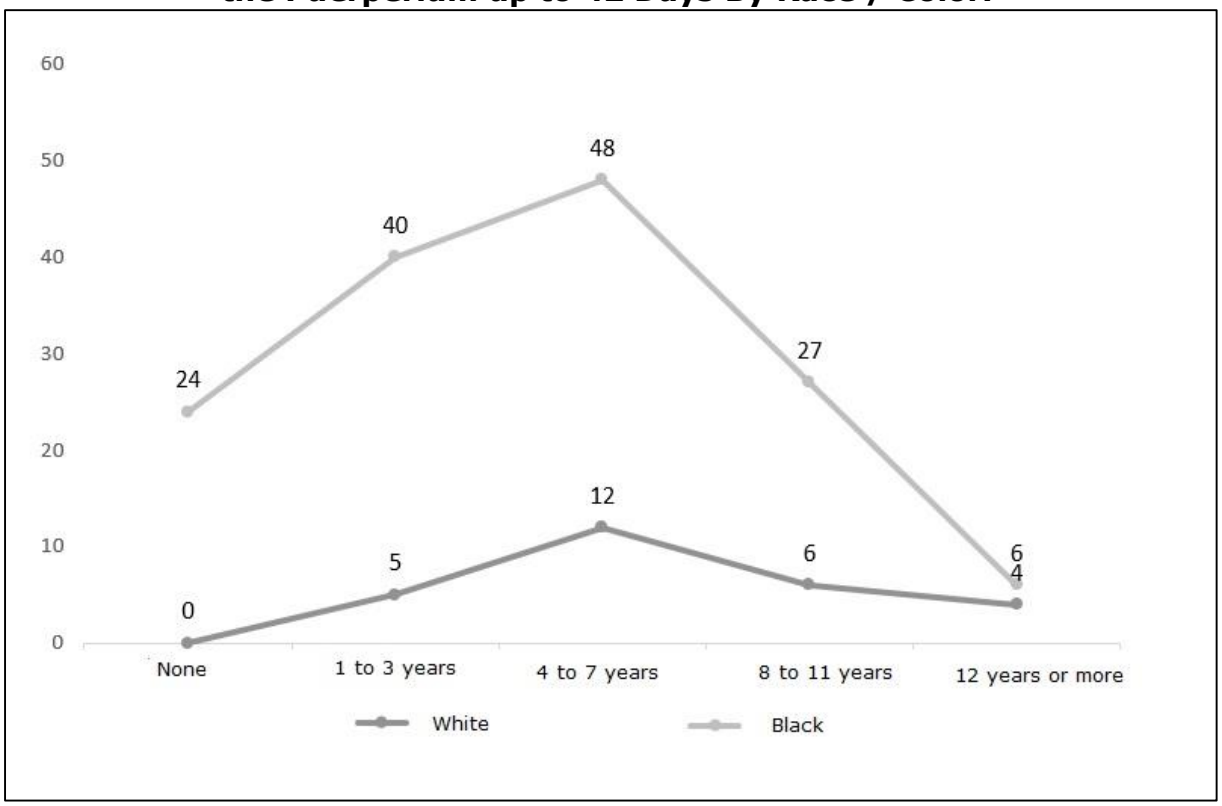
Table 1. Ratio Of Percentage Of Maternal Deaths to Percentage of Population By Race / Color.

Race/Color	Percentage Maternal Deaths at ten years	Percentage Maternal Deaths in the year 2010	Estimated Population Percentage ten years - live births (%)	Population Percentage for 2010 (IBGE)	Percentage Women of Childbearing Age for the year 2010 (IBGE)
White	15%	17%	12%	31%	31%
Brown	80%	74%	87%	61%	62%
Black	5%	9%	1%	8%	7%
Black	85%	83%	88%	69%	69%

Source: YES DATASUS / 2010 IBGE Census / Resident population DATASUS / IBGE.

Graph 1 represents the race / color education of the deaths that occurred in the ten-year period in absolute numbers. When analyzing the education of women who died due to maternal causes, it is evident that the more years of schooling, the lower the maternal mortality: only ten deaths occurred in women with education above 12 years and, on the other hand, There were 24 deaths among those who did not study. Of those who did not study, all were black. The highest number of deaths occurred among women who did not finish elementary school (none, one to three and four to seven years) - 129 deaths, about 75% (Figure 1).

