



PROFILE OF MATERNAL MORTALITY

PERFIL DA MORTALIDADE MATERNA

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ABSTRACT

Objective: to analyze the profile of maternal mortality. **Method:** an exploratory, descriptive study with a quantitative approach, which had as a source of data the death certificates registered in the Mortality Information System and the opinion analysis of maternal deaths discussed by the Technical Groups of Maternal Mortality Study Committees of Pernambuco. The data were analyzed by EPIINFO for Windows, version 3.5.2. **Results:** obstetrical data showed that most women have between one to four previous pregnancies, prenatal care and cesarean delivery. The hypertensive disorders and disease by human immunodeficiency virus [HIV] were the main causes of death. Most deaths were considered preventable. **Conclusion:** the results indicate the need for effective interventions of the multidisciplinary team to contribute to the reduction of maternal mortality throughout pregnancy and childbirth. **Descriptors:** Maternal Mortality; Woman's Health; Postpartum Period.

RESUMO

Objetivo: analisar o perfil da mortalidade materna. **Método:** estudo exploratório, descritivo, de abordagem quantitativa, que teve como fonte de dados as Declarações de Óbito registradas no Sistema de Informação sobre Mortalidade e o parecer de análise dos óbitos maternos discutidos pelos Grupos Técnicos dos Comitês de Estudos de Mortalidade Materna de Pernambuco. Os dados foram analisados pelo programa EPIINFO for Windows, versão 3.5.2. **Resultados:** os dados obstétricos mostraram que a maioria das mulheres teve entre uma a quatro gestações anteriores, realizou pré-natal e parto cesáreo. Os transtornos hipertensivos e a doença pelo vírus da imunodeficiência humana [HIV] foram as principais causas de óbito. A maioria dos óbitos foi considerada evitável. **Conclusão:** os resultados indicam a necessidade de intervenções efetivas da equipe multiprofissional para contribuir na redução da mortalidade materna, durante todo o ciclo gravídico-puerperal. **Descritores:** Mortalidade Materna; Saúde da Mulher; Período Pós-Parto.

RESUMEN

Objetivo: Analizar el perfil de la mortalidad materna. **Método:** estudio exploratorio, descriptivo de abordaje cuantitativo, que tuvo como fuente de datos los certificados de defunción registrados en el Sistema de Información de Mortalidad y el análisis de defunción materna discutidos por los Grupos Técnicos de los Comitês de Estudios de Mortalidad Materna de Pernambuco. Los datos fueron analizados por el programa EPIINFO for Windows, versión 3.5.2. **Resultados:** los datos obstétricos mostraron que la mayoría de las mujeres tuvieron entre uno y cuatro embarazos anteriores, realizaron la atención prenatal y el parto por cesárea. Los trastornos hipertensivos y enfermedad por el virus de la inmunodeficiencia humana [VIH] fueron las principales causas de muerte. La mayoría de las muertes fueron considerados prevenibles. **Conclusión:** Los resultados indican la necesidad de intervenciones eficaces del equipo multidisciplinario para la contribución de la reducción de la mortalidad materna en todo el embarazo y el parto. **Descriptores:** Mortalidad Materna; Salud de la Mujer; Periodo Posparto.

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INTRODUCTION

Maternal death is considered to be the death of a woman during pregnancy or up to 42 days after termination of pregnancy regardless of the duration or location of the pregnancy due to any cause related to or aggravated by the pregnancy or measures taken in connection therewith, but, not due to accidental or incidental causes.¹

Maternal deaths from obstetric causes can be of two types: direct obstetric and indirect obstetrics. Direct obstetric maternal death is one that occurs due to obstetric complications during pregnancy, childbirth or the puerperium, due to interventions, omissions, incorrect treatment or a chain of events resulting from any of these causes. The indirect thing is that, resulting from diseases that existed before pregnancy or that developed during this period, not caused by direct obstetric causes, but aggravated by the physiological effects of pregnancy.²

