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EPIDEMIOLOGICAL PROFILE OF INFANT MORTALITY IN MINAS GERAIS DURING 2020: A RETROSPECTIVE STUDY

Perfil epidemiológico da mortalidade infantil em Minas Gerais durante 2020: estudo retrospectivo

Perfil epidemiológico de la mortalidad infantil en Minas Gerais durante 2020: un estudio retrospectivo

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RESUMO

OBJETIVO: identificar o perfil epidemiológico da mortalidade infantil em Minas Gerais durante 2020. **Método:** estudo descritivo, exploratório, retrospectivo, transversal, com abordagem quantitativa, realizado em Minas Gerais com dados de acesso público do Sistema de Informação de Mortalidade. A amostra foi composta por 2.581 óbitos infantis notificados durante 2020. **Resultados:** sexo masculino (55,5%), pardo (51,8%), óbitos hospitalares (94,3%). Prevalência de mães jovens com idade inferior a 30 anos (52,5%), oito a 11 anos de estudos (49,4%), gestação com duração inferior a 36 semanas (59,9%), única (77,9%), parto cesáreo (45,0%) e abaixo do peso ao nascer (62,6%). As principais causas de óbitos foram: afecções perinatais (61,6%) e malformações congênitas, deformidades e cromossomopatias (25,0%). **Conclusão:** o alto índice de óbitos infantis

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notificados em Minas Gerais no ano de 2020 apresenta precedentes gineco-obstétricos importantes os quais podem repercutir diretamente no aumento da Taxa de Mortalidade Infantil durante o período neonatal precoce.

DESCRITORES: Mortalidade infantil; Saúde da criança; Atenção primária à saúde.

ABSTRACT

OBJECTIVE: to identify the epidemiological profile of infant mortality in Minas Gerais during 2020. **Method:** a descriptive, exploratory, retrospective, cross-sectional study with a quantitative approach, carried out in Minas Gerais using publicly accessible data from the Mortality Information System. The sample consisted of 2,581 infant deaths reported during 2020. **Results:** male (55.5%), brown (51.8%), hospital deaths (94.3%). Prevalence of young mothers under 30 years of age (52.5%), eight to 11 years of schooling (49.4%), pregnancy lasting less than 36 weeks (59.9%), single (77.9%), cesarean delivery (45.0%) and underweight at birth (62.6%). The main causes of death were: perinatal conditions (61.6%) and congenital malformations, deformities and chromosomopathies (25.0%). **Conclusion:** the high rate of infant deaths reported in Minas Gerais in 2020 presents important gynecological and obstetric precedents which can have a direct impact on the increase in the Infant Mortality Rate during the early neonatal period.

DESCRIPTORS: Infant mortality; Child health; Primary health care.

RESUMEN

OBJETIVO: identificar el perfil epidemiológico de la mortalidad infantil en Minas Gerais durante 2020. **Método:** estudio descriptivo, exploratorio, retrospectivo, transversal, cuantitativo, realizado en Minas Gerais a partir de datos de acceso público del Sistema de Información de Mortalidad. La muestra consistió en 2.581 muertes infantiles notificadas durante 2020. **Resultados:** sexo masculino (55,5%), castaño (51,8%), muertes hospitalarias (94,3%). Prevalencia de madres jóvenes menores de 30 años (52,5%), escolaridad de 8 a 11 años (49,4%), duración de la gestación inferior a 36 semanas (59,9%), solteras (77,9%), parto por cesárea (45,0%) y bajo peso al nacer (62,6%). Las principales causas de muerte fueron: afecciones perinatales (61,6%) y malformaciones congénitas, deformidades y cromosomopatías (25,0%). **Conclusión:** La elevada tasa de mortalidad infantil registrada en Minas Gerais en 2020 presenta importantes antecedentes ginecológicos y obstétricos que pueden tener un impacto directo en el aumento de la Tasa de Mortalidad Infantil durante el período neonatal precoz.

DESCRIPTORES: Mortalidad infantil; Salud infantil; Atención primaria de salud.

