

THE INFLUENCE OF THE 'ZERO MATERNAL DEATH FROM HEMORRHAGE' PROJECT ON MORTALITY RESULTING FROM POSTPARTUM HEMORRHAGE IN BRAZIL

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Abstract: **Introduction:** Postpartum hemorrhage (PPH) stands as the second leading cause of maternal death in Brazil. In this context, aiming to alter the statistics, the Pan American Health Organization/World Health Organization (PAHO/WHO), in conjunction with the Ministry of Health (MoH), developed the Zero Maternal Death from Hemorrhage project (0MMxH). **Objective:** To describe maternal mortality resulting from postpartum hemorrhage and assess the influence of the Zero Maternal Death from Hemorrhage project on death rates. **Method:** Data were collected from the DATASUS TABNET in October 2023. The Vital Statistics section was selected, encompassing mortality data since 1996 using ICD-10, filtering only deaths of women of childbearing age and maternal deaths. Brazil was segmented by regions, and observed variables included age group, race/ethnicity, education, marital status, and location of occurrence. Data were organized using Microsoft Excel. **Results:** In the pre-project period, 430 deaths were recorded, and in the post-project period, 452 were recorded. **Conclusion:** The Zero Maternal Death from Hemorrhage project (0MMxH) did not show significant impact; Brazil remains far from reversing the current scenario of maternal mortality due to PPH.

Keywords: Postpartum hemorrhage; Woman; Pregnancy; Prenatal care; Brazil

INTRODUCTION

According to the World Health Organization (2014), postpartum hemorrhage (PPH) is characterized by blood loss greater than 500 ml after vaginal birth, or greater than 1000 ml during cesarean section. It is important to understand that there are two forms of PPH, the primary, which occurs 24 hours after birth and the secondary, which occurs from 24 hours to 12 weeks after birth (BELFORT, 2020 apud ALVES et al., 2020).

PPH is currently a serious health problem, as it is one of the five main causes of maternal mortality (MM) in the world (BELFORT, 2020 apud ALVES et al., 2020). In this portrait, it is estimated that 30% of maternal deaths related to obstetric emergencies are due to PPH, with an average of 1 death for every 150,000 births (BAGIERRI et al., 2011 apud ALVES et al., 2020).

In Brazil, PPH is the second leading cause of maternal death, behind only hypertensive disorders. In this scenario, studies carried out by Souza et al (2013) in Brazil, showed through the Mortality Information System (SIM) that of 3179 maternal deaths, 14.26% were related to PPH (SOUZA et. al, 2013 apud COSTA et. al, 2021).

Among the causes of PPH, the following can be highlighted: uterine atony, trauma (lacerations, hematoma, rupture, inversion), retained placenta and placenta accreta, as well as coagulopathies. Furthermore, obesity, multiparity, labor induction, labor at an inappropriate time, general anesthesia, twins, polyhydramnios, macrosomia, anemia are risk factors for the occurrence of PPH (DELLANEY et al., 2016).

Thus, the main symptoms of postpartum hemorrhage are pallor, dizziness, confusion, tachycardia, hypotension, low oxygen saturation, in addition to signs of hypovolemia. (DELLANEY et al., 2016).

Faced with the serious scenario of maternal mortality due to PPH, the Pan American Health Organization/World Health Organization (PAHO/WHO), together with the Ministry of Health (MS), developed a policy project “Zero Maternal Death from Hemorrhage” (0MMxH) in 2017, with the aim of promoting better management of health employees, through training workshops, to achieve better medical conditions in cases of PPH.

Therefore, this article aims to describe

maternal mortality resulting from postpartum hemorrhage in the years 2013 to 2021 and verify the influence of the Zero Maternal Death due to Hemorrhage project, in force since 2017, on the number of deaths.

METHODS

A descriptive observational study of maternal mortality resulting from postpartum hemorrhage in Brazil was carried out from 2013 to 2021.

The statistical data used were collected in a public domain secondary database in the Health Information system (TABNET), of the Department of Informatics of the Unified Health System (DATASUS) in the month of October 2023. In the data system, we selected the Vital Statistics section, followed by the Mortality category since 1996 by ICD-10, filtering only deaths of women of childbearing age and maternal deaths. The geographic coverage was all of Brazil, segmented by regions. Postpartum hemorrhage was selected in the ICD10 category, a DATASUS research category, and the related variables were color/race, place of occurrence, education, age group, marital status, regions of Brazil, and year of death. The collected data was organized into graphs and tables using the Microsoft Excel program.