Maternal mortality is one of the most serious violations of women's human rights because it is preventable in 92 per cent of cases and mainly in developing countries. It is measured by the Maternal Mortality Ratio (MMR) and reflects the quality of the care provided to the reproductive life of the citizens and, indirectly, the level of development of the regions and countries and the conception of their leaders, especially with regard to women's health care. Maternal and neonatal deaths are closely related to the lack of recognition of these events as a social and political problem; ignorance of its true magnitude; and to the deficiency of the quality of health services offered to women in the pregnancy-puerperal cycle and to the newborn.³

There is a gap between developed and developing countries. In Canada and the United States, the figures are less than nine maternal deaths per 100 thousand live births, and countries such as Bolivia, Peru, and Haiti account for more than 200 deaths. Across Latin America, about 28 thousand women die each year from complications of pregnancy, childbirth, or the puerperium.⁴

In Brazil, the reduction of maternal mortality is a challenge for the health sector and for society. In 2005, the estimated MMR was 74.7 maternal deaths per 100 thousand live births (LB), considering the underreporting of maternal causes in the Death Certificates (DC) and underreporting of deaths in the registry offices.⁵ During this period, the Northeast presented the Highest MMR of Brazil, 66.9/100,000 NV, while the

Southeast had the lowest, 40.7/100,000 NV. More poor, brown, low-educated women living in rural areas and in the North and Northeast regions die, where access to health and public goods and services are more limited.³

In Pernambuco, the high mortality rates found in the various regions point to the need for specific actions that have the greatest impact for the inversion of this indicator. The last year when the analysis of deaths by the State Committee for Studies of Maternal Mortality was concluded in 2008, and pointed out an MMR of 77.1, a figure considered to be high.³ A study carried out in the city of Recife -PE, revealed an MMR of 65.99/100,000 LB.⁶ MMR considered acceptable by the WHO is from 20 maternal deaths per 100 thousand live births.⁷

Knowledge about the occurrence of maternal deaths is extremely important for the planning of intervention measures. It is in this perspective that the Maternal Death Committees, which are inter-institutional, educational, stealth, non-coercive or punitive bodies are created, with the objective of identifying, studying maternal deaths and pointing out intervention measures for their reduction². Brazil was one of the 189 nations in the world to sign a commitment to reduce maternal mortality by 75% by 2015. Today, more than a quarter of all maternal deaths in Latin America occur in Brazil.⁸

OBJECTIVES

- To analyze the profile of maternal mortality.
- To describe the demographic, socioeconomic, and adequacy characteristics of obstetric care received by women who died during the study period.
- To identify the underlying causes of maternal deaths.
- To enable the assessment of mortality trends by identifying the most vulnerable subgroups of the population.

METHOD

Article elaborated from the Work of Completion of Nursing Residency in Women's Health, Barão de Lucena Hospital, linked to the Academic Center of Vitória, Federal University of Pernambuco-CAV / UFPE.

An exploratory, descriptive study with a quantitative approach.⁹ The study was conducted at the Barão de Lucena Hospital (BLH), Recife, Brazil, with a data collection period between August and December 2012. The BLH is a state reference in maternal and child care of high complexity, with 320 active

beds. There were five General Surgery beds, 16 Gynecology, 44 General Clinic, six Nephrology, ten Oncology, ten neonatal kangaroo intermediate care units, 16 neonatal intermediate care unit, ten adult ICUs, 18 neonatal ICUs, eight Pediatric ICU, 55 Surgical Obstetrics, 20 Clinical Obstetrics and 37 Clinical Pediatrics.¹⁰

88 maternal deaths occurred in BLH between 2000 and 2009, recorded in the Mortality Information System (MIS). The Death Certificates (DC) recorded in the MIS were used as the data source for the sociodemographic variables. For the other variables, the analysis of the maternal deaths analyzed by the Technical Groups of the Maternal Mortality Studies Committees of Pernambuco was used, which are included in the Maternal Mortality Surveillance database of the Health Secretariat of the State of Pernambuco (SES-PE). The State Committee on Maternal Mortality and the Maternal Mortality Studies Technical Group aim to analyze cases, in relation to classification and avoidability, and to define prevention measures.¹¹

Of these 88 maternal deaths, 23 deaths were not part of the calculations of variables related to obstetric history and death, since the Maternal Death Surveillance of SES-PE did not have these variables available in its database.