INTRODUCTION

Infant Mortality (IM) was responsible for around 3.9 million deaths in children under one year of age worldwide in 2019.[1] In Brazil, in the same year, it was responsible for 38,619 infant deaths, which represents 13.3 for each live birth (LB). Meanwhile, the state of Minas Gerais had an Infant Mortality Rate (IMR) of 12.9 deaths per live birth.[2] The IMR is characterized by the frequency of deaths in the infant population under one year of age per thousand live births in a given geographical area in the year in question.[3] Therefore, IMR is understood as the sum of deaths occurring in the early neonatal (0-6 days of life), late neonatal (7-27 days) and post-neonatal (28-364 days) periods.[4]

IM is still seen as one of the most aggravating public health problems in the world since, even with the reduction in numbers worldwide, several developing countries still have a high rate.[5] In this sense, IM is a sensitive indicator of a country's development which involves social, cultural and biological conditions, as well as pointing out flaws in the health services provided.[6,7] According to the World Health Organization (WHO), IMR is a research tool which identifies the availability of jobs and the effectiveness of health care, especially prenatal care, childbirth, the newborn (NB) and children in their first year of life, and is constantly analyzed for the implementation of public policies aimed at maternal and child care.[5]

Through IM, the inequality of a society can be analyzed, as well as the effectiveness of access to health services in terms of their potential for resolution.6 In recent decades, Brazil has undergone various transformations related to socio-economic development, urbanization, the social determinants of pathologies and the ordering of health services. In this context, the Ministry of Health (MoH) created the Live Birth Information System (SINASC) and the Mortality Information

System (SIM) in 1976 and 1990, respectively, which are important data tools for analyzing IM.[8]

It should be noted that Brazil is one of the few countries that has shown a decrease in IMR. There was a decline in IMR between 1990 and 2015, from 47.1 to 13.3 infant deaths per thousand LB. However, in 2016, the IMR increased to 14.0. Despite this, between 2017 and 2019, the rate was again the same as in 2015, at 13.3 deaths per 1,000 LB.[2] It should be noted that 65.8% of deaths of children under one year of age could have been avoided, and that it is necessary to improve care for women during prenatal care, childbirth and the puerperium, or for newborns, through appropriate therapeutic and diagnostic actions and health promotion actions.[9]

In Brazil, over the years, one of the government's main priorities has been to find strategies to improve child health care through health actions based on quality and solving identified problems. Thus, in order to prevent child health problems and minimize their determinants, health policies have been implemented, such as the Prenatal and Birth Humanization Program (PHPN, 2000), the Agenda of Commitment for Comprehensive Child Health and Reduction of Child Mortality (2004), the National Policy for Comprehensive Child Health Care (PNAISC, 2015), among others. Therefore, the PNAISC was created and structured to meet the characteristics of children in their various life cycles, from pregnancy to adolescence. Furthermore, it is structured along the axes of Primary Care (PC) with the aim of safeguarding the quality of life (QoL), disease prevention and health promotion of this group.[10]

In view of this, the Ministry of Health introduced the Stork Network in 2011 through Ordinance No. 1,459, which aims to implement a network of care for prenatal care, labor and birth, the puerperium and the logistics system, highlighting the physiological process and providing a safe birth for children.[11] Thus, IM is a challenge for the Unified Health System (SUS), as it is not only linked to biological aspects, but also to socioeconomic, environmental and cultural issues, requiring the health system to be able to offer the community a biopsychosocial model, taking into account health promotion actions.[12]

The Family Health Strategy (ESF) is a representative model for the organization of primary care in Brazil, and is responsible for changing the health-disease process of individuals in a private, family and collective way. Thus, the Ministry of Health proposed this model with the aim of reorganizing health care through group work.[13] Over the years, this model of care has enabled satisfactory results associated with maternal and child health, such as improved prenatal care and the prevention of infectious diseases. Therefore, studies show that Primary Health Care (PHC) plays a significant role in reducing IM in children under one year of age.[14]

Studies show that there is a relationship between the number of prenatal consultations and maternal socio-economic conditions, type of delivery and the particularities of the birth of children who died in the neonatal period, most of whom were less than seven days old. Poor prenatal care is correlated with an increase in neonatal deaths due to some preventable causes during prenatal care, based on preventive actions and health promotion for pregnant women, carried out in primary care.[6] Although IMR in Brazil has fallen dramatically in recent years, there are still some obstacles to overcome, such as social inequalities, socioeconomic development and access to health services.[15]

The study of IM in the state of Minas Gerais has a direct impact on the actions of health services, especially PHC, since it is the first level of health care and the gateway to SUS users, which will have repercussions on the maintenance of the planning of these actions, as well as the implementation of new measures and the maintenance of public health policies in order to contribute to the reduction of IM in the first year of life. Therefore, this study aimed to identify the epidemiological profile of IM in Minas Gerais during 2020.

