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CHARACTERIZATION OF MATERNAL MORTALITY IN A HEALTH REGION OF INLAND MINAS GERAIS

CARACTERIZAÇÃO DA MORTALIDADE MATERNA EM UMA REGIÃO DE SAÚDE DO INTERIOR DE MINAS GERAIS

CARACTERIZACIÓN DE LA MORTALIDAD MATERNA EN UNA REGIÓN DE SALUD DEL INTERIOR DE MINAS GERAIS

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Objective: to conduct a survey of the epidemiological, care and causal profile of maternal mortality in the cities of geographical coverage of a Regional Health Superintendence located in inland Minas Gerais in the period from 2004 to 2018. Method: descriptive, quantitative observational epidemiological study with data analysis obtained from the Department of Informatics of the Unified Health System, Death Certificates and Maternal Death Investigation Forms. Results: of the 19 maternal deaths analyzed, 8 (42.10%) were women aged 20 to 29 years, white, married, with 8 to 11 years of schooling. Deaths occurred in hospital institutions (100.00%), highlighting direct obstetric maternal death (89.47%) with obstetric embolism as the cause (21.05%). Conclusion: the maternal deaths studied are more related to quality and full access to existing points of care in the maternal-child care network than to the aspects of social vulnerabilities investigated.

Descriptors: Maternal Mortality. Women's Health. Maternal Health. Epidemiology, Descriptive.

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Objetivo: realizar um levantamento do perfil epidemiológico, assistencial e causal da mortalidade materna nos municípios de abrangência geográfica de uma Superintendência Regional de Saúde localizada no interior de Minas Gerais no período de 2004 a 2018. Método: estudo epidemiológico observacional descritivo, quantitativo, com análise de dados obtidos do Departamento de Informática do Sistema Único de Saúde, Declarações de Óbito e Fichas de Investigação de Óbitos Maternos. Resultados: dos 19 óbitos maternos analisados, 8 (42,10%) eram de mulheres de 20 a 29 anos, brancas, casadas, com 8 a 11 anos de estudo. Os óbitos ocorreram em instituições hospitalares (100,00%), destacando-se morte materna obstétrica direta (89,47%) com embolia obstétrica como causa (21,05%). Conclusão: as mortes maternas estudadas estão mais relacionadas à qualidade e acesso integral aos pontos de cuidados existentes na rede assistencial materno-infantil do que aos aspectos de vulnerabilidades sociais investigados.

Descritores: Mortalidade Materna. Saúde da Mulher. Saúde Materna. Epidemiologia Descritiva

Objetivo: realizar un estudio del perfil epidemiológico, asistencial y causal de la mortalidad materna en los municipios de cobertura geográfica de una Superintendencia Regional de Salud localizada en el interior de Minas Gerais en el período de 2004 a 2018. Método: estudio epidemiológico observacional descriptivo, cuantitativo, con análisis de datos obtenidos del Departamento de Informática del Sistema Único de Salud, Declaraciones de Óbito y Fichas de Investigación de Óbitos Maternos. Resultados: de los 19 óbitos maternos analizados, 8 (42,10%) eran de mujeres de 20 a 29 años, blancas, casadas, con 8 a 11 años de estudio. Los óbitos ocurrieron en instituciones hospitalarias (100,00%), destacándose muerte materna obstétrica directa (89,47%) con embolia obstétrica como causa (21,05%). Conclusión: las muertes maternas estudiadas están más relacionadas a la calidad y acceso integral a los puntos de atención existentes en la red asistencial materno-infantil que a los aspectos de vulnerabilidades sociales investigados.

Descriptores: Mortalidad Materna. Salud de la Mujer. Salud Materna. Epidemiología Descriptiva.

Introduction

Maternal health is permeated by important physical, emotional and social events and changes, involving women's health in the preconception period, pregnancy and the puerperium[1]. In this context, maternal death is defined as death occurring during the gestational period or up to 42 days after the termination of pregnancy, caused by a complication directly related or not to pregnancy[2].