Figure 1. Years of Schooling in Deaths During Pregnancy, Childbirth and the Puerperium up to 42 Days By Race / Color.



Source: Mortality Information System (SIM) / Health Surveillance Secretariat (SVS) / Ministry of Health (MS).

Table 2 shows that there is great variability in mortality rate according to Health Regions. While the second Health Region of Alagoas (formed by the municipalities: Jacuípe, Japaratinga, Maragogi, Camaragibe Matrix, Passo de Camaragibe, Porto Calvo, Porto de Pedras, São Luís do Quitunde and São Miguel dos Milagres) had the highest mortality rates in four years (2007, 2011, 2012 and 2014), five regions were not the protagonists of the mortality rate in any of the evaluated years (1st, 3rd, 5th, 6th, 7th) (Table 2).

Table 2. Variation of Maternal Mortality Rate by Year.

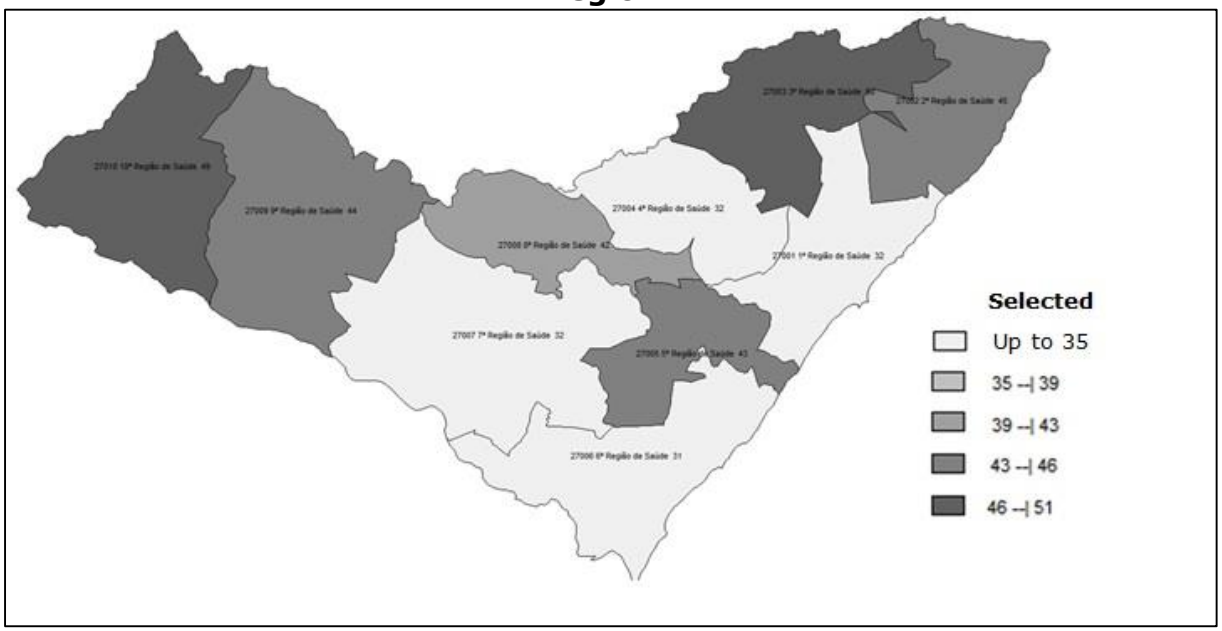
Year	Variation in maternal mortality rate in Alagoas State (per 100,000 live births)	Health Region with the highest rate that year
2006	8.71 – 67.88	8th
2007	18.8 – 130.89	2nd
2008	20.24 – 116.95	4th
2009	16.29 – 154.67	4th
2010	28.28 – 150.6	9th
2011	29.56 – 344.03	2nd
2012	15.95 – 363.19	2nd
2013	24.26 – 173.91	10th
2014	36.91 – 432.9	2nd
2015	36.91 – 170.06	10th

Source: MS / SVS / DASIS - Live Birth Information System - SINASC. MS / SVS / CGIAE - Mortality Information System - YES.