Categorical variables were analyzed using frequencies and percentages. The association between qualitative variables was performed using the chi-square test, and in the case of a significant association, residual analysis was performed to verify the categories that contributed to the association (residual values greater than |1.96| contribute positively to the association, that is, they indicate that a higher frequency occurs than must happen if there is independence between the categories). Data from the “ignored” category present in the variables were disregarded in the association. Associations were considered significant if

p-value < 0.05. The data were tabulated in an EXCEL spreadsheet and analyzed using the Bioestat 5.3 program.

As this was an epidemiological study of secondary analysis, from a public domain database and in accordance with resolution 466/2012 of the National Health Council, there was no need for submission to the Research Ethics Committee.

RESULTS

In our study, it was discovered that, in the pre-project period, the total number of deaths resulting from postpartum hemorrhage was 430, while in the post-project period it was 568, which represents an increase of approximately 32%. These results are identified in table 1 and figures 1, 2 and 3.

Furthermore, a statistical association was found in the age group of p-value=0.2611, race/color of p-value=0.7729, education level of p-value=0.0315, marital status of p-value=0.3528 and place of occurrence with p-value=0.7914. Therefore, education was the only variable that presented statistical significance, as it has a p-value < 0.05.

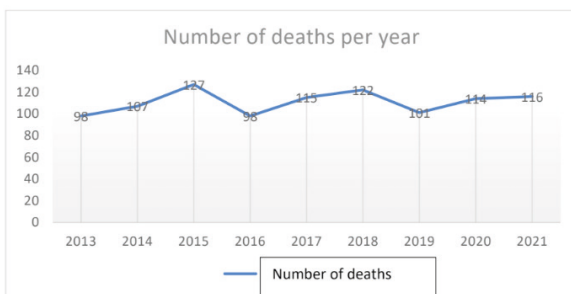


Figure 1: Graph of mortality resulting from postpartum hemorrhage according to the year of death between 2013 and 2021 in Brazil.

Source: Prepared by the authors (2023).

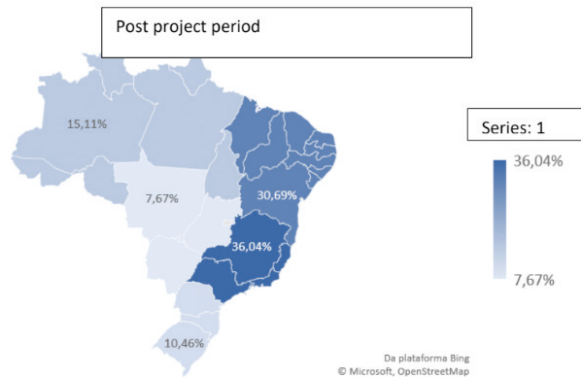


Figure 2: Graph of mortality resulting from postpartum hemorrhage for regions of Brazil between 2013 and 2016 (pre-project).

Source: Prepared by the authors (2023).

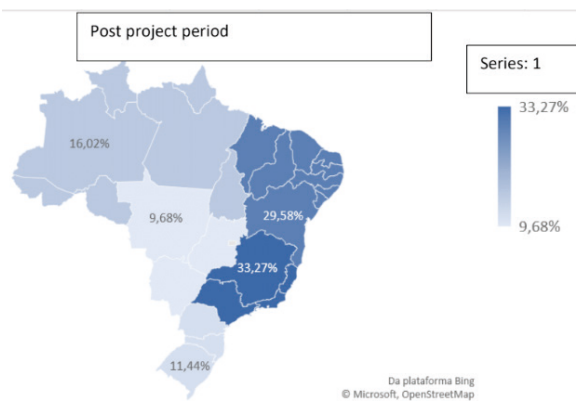


Figure 3: Graph of mortality resulting from postpartum hemorrhage for regions of Brazil between 2017 and 2021 (post-project).

Source: Prepared by the authors (2023).