Thus, the recognition of the family and social impacts of maternal death[3] and the understanding that most of these deaths are preventable[4] reinforce the global challenge and the importance of the commitment to reduce maternal mortality, as stated in the agenda of the United Nations (UN)[5].

In Brazil, maternal mortality has a capillary distribution in the territory, with deep regional inequalities[5]. Thus, to understand maternal mortality, it is important to consider different aspects, such as those related to the social profile of women, to risk factors, to illegal abortion, to pregnancy-puerperal cycle care, to regional inequalities, as well as to the quality of information and policies, programs and actions to cope with this mortality[5].

The understanding is that the qualification of the care represents an important challenge[3]. In this perspective, the reduction of maternal mortality involves care actions aimed at family planning, ensuring access and qualified prenatal, childbirth and puerperium care[6] based on scientific evidence[3]. Strategies for equity in health and improvement of quality and safety of care should be sought[4].

Understanding the factors involved in maternal deaths can help in the construction of coping strategies[6]. Therefore, understanding the causes of maternal mortality can support the development of health policies, programs and actions[3], which recognize the relationship between social inequalities and maternal death[6], aimed at reducing inequities and barriers to access[3] and ensuring adequate care for women in the pregnancy-puerperal cycle[6].

Thus, the research was based on the following question: How is maternal mortality characterized in the geographic region covered by a Regional Health Superintendence (RHS) located in inland Minas Gerais? The objective of this study was to conduct a survey of the epidemiological, care

and causal profile of maternal mortality in the cities of geographical coverage of a Regional Health Superintendence located in inland Minas Gerais from 2004 to 2018.

Method

This is an observational, descriptive epidemiological study with a quantitative approach. The universe of the study comprised the geographical area covered by RHS/Passos, located in the southwest of Minas Gerais, with 27 cities, subdivided into four health micro-regions: Cássia, with 5 cities; Passos, with 9 cities; Piumhi, with 7 cities and São Sebastião do Paraíso, with 6 cities[7].

The study population comprised all deaths of women living in the cities covered by the RHS/Passos registered in the Department of Informatics of the Unified Health System (DATASUS), of public access, concerning data on maternal mortality from 2004 to 2018[8]. The criterion for inclusion in the study was to be a city covered by the RHS/Passos that had maternal death registered in the DATASUS from 2004 to 2018. The exclusion criterion concerned cities that refused the request for authorization to perform this research.

The study was developed from June to September 2022. Initially, a previous research was carried out in DATASUS, showing that, among the four health micro-regions, in three, there were records, totaling 19 maternal deaths in the period. For the micro-region of Passos, there were ten deaths in total, one from Alpinópolis, two from Carmo do Rio Claro, one from Itaú de Minas and six from Passos. For the micro-region of São Sebastião do Paraíso, a total of six deaths were recorded, five from São Sebastião do Paraíso and one from Pratápolis. Finally, in the micro-region of Piumhi, three deaths were recorded, one from Capitol and two from Piumhi. It should be noted that, in the micro-region of Cassia, there were no maternal deaths during this period.

In addition to DATASUS, the other sources of complementary data searched were the minutes of the Municipal Committees for the Investigation of Maternal, Child and Fetal Mortality, the Death Certificate (DC) and the Maternal Death Investigation Forms: (a) Maternal Death Investigation Form – Outpatient Health Service; (b) Maternal Death Investigation Form – Hospital Health Service; (c) Maternal Death Investigation Form – Household Interview; (d) Necropsy Report Data Collection Form – Maternal Death and (e) Maternal Death Investigation Form – Summary, Conclusions and Recommendations.