The basic cause of maternal deaths was distributed according to the International Statistical Classification of Diseases (ICD-10). The underlying cause is defined as an illness or injury that initiated the chain of pathological events that led directly to death or the circumstances of the accident or violence that produced the fatal injury.¹

From the databases the following variables were analyzed: sociodemographic (age, schooling, marital status, occupation, municipality of residence); obstetric and

health care history (number of previous pregnancies, type of delivery, number of abortions, prenatal consultations); related to death (basic cause, type of death, moment of death, gestational age, definition of death, avoidance, classification of death).

The data was processed and analyzed by EPIINFO for Windows, version 3.5.2. Descriptive statistics measurements were performed through frequency distributions for the variables studied and data were presented in a tabular and graphical format using Microsoft Office Excel 2007 software.

The research followed the ethical procedures recommended by Resolution 196/96 of the National Health Council (NHC) and was approved by the Research Ethics Committee of Agamenon Magalhães Hospital (CAEE 03989212.6.000.5197). The use of the database was authorized by the Directorate of Health Surveillance of the State Department of Health of Pernambuco, preserving the confidentiality of all information provided.

RESULTS AND DISCUSSION

88 maternal deaths were analyzed at the Barão de Lucena Hospital during the study period. Table 1 shows the socio-demographic characteristics of the maternal deaths analyzed. The majority of maternal deaths (45.5%) occurred in women between the ages of 20 and 29 years, with a mean of 28.5 years, and a considerable proportion of maternal deaths, in the extreme ranges of the reproductive phase, from 12 to 19 years (11.4%) and 30 to 39 years old (35.2%), who had four to seven years of schooling (58%), were single (68.2%) and were housewives (73.9%).

Table 1. Sociodemographic characteristics of maternal deaths. Recife (PE), Brazil, 2015.

Variables	n	%
Age group (years)		
10 to 19	10	11.4
20 to 29	40	45.5
30 to 39	31	35.2
40 to 49	7	8.0
Schooling (years of study)		
None	5	5.7
From 1 to 3	5	5.7
From 4 to 7	51	58.0
8 to 11	16	18.2
12 and over	1	1.1
Ignored	10	11.4
Marital status		
Married	23	26.1
Single	60	68.2
Widow	1	1.1
Ignored	4	4.5
Occupation		
From home	65	73.9
Student	12	13.6
Others	11	12.5

Source: Data from the Death Certificates registered in the Mortality Information System

Several factors may contribute to the occurrence of maternal death. Among them the socio-demographic and obstetric ones.¹² Socio-demographic aspects should be considered when planning actions aimed at reducing maternal mortality, since it represents the degree of vulnerability of the population, in particular, women.¹³

The age group of 20 to 29 years of age is said to have a lower reproductive risk. This represents the importance of maternal mortality to public health, reinforcing the need to improve prenatal, delivery and puerperium care and, in addition, the early detection of at risk pregnancies. Attention is also drawn to deaths reported in the extreme ranges of the reproductive age phase, periods in which pregnancy could be avoided through appropriate reproductive planning initiatives to mitigate maternal and fetal risks as an important measure of health promotion.¹⁴

No young woman should become pregnant before the age of 18 because newborns of women at this age are more prone to prematurity and low birth weight and are more likely to die during the first year of life. With regard to pregnancy after age 35, the risk of complications is also increased both during pregnancy and at delivery due to bleeding, premature birth and fetal malformation. Research on spatial analysis of maternal mortality found that women over 30 years of age constituted groups that were more likely to have maternal death (2.45 times higher than women aged 20-29 years).¹⁵⁻

Schooling is also directly related to care. The higher the level of women's knowledge,

the greater the demand for health services.¹⁷ In this study, most of the women had less than eight years of education. According to Haidar et al.,¹⁸ mothers with less than eight years of schooling are 1.5 times more likely to have low birth weight infants. This association may be related to the low socioeconomic status of these mothers, who, may, present less weight gain during pregnancy, later onset of prenatal care or quality.