DISCUSSION

Based on the data provided by the DATASUS database and shown in figure 1, it is observed that, in the period preceding the “Zero Maternal Death due to Hemorrhage” project (0MMxH), which corresponds to the time interval between the years 2013 and 2017, there were 430 maternal deaths caused by PPH. In 2017, in the year in which (0MMxH) was approved, 115 deaths were recorded, a number that increased in 2018, when 122 deaths from PPH occurred. Two years later, in 2019, there was a reduction in the number of deaths, which fell to 101. However, in the

	Pre-project (2013-2016)	Pre-project (2013-2016)	Post-project (2017-2021)	Post-project (2017-2021)	
Age	n	(%)	N	(%)	p
10 to 19 years	43	10	53	9,3	0,2611
20 to 29 years	138	32,1	171	30,1	
30 to 39 years	202	46,9	298	52,5	
40 to 49 years	47	11	46	8,1	
Race/color					
White	138	32,1	181	31,9	0,7729
Black	39	9	43	7,6	
Yellow	1	0,2	2	0,4	
Brown	232	53,9	310	54,6	
Indian	11	2,6	21	3,7	
Ignored	9	2,2	11	1,9	
Education					
None	14	3,3	16	2,8	0,0315
1 to 3 years	49	11,4	36	6,0	
4 to 7 years	96	22,3	120	21,1	
8 to 11 years	173	40,2	238	41,9	
12 years or over	41	9,5	75	13,2	
Ignored	57	13,3	83	14,6	
Marital status					
Single	180	41,8	243	42,8	0,3528
Married	130	30,2	180	31,7	
Widow	3	0,7	1	0,2	
Legally separated	11	2,6	16	2,8	
Other	86	20	89	15,7	
Ignored	20	4,7	39	6,9	
Place of Occurrence					
Hospital	401	93,3	530	93,3	0,7914
Other healthcare facility	3	0,7	8	1,4	
House	11	2,6	11	1,9	
Public way	2	0,5	3	0,5	
Others	13	2,9	15	2,6	

Table 1 - Table of mortality resulting from postpartum hemorrhage according to the variables of age group, race/color, education, marital status and place of occurrence, between the years 2013 and 2021 in Brazil.

Source: Prepared by the authors (2023).

following years, in 2020 and 2021, there was an increase in deaths again to 114 and 116, respectively.

It is important to point out that, according to the numbers, there was no expressiveness of the project (0MMxH) in women's health, which was observed by the increase in deaths from PPH, when compared to the year the project was approved, in the years 2018 and 2021 and also due to the maintenance of the high number of deaths in the years 2019 and 2020. However, it is worth highlighting the short period of time since the approval of the strategy and the period of the outbreak of the pandemic, which turned all the attention in the health sector to the fight against COVID-19 and, possibly, made it impossible for measures to be taken in order to diligently implement the project.

In 2019, in the state of Pará, an action related to the project took place: The Zero Maternal Death from Hemorrhage Strategy Workshop. This demonstrates the State's attempts to minimize cases of maternal deaths from PPH by providing training related to the project (0MMxH). Furthermore, an investment of one billion reais was declared by the Ministry of Health in 2021 to fund initiatives aimed at reducing maternal mortality. However, statistics from DATASUS describe mortality due to PPH until 2021 and it is not known how the project will unfold in the following year, but better implementation of (0MMxH) and consequent reduction in maternal deaths are expected (OLIVEIRA, 2019; DUARTE, 2021).

When investigating the number of deaths from PPH according to age group, a predominance is found between 30 and 39 years old. In the years analyzed prior to (0MMxH), 202 deaths due to PPH were recorded in this age group, while since the project began until 2021, 298 deaths were recorded. Although the increase in deaths is

not expected, it is understandable given the short implementation time of (0MMxH) and little attention devoted to better preparation of professionals. From this perspective, age group cannot be considered an isolated factor for the occurrence of death from PPH. However, from the age of 35, pregnancy is considered risky, making women more susceptible to complications during childbirth and postpartum, justifying the greater number of deaths from PPH between the ages of 30 and 39, since this period is still corresponding to fertile age. Furthermore, regarding the age group from 40 to 49 years old, the numbers were lower, because even though pregnancy is even higher risk, the number of women who become pregnant at this age is reduced (SOARES, 2021).