As the aforementioned sources constitute confidential data, authorization was requested to conduct research in the eight cities mentioned previously that recorded the 19 maternal deaths in DATASUS. Of these eight cities, only one refused the request for authorization to perform this research. The city that refused the research authorization registered two maternal deaths of the 19 present in DATASUS. Thus, the sample design was composed of 17 deaths from the 7 cities that authorized the research

For all data sources, instruments were developed to guide the collection of information. The study variables were data on sociodemographic aspects (schooling, marital status, age, race/color, occupation); reproductive history (number of previous pregnancies); pregnancy and prenatal care (type of pregnancy, place of prenatal care, monitoring of high-risk prenatal care, number of prenatal care visits, month of gestation of the first prenatal visit, gestational age of the last prenatal visit); type of childbirth and abortion; and death data (type and causes of obstetric maternal death, death in pregnancy, childbirth or puerperium, medical care, necropsy, place of occurrence, investigated death and a demand for new information during the investigation), selected based on the Manual of Completion of the Maternal Death Investigation Forms[9], which contains guidelines for the standard completion of these Forms and, therefore, favors the process of investigation and surveillance of maternal death.

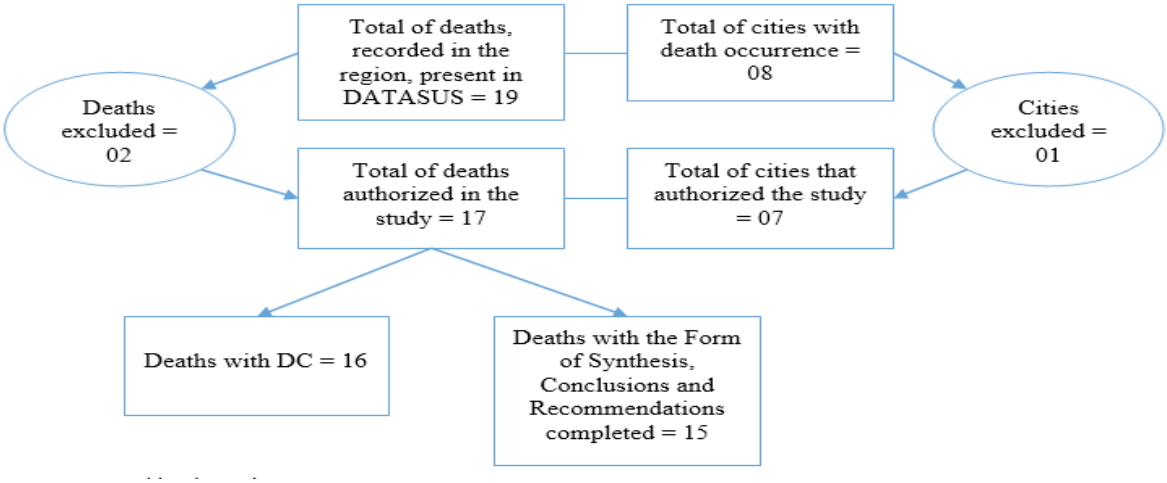
The data referring to the investigated variables were stored in a Microsoft Excel spreadsheet for the measurement of simple descriptive statistics, presented in absolute frequency (n) and relative

frequency (%) of distribution for the period of years. The research was approved by the Research Ethics Committee of the University of the State of Minas Gerais – Passos Unit, Opinion n. 5,134,339, and requested waiver of the Informed Consent Form for dealing with secondary data, according to the legal provisions of Resolution n. 466, of December 12, 2012, of the National Health Council.

Results

The results found in this study are represented in Figure 1, which presents a scheme related to the total number of deaths in the cities studied present in DATASUS[8], and the results obtained regarding the analysis of the presence of death certificates and the completion of the Forms of Summary, Conclusions and Recommendations.

Figure 1 – Graphical presentation of the results



Source: created by the authors.

Data collection in DATASUS[8] allowed the analysis of the 19 maternal deaths registered in the region. As there was no consent to continue the study for 2 deaths, 17 maternal deaths constituted the sample design of municipal data collection. It was verified the existence of a complete investigation in two of these deaths, and, among these, only one had the DC.