A survey conducted in Porto Alegre (RS) found that 71.8% of maternal deaths occurred in single women.¹³ Already in Piauí and in the city of Ribeirão Preto (SP), they identified a higher proportion of maternal deaths among married women.^{12,19} For the Parliamentary Commission of Inquiry on Maternal Mortality (CPI), 20 single women are more likely to die, considering abandonment as a contributing factor. The absence of a social support network, of which the partner is a part, represents an important risk factor related to unfavorable outcomes.²¹ Most of the women had their occupation as "housewife". It is important to emphasize that this occupation, often devalued because it is not paid work and does not have a return to society, is responsible for great physical effort even during pregnancy, which can lead to death.²⁰

Regarding the obstetric history, 63% of the women had one to four previous pregnancies, 47.7% had the last gestation between 37 and 41 weeks, 70.8% had prenatal care, 58% had Cesarean section childbirth and 76.9% had abortions (Table 2).

Tabela 2. Óbitos maternos segundo antecedentes obstétricos e de assistência à saúde. Recife (PE), Brasil, 2015.

Variables	n	%
Parity		
Primiparous	15	23.0
1 to 4 pregnancies	41	63.0
5 or more pregnancies	9	14.0
Gestational age (last gestation)		
Up to 22 weeks	10	15.4
23 to 36 weeks	23	35.4
37 to 41 weeks	31	47.7
More than 42 weeks	1	1.5
Performing prenatal care		
Accomplished	46	70.8
Unrealized	7	10.8
Ignored	12	18.5
Type of birth		
Normal	27	42.0
Cesarian	38	58.0
Abortion		
Performed	54	76.9
Did not perform	11	23.1

Source: Data from the Death Certificates registered in the Mortality Information System

Regarding parity, the same was found in a study conducted in Recife (PE), in which 54.1% of the women had one to four pregnancies.⁶ The WHO15 states that women who have more than four pregnancies are more exposed to damage, as it increases the risk of anemia, hemorrhage, congenital anomaly and low birth weight. In the last gestation, the gestational age in which the majority of the women were, was between 37 to 41 weeks, that is, a gestational age considered to term. A large proportion of these women performed prenatal consultations during pregnancy.

According to a survey conducted by the National School of Public Health in Brazil, 99% of women undergo at least one consultation during pregnancy, representing high coverage but, low efficiency, since the prenatal goals, of preventing and treating injuries before they reach mother and baby, do not have the expected efficiency.²²

The type of delivery with the highest number of deaths was caesarean section. Of the approximately three million deliveries per year in Brazil, more than half (52%) are delivered by cesarean section.²³ Cesarean delivery increases the risk of maternal death sevenfold, increases the risk of subsequent pregnancies, and practically defines woman's reproductive life.²²

Caesarean section presents risks inherent to the surgical procedure, increases the recovery time of the puerpera and influences the increase of the maternal and neonatal mortality rate, besides increasing the possibility of contracting an infection or having hemorrhage. In relation to the newborn, the risk of going to the Intensive Care Unit quadruples among those born by cesarean section.²⁴

A significant amount of women have aborted at some point in their lives. Abortion, in most cases, is carried out in precarious hygienic conditions and clandestinely. When it does not cause sequelae, it can lead to death. Unwanted pregnancy can result in abortion, which makes the failure of family planning guidelines clear.¹³

Regarding the type of death, 92.3% were early-stage deaths. In relation to the moment of death, 66.2% occurred during the precocious puerperium, 86.2% were defined as a reported death, and 73.8% were considered preventable (48 cases). Maternal deaths classified as direct obstetric occurred in 73.8% of the cases and indirect obstetric deaths accounted for 26.2% of deaths (Table 3).

Table 3. Characteristics related to maternal deaths. Recife (PE), Brazil, 2015.