It is known that there is inequality in access to medical care between the white population and the black population, since, according to the Ministry of Health, six out of every ten maternal deaths in Brazil are of black women. It is worth noting that there are different causes for this mortality in addition to PPH, such as hypertension, infections and unsafe abortions. When analyzing mortality resulting from PPH, however, we observed that the brown race accounts for the highest number of deaths in both periods, followed by the white race and, soon after, the black race. This apparent contradiction can be explained by the fact that certain risk factors such as fetal anomalies and abnormally large fetuses are not completely preventable and, therefore, are not related to prior medical care. Furthermore, it is worth pointing out the difficulty of self-declaration regarding race/color, which interferes with the real recorded number of black women killed due to PPH.

In this context, it is important to highlight that access to prenatal care during pregnancy can prevent maternal death due to postpartum hemorrhage, as this monitoring

would avoid antepartum factors that lead to maternal death, such as maternal anemia, and would manage events blood pressure, such as gestational hypertension, and would assess the risk of placental accreta in pregnant women with a previous cesarean section. However, women with low education, single women and unplanned pregnant women find it more difficult to receive medical care during prenatal care. The highest number of deaths from PPH occurs among women with 8 to 11 years of education, both in the pre and post periods (0MMxH). Considering that completing secondary education is 12 years, it is valid to observe that failure to meet educational demands may be one of the causes of misinformation in these women regarding the care that must be taken during pregnancy, regarding the importance of carrying out a prenatal care and the knowledge that these services are offered in the SUS. Furthermore, in relation to the difficulty in accessing prenatal care, there are statistics that indicate that single women are the majority in deaths from PPH. This fact may indicate that the absence of partners or family support makes women more vulnerable and, consequently, more susceptible to death from PPH, since, being helpless, they may not receive ideal medical monitoring during pregnancy (OPAS, 2018; FIGO, 2018; OSANAN et al, 2018).

Furthermore, it is clear that education has statistical significance, since the p-value for this category is 0.0315 (being considered significant when $p < 0.05$), which reaffirms the existence of a relevant difference between the groups of different levels of education, so that the association made between education and an increase in the number of maternal deaths caused by PPH has a considerable statistical association.

Regarding the place of occurrence, the majority of PPH deaths occurred in the hospital itself, followed by other unspecified

locations, home, other health establishment and public roads, respectively. This is due to the fact that the vast majority of Brazilian births occur in hospitals, which makes the chances of complications greater in these health homes.

As seen in figures 2 and 3, the occurrence of deaths due to PPH may vary depending on the federation unit, both in the pre and post periods (0MMxH) the statistics remained similar in relation to the ordered classification between regions. The Southeast region recorded the highest number of maternal deaths, which can be explained by the fact that it is the most populous region in the country. Next, the Northeast region recorded the second highest number of deaths from PPH, as it faces numerous challenges due to marked socioeconomic inequality, which make access to quality healthcare difficult for a greater number of women. The North region, in third place, is characterized by the lack of logistics that provide hospital care to riverside populations, as it is a vast territory with transport difficulties and is sparsely populated. Finally, there are the South and Central-West regions, respectively, which despite being the regions with the fewest cases of death from PPH, registered a significant increase in the post-period (0MMxH) (SOUZA, 2013).

Finally, it is undeniable that there are obstacles in monitoring and recording data such as mortality resulting from PPH. Among the causes for this is under-information, resulting from a failure on the part of health professionals involved in the birth to declare the cause of death, and under-registration, characterized by the omission of registering the death at a registry office, common in regions with lower socioeconomic dynamism such as the North, Northeast and Central-West. Furthermore, postpartum hemorrhage is a public problem and is increasingly common among the community, seen mainly through

alarmist reports in the media that reaffirm the social need for the effective development of projects such as Zero Maternal Death. due to hemorrhage.

CONCLUSION

Therefore, it is understood that, according to the research carried out and the analysis of the data offered, although the project has been developed and applied, Brazil still faces significant challenges in reducing mortality related to PPH. This is largely due to insufficient

infrastructure in certain regions of Brazil and limited investment in comprehensive health actions for pre- and postpartum women. In this context, it would be prudent to consider the adoption of more robust public policies, such as expanding access to qualified maternal health services, strengthening education and awareness programs on reproductive health, and continued investment in equipment and professional training in the most affected locations. due to the problem of PPH. These measures could contribute to a more effective reversal of the current scenario.

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