In relation to the maternal death investigation form referring to the Summary, Conclusions and Recommendations, there was the possibility of collecting 15 maternal deaths. However, in the investigation records regarding the Outpatient Health Service and Necropsy Report, no information was collected as these forms were not completed, as well as in the minutes of the municipal committees investigating maternal death, where no relevant information was found that added a qualifying aspect to the analysis.

The variables were organized and grouped, according to the sample and source of data surveyed, in two topics: Epidemiological and care profile of maternal mortality and Causal profile of maternal mortality.

Epidemiological and care profile of maternal mortality

According to information from DATASUS[8], of the 19 maternal deaths, 8 (42.10%) were women who had 8 to 11 years of schooling, and 6 (31.57%) had no information about schooling. Regarding marital status, 8 (42.10%) women were married, but, in two deaths (10.52%), this information was ignored. Regarding the age group, 8 (42.10%) women were between 20 and 29 years old, and 7 (36.84%) were between 30 and 39 years old. As for race/color, 8 (42.10%) women were white and 7 (36.84%) women were black (black and brown) (Table 1).

Regarding the type of obstetric cause, there was a higher occurrence of direct obstetric maternal death in 17 women (89.47%), all in hospital institutions (100%). In addition, of the total number of deaths recorded, 17 deaths (89.47%) were investigated with an informed summary form.

Table 1 – Characterization of maternal mortality by schooling, marital status, age group, race/color, type of obstetric cause, place of occurrence and investigation of the death. Passos, Minas Gerais, Brazil – 2004-2018. (N=19)

Variables	n	%
Schooling		
None	-	-
1 - 3 years	2	10.52
4 - 7 years	3	15.78
8 - 11 years	8	42.10
12 years or more	-	-
Ignored	6	31.57
Marital Status		
Single	5	26.31
Married	8	42.10
Widowed	-	-
Legally Separated	3	15.78
Consensual Union	1	5.26
Ignored and not informed	2	10.52
Age Group		
10 - 14 years	-	-
15 - 19 years	1	5.26
20 - 29 years	8	42.10
30 - 39 years	7	36.84
40 - 49 years	3	15.78
Race/Color		
White	8	42.10
Black	6	31.57
Brown	1	5.26
Indigenous	-	-
Ignored	4	21.05
Deaths by type of obstetric cause		
Direct obstetric maternal death	17	89.47
Indirect obstetric maternal death	2	10.52
Unspecified obstetric maternal death	-	-
Place of death		
Hospital facility	19	100
Other health facility	-	-
Home	-	-
Street	-	-
Others	-	-
Investigated Death		
Death investigated, with informed summary form	17	89.47
Death not investigated	2	10.52

Source: created by the authors.

Note: Conventional sign used:
- Numeric data equal to zero not resulting from rounding.

Regarding the 17 maternal deaths that constituted the sample design, 16 had DC. Of these, 6 women (37.50%) were inserted in the labor market, being housewife the most frequent occupation, with 4 cases (25.00%), and 6 (10.52%) had no information for the usual occupation.

The medical care provided during the disease that caused death was present in 15 cases (93.75%), and, in one case (6.25%), this information was ignored.

Regarding referral for necropsy, 14 cases (87.50%) were not referred, one case (6.25%) was referred and one case (6.25%) had the information ignored (Table 2).

Table 2 – Characterization of maternal mortality by occupation, medical care provided during the disease and necropsy. Passos, Minas Gerais, Brazil – 2004-2018. (N=16)

Variables	n	%
Occupation		
Housewife	4	25.00
Cashier	1	6.25
Student	1	6.25
Clinical analysis laboratory assistant	1	6.25
Receptionist	1	6.25
House maid	1	6.25
Film assembler	1	6.25
Not informed	6	37.50
Medical care provided during the disease that led to death		
Yes	15	93.75
No	-	-
Ignored	1	6.25
Confirmation of the diagnosis by necropsy		
Yes	1	6.25
No	14	87.50
Ignored	1	6.25

Source: created by the authors.