When analyzing Figure 1, elaborated from the maternal mortality rates by Health Region in the State of Alagoas in the historical series 2006 - 2015, it is observed that, in the period, the Health Regions with the highest rate were: 3rd (50) and 10th (49). Four Health Regions had a mortality rate below 35, namely: 7th, 4th, 1st and 6th. The 8th Health Region obtained rates between 35 and 39. The 2nd and 9th had rates between 43 and 46.

Also, when dividing between the 2006-2010 and 2011-2015 series, the Health Regions with the highest mortality rate in the first series were: 8th (36), 6th (33) and 4th region (31). Between 2011 - 2015, the highlighted regions were: 3rd (84), 10th (82) and 2nd (66). (Figure 2).

Figure 2. Maternal Mortality Rate Per 100,000 Live Births By Health Region.



Source: MS / SVS / DASIS - Live Birth Information System - SINASC. MS / SVS / CGIAE - Mortality Information System - YES.

Table 3 shows the risk of death odds ratio calculation for each race / color segment in which White obtained 0.359; brown, 1,591 and black, 1,561. The black color, despite all percentage analysis performed in this study, had no significant association. To make this association significant, the number of the population should be increased: including more years or including other states or regions of the country.

The white color is not a risk factor, but a protective factor, corroborating the analysis performed for 2010 and the percentage of death in white for the same year. Brown color and black population are risk factors.

Table 3. ODDS Risk Analysis by Race / Color Categories.

Race/Color	Maternal death						ODDS	$CI_{95\%}$	
	Yes		No		Total			L.Inf.	LSup.
	n	%	n	%	n	%			
White									
Yes	32	0.0010	3265776	99.9990	3265808	31.02			
No	198	0.0027	7260568	99.9973	7260766	68.98	0.359	0.247	0.522
Total	230	0.0022	10526344	99.9978	10526574	100.00			

Black *									
Yes	11	0.0017	644099	99.9983	644110	6.12			
No	219	0.0022	9882245	99.9978	9882464	93.88	0.771	0.421	1.412
Total	230	0.0022	10526344	99.9978	10526574	100.00			
Brown									
Yes	164	0.0026	6418181	99.9974	6418345	60.97			
No	66	0.0016	4108163	99.9984	4108229	39.03	1.591	1.195	2.117
Total	230	0.0022	10526344	99.9978	10526574	100.00			
Black									
Yes	175	0.0025	7062280	99.9975	7062455	67.09			
No	55	0.0016	3464064	99.9984	3464119	32.91	1.561	1.153	2.113
Total	230	0.0022	10526344	99.9978	10526574	100.00			

Source: YES DATASUS / 2010 IBGE Census / Resident population DATASUS / IBGE. Processing: authors. Note * Not significant

DISCUSSION

The percentages of death in the total historical series, when compared to the live births of the period, lead us to believe that, although black women present the highest number of deaths in absolute numbers, they are also high in the population. When the population was estimated by the number of live births, black women, who comprise brown and black, died less than their population. This means that for white women, they died more. Already when analyzing the numbers only for the year 2010, black women died a greater percentage than their population, proportionately, while white women died 14% less than their population contingent.

Black women, because they are smaller compared to white and brown women, have a very high mortality rate in the years in which there are death occurrences of this follow-up. In this analysis, it is evident that black women, when stratified and relativized by live births of the same group, had a mortality rate 900 times higher than brown and white.

Nevertheless, in table 3, the higher risk of death of the black population in relation to the white population was highlighted. In contrast to the analysis in Table 1, which relates to all the years of the historical series in which white women died more than her population estimated by live births, In the odds ratio study, it can be emphasized that the black population has a higher chance of death and the component of this population that adds the highest risk is brown, considering that the black population had no significant analysis.

The growth of the Maternal Mortality Rate of all races occurred mainly in the second five years (2010-2015), despite the creation of the Stork Network, a program that aims at the right to reproductive planning and humanized pregnancy care in 2010. However, when evaluated only black women, it is visualized that this is the only race in which the mortality rate was reduced in relation to the previous five years (2006-2010).