Variables	n	%
Type of death		
Precocious	60	92.3
Late	5	7.7
Moment of Death		
Pregnancy	12	18.5
Childbirth	3	4.6
Early puerperium *	43	66.2
Late puerperium **	3	4.6
During abortion	4	6.2
Definition of death		
Declared	56	86.2
Presumed	9	13.8
Evitability		
Preventable	48	73.8
Inevitable	8	12.3
Inconclusive	1	1.5
Probably avoidable	8	12.3
Classification of death		
Direct	48	73.8
Indirect	17	26.2

* Death occurring up to 42 days after gestation.
** Death that occurs from 43 days to less than one year after the end of gestation.
Source: Data from the Death Certificates registered in the Mortality Information System.

The puerperium is the period that begins after the birth in which local and systemic changes occur, in the woman's body, that return to the state of the pre-pregnancy state. It can be subdivided into phases: the immediate puerperium (1st to 10th day); late puerperium (10° to 45°) and remote (45° thereafter).²⁵ A study that analyzed the maternal mortality in a Hospital of Rio Grande do Sul emphasizes that the period of birth and the immediate puerperium are critical periods of risk for maternal death and, as such, require qualified assistance and that pregnant women have easy access to health services.²⁶ Maternal Death is considered declared when the information recorded in the Death

Certificate (DC) allows to classify the death as maternal.²

With regard to avoidance of deaths, the prevalence of deaths considered avoidable and of direct obstetric causes was verified. The great majority of these deaths could have been avoided, especially, by adequate care for prenatal, childbirth and the puerperium.²⁷

Table 4 shows the maternal deaths according to the basic cause. The main underlying causes were: human immunodeficiency virus [HIV] (23.9%); hypertensive disorders (20.5%); diseases of the circulatory system (6.8%); puerperium complications (5.7%), and maternal infectious and parasitic diseases (5.7%).

Table 4. Maternal deaths according to basic causes. Recife (PE), 2015.

CID 10/Cause	n	%
B20, B22, B24- Human immunodeficiency virus (HIV) disease	21	23.9
O13, O14, O15- Pre-eclampsia, eclampsia	18	20.5
O99.4- Diseases of the circulatory system	6	6.8
O85, O92- Puerperium complications	5	5.7
O98- Maternal infectious and parasitic diseases	5	5.7
O03, O06- Abortion	4	4.5
O60, O65- Complications of labor and delivery	4	4.5
O85, O86- Puerperal infection	4	4.5
O88- Embolism of obstetric origin	4	4.5
O99.8 Other diseases and conditions	4	4.5
O99.6- Diseases of the digestive system	3	3.4
O99.5- Diseases of the respiratory system	2	2.3
O26.6 Liver disorders	2	2.3
O45- Placental abruption	2	2.3
O00- Ectopic Pregnancy	2	2.3
O99.3- Mental disorders	1	1.1
O01 - Hydatidiform spring	1	1.1

Source: International Statistical Classification of Diseases (ICD-10)

Among the direct obstetric causes, hypertensive disorders and complications of the puerperium predominated, whereas, among the indirect obstetric causes, the

human immunodeficiency virus [HIV] prevailed. According to a study that evaluated the risk factors for maternal mortality in Recife, the five main causes of direct

maternal obstetric death have not changed in the last decade.²⁸ Among the indirect obstetric causes, a study shows the advance of AIDS, which already occupies the first position in this group, along with other infections and preexisting cardiovascular diseases.²⁹

CONCLUSION

The reduction of maternal mortality in Brazil is still a challenge for health services and for society as a whole. The high rates found constitute a serious public health problem, allowing the identification of the need to implement effective interventions of the multiprofessional team to contribute to the reduction of maternal mortality, throughout the pregnancy-puerperal cycle, and especially in the early puerperium, where deaths predominated. In addition, knowing health indicators related to such conditions is fundamental for the planning of actions in women's health.

Many strategies have been related to problem solving, including an adequate birth and death registration system, implementation of maternal mortality committees, reproductive planning, prenatal care, use of appropriate technologies, institutional attention to childbirth. However, we still need government initiatives to be co-operative to ensure the implementation of these actions by adequate financial investment with health, public policies specifically aimed at reducing maternal deaths, projects aimed at reducing barriers to quality maternal care and availability of easily accessible obstetric services.

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