Note: Conventional sign used:
- Numeric data equal to zero not resulting from rounding.

Regarding the 15 maternal deaths present in the Maternal Death Investigation Forms - Summary, Conclusions and Recommendations (Table 3), 7 (46.66%) were of high-risk pregnant women and 5 (33.33%) of habitual risk. High-risk pregnancies were monitored by secondary care and those at normal risk were monitored by Primary Health Care (PHC) teams.

Concerning the reproductive history, six pregnant women (40%) were primigravidae, followed by five (33.33%) multigravidae. Regarding the number of prenatal appointments, nine women (60%) had six or more appointments and two (13.33%), none. In 11 women (73.33%), the beginning of prenatal care occurred until the 3rd month of pregnancy and the follow-up of prenatal care continued in 10 women (66.66%) who had gestational age between 25 and 37 weeks or more.

In addition, in these Forms, the surgical procedure of cesarean section was performed in five women (33.33%), followed by vaginal childbirth in four women (26.66%). Among the cases, there was the occurrence of miscarriage in two women (13.33%) and no record of induced abortion. Regarding the occurrence of death in the period of the pregnancy-puerperal cycle, it was predominant during the puerperium phase with seven deaths (46.66%). During the investigation, only four deaths (26.66%) were reported based on new information.

Table 3 – Characterization of maternal mortality by retrieving information, time of death, number of pregnancies, number of prenatal appointments, beginning of prenatal care, gestational age at the last prenatal appointment, place providing prenatal care, follow-up by high-risk prenatal care, type of childbirth and type of pregnancy. Passos, Minas Gerais, Brazil – 2004-2018. (N=15)

Variables	n	%
The investigation allowed the retrieval of some information		
Yes	4	26.66
No	11	73.33
Death in Pregnancy or Puerperium		
During pregnancy	3	20.00
After abortion	2	13.33
During childbirth or up to 1h after childbirth	2	13.33
During puerperium, up to 42 days	7	46.66
Not completed	1	6.66
Number of pregnancies (except the current)		
0 (primigravidae)	6	40.00
1 (secongravidae)	4	26.66
2 (multigravidae)	-	-
3 or more (multigravidae)	5	33.33
Number of prenatal appointments		
0	2	13.33
1 - 5	4	26.66
6 or more	9	60.00
Gestational month of 1st prenatal appointment		
1st	4	26.66
2nd	6	40.00
3rd	1	6.66
4th	2	13.33
Not informed	2	13.33
Gestational age of the last prenatal appointment (weeks)		
0 - 12	-	-
13 - 24	3	20.00
25 - 36	4	26.66
37 or more	6	40.00
Not informed	2	13.33
Place of prenatal care		
Primary care	5	33.33
Secondary care	7	46.66
Not informed	3	20.00
High-risk prenatal care follow-up		
Yes	7	46.66
No	-	-
Not applicable	5	33.33
Not informed	3	20.00
Type of childbirth/abortion		
Vaginal	4	26.66
Cesarean section	5	33.33
Spontaneous abortion	2	13.33
Not informed	4	26.66
Type of pregnancy		
High risk	7	46.66
Normal risk	5	33.33
Not informed	3	20.00

Source: created by the authors.

Note: Conventional sign used:
- Numeric data equal to zero not resulting from rounding.

Causal profile of maternal mortality

Through the data obtained in DATASUS[8], the cause of the 19 maternal deaths was diversified, being embolism of obstetric origin the most frequent, with four cases (21.05%), followed by postpartum hemorrhage with three cases (15.78%), hemorrhagic disorders with two cases (10.52%) and hypertensive disorders also with two cases (10.52%) (Table 4).