This, possibly, may be linked to the creation of the National Policy of Integral Health of the Black Population (NPIHBP), in 2007, and carried out from 2009, which aims to improve the health conditions of this population.[7]

At the moment when the issue of race / color is a self-declaring element, that is, defined by the relatives of the victim in the case of death, by the mother in the case of live and vulnerable births and by the individual himself, as well as the lack of own characteristics and unique to define the population, mainly brown, due to its multi-disciplined character, race becomes an oscillating variable and sometimes difficult to define.

The analysis may also be difficult when considering the number of cases ignored - inadequate filling of the race / color variable and the reliability of data related to puerperal time - which obtained considerable number around the years - 23 deaths, 10% of total deaths, reaching seven in 2014, and also due to the increase in death reports, registrations and computerization, due to technological expansion, which automatically increase the number of deaths registered over the years.

Figure 1 is different in relation to race / color in almost all of its presentation, with the death of black women always at high levels when analyzing the lowest levels of education.

However, by assessing only the variable with the highest level of education (12 years and over), the number of deaths among the races is approaching. At this time, black women show a small discrepancy in absolute numbers compared to white women, a considerable factor when compared to the racial constitution of the State of Alagoas, and also to the lack of proportional education of the black population in the state. In addition, the finding reinforces the fact that education may be a protective / preventive factor for maternal mortality.

Thus, the higher proportion of black deaths is linked to issues such as social conditions (as well as education) and also the large contingent of black population in the state, which increases the demand for black women in services

and causes more deaths of this race, and , again, the difficulty of better analysis by the large number of cases ignored.

Through analyzes carried out in the different Health Regions of Alagoas, important variations were observed in Maternal Mortality Rates, which reflects the discrepancies for each Health Region, mainly due to the population differences of each municipality and the difficulties of access to hospitals and efficient prenatal care.

The 2nd Health Region, despite having the largest number of years with the highest mortality rate in the State (2007, 2011, 2012, 2014), has hospitals of Porto Calvo, Matrix de Camaragibe and José Augusto Hospital, in São Luís do Quitunde, besides using the services of the State General Hospital, in Maceió.

Although this region has medium and high complexity hospitals, the mortality rate remains high. This data reflects the need for efficient actions aimed at reducing maternal mortality. Higher investments are needed in primary care and in maternity care services, since most municipalities use Maceió maternity hospitals as a reference, thus far from the residence of many mothers. It is also emphasized the need to implement death investigation policies, which help in the search for the improvement of the services offered to parturient.

Although the increase in values is justified, among others, by the higher number of records, the rates remain high, far beyond the ideal considered by the UN (mortality rate below 35), this reflects the need for effective policies that can break through present inequities and provide mothers with efficient prenatal care, as well as the availability of maternal beds near their homes for responsive care.

CONCLUSION

It was noted that the analysis of black women shows discrepancies regarding their components (between black and brown). While browns were practically equivalent to white numbers in most analyzes (except for odds ratios, in which browns were most at risk), black women, in the years of death, had a much higher mortality rate (despite (in the odds ratio analysis, non-significant assessment), as well as having a higher number of deaths in proportion to their existence in the population.

Despite this, black women were the only ones who decreased the mortality rate in the second five years. This decrease may be linked to the implementation of the National Policy of Integral Health of the Black Population, in 2007.

Regarding education, the death of black women always has high levels, especially when analyzing the lowest levels of education. The higher the education, the lower the mortality rates and the closer the mortality rates between white and black women. Given this, education may be a protective factor.

Regarding the territoriality of the state, the 2nd Health Region had the highest mortality rate in the years analyzed (2007, 2011, 2012, 2014), despite having medium and high complexity hospitals. This may be related to an inefficiency of services when considering attention to pregnant women.

Improvement of the technological means for notification evidenced an increase in the number of records and, consequently, a higher data quality, culminating in a general increase of the numbers in the second five years of the analyzed years.

The analysis was hampered by the high number of ignored cases, leading to underestimation of numbers, and the lack of objective characteristics that define the population's race.

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