Table 4 – Characterization of maternal mortality by causes of direct and indirect maternal death according to the ICD-10 category. Passos, Minas Gerais, Brazil – 2004-2018. (N=19)

ICD-10 Category	n	%
Direct obstetric maternal death	17	89.47
O07 Failed abortion attempt	2	10.52
O14 Gestational hypertension with significant proteinuria	1	5.26
O15 Eclampsia	1	5.26
O16 Unspecified maternal hypertension	1	5.26
O30 Multiple Pregnancy	1	5.26
O45 Placental abruption	2	10.52
O62 Abnormalities of uterine contraction	1	5.26
O72 Postpartum hemorrhage	3	15.78
O75 Other labor and childbirth complications not classified elsewhere	1	5.26
O88 Embolism of obstetric origin	4	21.05
Indirect obstetric maternal death	2	10.52
O99 Other diseases of the mother classified elsewhere, but which complicate pregnancy/childbirth/postpartum	2	10.52

Source: created by the authors

ICD - International Statistical Classification of Diseases and Health-Related Problems.

Discussion

In the present study, direct obstetric maternal death prevailed, which points to the possibility of low quality of maternal and child health care provided to women[10], difficulties in accessing health services, lack of monitoring and timely detection of health problems, professionals involved in the prenatal, delivery and puerperium care poorly trained[11], and demonstrate that maternal deaths still persist as a major public health problem due to their character of preventability[2,12-14].

Deaths occurred most often in the puerperal period. The quality of health care is equally important in all phases, from reproductive planning and preconception monitoring, through pregnancy, childbirth, birth and postpartum. However, the findings indicate the relevance of maternal puerperal health care aimed at qualified surveillance by both the obstetric care hospital and the PHC service. Thus, strategies are needed to sensitize health professionals, since the puerperium tends to be a less valued period, both by professionals and women and family, when compared to pregnancy and childbirth.

Knowing that there is a high number of maternal deaths in the first 48 hours in the postpartum period[15], and that these may be directly or indirectly associated with each phase of the puerperal pregnancy cycle, obstetric care services should also prioritize the identification of risk factors and maternal complications in pregnancy, childbirth and postpartum, as well as the necessary conduct in a timely manner. In this sense, it would be beneficial to have a systematic and, if possible, computerized communication between hospital services of obstetric care and PHC services, in order to enhance shared care from pregnancy to the post-pregnancy period care in the puerperium, contemplating the concept of high responsibility.

The importance of PHC in relation to the women's health care in the puerperal period through health promotion and education is unquestionable, as well as early detection of complications and adequate treatment. However, what is evident is the lack of attention given to the puerperal period, prioritizing the care of the newborn[10]. Therefore, the services can seek strategies to improve this scenario, such as telecare and home puerperal appointments[16].

Regarding prenatal care, most of the pregnant women performed prenatal care in adequate time, place and number of appointments. Nevertheless, this fact draws attention because it demonstrated that its performance is not a sufficient condition for achieving safe and healthy maternal health with favorable outcomes. Here is a question about the quality of prenatal care offered, about the need to expand the set of minimum quality criteria recommended for the pregnancy-puerperal cycle by public policies, management tools that contribute to the systematization, registration and monitoring of these criteria, as well as to optimize communication in shared care.

Although multiparity is a risk factor, in many studies, primiparity has also been presented as a risk factor associated with maternal death[17]. It is relevant to carry out in-depth studies about the thee, since the literature indicates that there are inequalities between parities. Primiparous women may have more advantage than multiparous women because they have more favorable socioeconomic conditions and maternal healthy habits, even though there are no differences in the existence of pre-existing diseases and comorbidities to pregnancy[17].

Analyzing the types of delivery, most women performed the surgical procedure of cesarean section. It is important to investigate the existence of real clinical indication to perform this procedure. A study shows that primiparous women are the ones who do this procedure most unnecessarily[17]. There are many risks that women are exposed to when performing cesarean sections, such as hemorrhagic complications, puerperal infections and abnormal placentation[18]. It is emphasized the need to provide guidance to women about the risks that cesarean childbirth can cause, given the number of cesarean sections performed in the country, which stands out worldwide for the high proportion of this childbirth route.

In the study, there was a portion of maternal deaths related to spontaneous abortion. The literature suggests that the complications involved in this phenomenon include infection and hypovolemic shock due to intense hemorrhage[19]. It is important to note that these complications are rare and are related to social determinants of health and lack of quality obstetric care[19]. This information is important since it raises the urgency of promoting actions to qualify reproductive, preconception and prenatal care.

Regarding the assistance received during the disease that caused death, no woman was unassisted, and the necropsy was performed in only one death. It is important to perform necropsy in women for the real dimensioning of the cause that led to death, enabling mortality committees to identify the risks that caused death and to establish strategies to prevent new maternal deaths[3,11].

In this study, the three main causes were obstetric embolism, followed by postpartum hemorrhage and hypertension. Although divergent from national data[12], this study shows that maternal death due to obstetric embolism may be characterizing a transition in the profile of cause of maternal deaths, as it begins to gain space and has also been presenting itself as a warning sign in some works, such as that carried out in the state of Recife[11], which found it as the second most frequent cause, and in the state of Rio de Janeiro[20], which recorded it as the fourth leading cause of all deaths analyzed. The identification of risk factors, such as advanced age and cesarean sections, and the timely and early recognition and intervention of the multiprofessional team is essential for the avoidance of maternal deaths due to obstetric embolism[21].

Hypertensive and hemorrhagic disorders present in maternal deaths indicate failures in the network and health care provided, since practically all cases are capable of prevention and

control of pre-existing diseases and comorbidities through the provision of a quality preconception and prenatal care[12]. The data obtained point to the importance of reviewing and improving the actions recommended by public policies for the care of the pregnancy-puerperal cycle, with a view to the prevention and qualified and timely care of complications related to embolism, hypertension, and other prevalent causes of maternal morbidity and mortality. Equally relevant is to create management, registration, systematization and monitoring strategies that promote the guarantee that the actions recommended are actually carried out in the context of health services.

The present data corroborate a study conducted in Juiz de Fora, in which most deaths were women who had completed high school[22], but contrast with results obtained in Montes Claros, Brazil, in which most deaths occurred in women who had incomplete elementary school[14]. The scenario of education level changes according to each region analyzed, but it is evident that, in the Northern and Northeastern regions of Brazil, maternal deaths are closely related to low schooling[13].

Another point to be highlighted in relation to schooling is the completed *ignored* field, which also appears in other studies[13,22]. The absence of more accurate information regarding study years makes it impossible to detail the analysis of its relationship with maternal mortality and may have interfered for possible profile change, depending on the real condition of the woman.

The present study showed that, although there is a higher frequency of deaths in white women, there was also the occurrence in black and brown women, since different population distributions in relation to race/color can be found according to each region under study[3], in addition to the number of answers with this field filled as ignored, which may have interfered with the result.

As for the socio-affective support that the woman receives in the pregnancy-puerperal cycle, this study points to a higher frequency of deaths in married women. This fact does not corroborate several studies published at the national[23], state[13] and municipal levels[3,11,14,22], which show that single women have a higher risk of maternal death.

Regarding age, the patterns found agree with some studies that recorded the predominance of maternal deaths in the age group between 20 and 29 years[3,13], however, there is a significant occurrence in the age group between 30 and 39 years[24], as well as in this study.

This study showed that the housewife occupation appears more frequently and other occupations appear in a diversified way, corroborating data collected by other studies that found that 46.2%[11], 40.9%[20] and 35.6%[25] were housewives. It is inferred here that the housewife occupation may be related to the level of education and socioeconomic conditions. Although the highest frequency was presented in women who were housewives, 37.5% of women were inserted in the labor market, evidencing that work requiring intense rhythms, weightlifting, repetitive, monotonous and stressful tasks are some occupational risk factors for maternal mortality[25].

Although some deaths have not been investigated, it is worth remembering the Ordinance n. 653, of May 28, 2003, of the Ministry of Health, which made the investigation of maternal death mandatory for the cities. In the few times that new information was retrieved, the lack of information on which new data were collected by the investigation is questioned.

All maternal deaths occurred in hospital institutions (100%), following the same level found in the scientific literature[11,13-14,22], relating the accomplishment of the majority of births in health institutions and that, at the time of death, these women were receiving care.

The literature has numerous recommendations to mitigate the problem of maternal mortality, such as the quality of prenatal care offered, including access to adequate tests, safe childbirth and postpartum and training of professionals[11-12,22]. Nevertheless, in a few studies, preconception care is treated as an important theme in the reduction of maternal deaths, requiring incentives in its

practice and deserving greater attention from the maternal and child network[26].

The permanent and continuous implementation of preconception care in PHC is considered a great ally in the fight against morbidity and mortality by providing women with opportunities to assess the state of health and conditions of adequate and healthy planning of their pregnancy, in addition to the relevance of more rigorous identification and control in chronic conditions in this period, since chronic diseases may compromise the functioning of the healthy maternal organism in the pregnancy-puerperal cycle[26]. In this scenario, greater investments become important in order to promote, expand and qualify the actions of reproductive planning and preconception care, as well as the puerperal period, in health services.

The analysis of the maternal mortality profile for the RHS/Passos Region was impaired due to the existence of scarce data on maternal deaths in the cities in the maternal death investigation records and in the minutes of the municipal investigation committees. This fact make it difficult to portray in more detail the sociodemographic, care and causal profile of maternal mortality in that region.

Another important limitation refers to the considerable numbers of records that did not have information or were included as ignored information, especially about the variables of schooling, marital status, race/color, occupation, prenatal care facility, type of childbirth/abortion, type of pregnancy, among others, making it impossible to accurately portray maternal deaths.

The study contributes to demonstrate the weaknesses found regarding the role of municipal epidemiological surveillance of maternal mortality concerning the completion of maternal death investigation forms and the recording of this information in minutes of the municipal committees of investigation of maternal death. Training on the organization of the work process is recommended, seeking the qualification of primary information in the database of cases of maternal deaths to monitor maternal epidemiological profiles.

Conclusion

The survey of the epidemiological, care and causal profile of maternal mortality conducted in this study showed a predominance of direct maternal death with greater occurrence in the puerperium, in women aged 20 to 29 years, married, white, with 8 to 11 years of schooling and housewives, with obstetric embolism being the most frequent cause of death. Moreover, it enabled the identification of relevant information and weaknesses related to municipal surveillance of maternal death and the network of maternal and child health care.

Therefore, the maternal deaths studied are more related to quality and full access to existing points of care in the maternal-child care network than to the aspects of social vulnerabilities investigated.

Collaborations:

1 – conception and planning of the project: Wanessa Leonel Nunes and Raquel Dully Andrade;

2 – analysis and interpretation of data: Wanessa Leonel Nunes, Raquel Dully Andrade, Jaqueline Silva Santos and Maria Ambrosina Cardoso Maia;

3 – writing and/or critical review: Wanessa Leonel Nunes, Raquel Dully Andrade, Jaqueline Silva Santos, Maria Ambrosina Cardoso Maia, Gilmar Antonio Batista Machado, William Messias Silva Santos and Fabíola Silveira Lemos;

4 – approval of the final version: Wanessa Leonel Nunes, Raquel Dully Andrade, Jaqueline Silva Santos, Maria Ambrosina Cardoso Maia, Gilmar Antonio Batista Machado, William Messias Silva Santos and Fabíola Silveira Lemos.

Competing interests

There are no competing interests.

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