METHOD

This is a descriptive, population-based, exploratory, retrospective, cross-sectional study with a quantitative approach. The study was carried out in the state of Minas Gerais, using the Mortality Information System (SIM). The epidemiological variables were made available through the Database of the Department of Informatics of the Unified Health System (DATASUS), MS, Health Surveillance Secretariat (SVS), which accessed the data during the month of April 2022. The study population was given through publicly accessible secondary data related to the prevalence of MI reported throughout the state of Minas Gerais, Brazil. The study sample consisted of 2,581 cases of infant deaths reported in the state of Minas Gerais during the period from January 1 to December 31, 2020.

The following inclusion criteria were adopted for participation in the study: (1) being Brazilian, under the age of one and living in the state studied; (2) having the cause of death recorded according to the International Classification of Disease No. 10 (ICD-10); (3) having the death notified during the stipulated period; and (4) having all the information available on DATASUS. The following were excluded: (1)

records of patients not resident in the state of Minas Gerais; (2) records with incomplete data. A self-prepared form based on the MH's SIM notification form was used. Data was collected using publicly available secondary data, available for download from the DATASUS website, during the second half of 2022, in October, November and December, by the researcher in charge.

A form was used as a data collection instrument containing the following study variables: gender; race/color; place of death; mother's age; mother's schooling; length of pregnancy; type of pregnancy; type of delivery; birth weight; ICD-10 chapter; and region. Data was collected from DATASUS, where it is publicly available online at the following website: http://tabnet.datasus.gov.br/cgi/deftohtm.exe?sim/cnv/inf10mg.def.

The data was stored in the Statistical Package for the Social Sciences (SPSS®), version 15.0, for later tabulation and discussion. The data was analyzed according to simple, non-parametric, non-probabilistic descriptive epidemiology. The data was presented in tables with absolute and percentage frequencies and prepared using Microsoft Excel®, version 2010. The data was processed using univariate statistical analysis.

To calculate the Neonatal Mortality Rates (NMR), the number of deaths of residents from zero to 364 days of age was divided by the total number of live births of resident mothers, multiplied by one thousand, and subdivided according to age, from seven to 27 days; and from 28 to 364 days of age, characterizing the early neonatal, late neonatal and post-neonatal periods, respectively.

$$Early\ Neonatal\ Mortality\ Rate = \frac{Number\ of\ deaths\ of\ children\ aged\ 00\ to\ 06\ days}{Total\ number\ of\ live\ births} x1.000$$

$$Late\ Neonatal\ Mortality\ Rate = \frac{Number\ of\ deaths\ of\ children\ aged\ 07\ to\ 27\ days}{Total\ number\ of\ live\ births} x1.000$$

$$Postneonatal\ Mortality\ Rate = \frac{Number\ of\ deaths\ of\ children\ aged\ 28\ to\ 364\ days}{Total\ number\ of\ live\ births} x1.000$$

Finally, to calculate the IMR, the number of deaths in children under one year of age in residents of Minas Gerais and, subsequently, all the states in the Southeast region of Brazil was divided by the total number of LB of resident mothers, multiplied by one thousand, to compare the study with the other states.

$$Infant\ Mortality\ Rate = \frac{Number\ of\ deaths\ of\ children\ under\ 1\ year\ of\ age}{Total\ number\ of\ live\ births} x1.000$$

The data ignored in the survey constitutes lost data, making it difficult to carry out a more precise and reliable analysis of the total sample of children in this study, as well as other variables. The study complied with the ethical precepts established by Resolution 510 of April 7, 2016, of the National Health Council (CNS), which regulates research directly or indirectly involving human beings. Given that the study used a secondary database in the public domain, it was not necessary/obligatory to send the research project to the Research Ethics Committee (CEP) for appraisal and approval.

RESULTS

There was a prevalence of early neonatal deaths (56.9%) in the zero to six-day age range, male (55.5%), brown (51.8%), hospital-born (94.3%), children of young mothers aged 25-29 (20.2%) who had between eight and 11 years of schooling (49.4%). Of the infant deaths, 59.9% were neonates whose pregnancy duration was less than 37 weeks, with a higher prevalence between 22-27 weeks (27.6%). Most of the deaths were from single pregnancies (77.9%), cesarean deliveries (45.0%) and underweight children (62.6%), so that they were divided into Low Birth Weight (LBW) (17.2%), with a weight between 1.500 to 2,499 grams; Very Low Birth Weight (VLBW) (10.3%), weighing between 1,000 and 1,499 grams; and Extreme Low Birth Weight (EBLBW) (35.1%), weighing less than 1,000 grams (Table 1).

Table 1 - Socioeconomic and gynecological-obstetric profile of infant deaths according to LB age group. Minas Gerais, Brazil, 2020

Variables	Age group (days)							
	0-6		7-27		28-364		Total	
	n	%	n	%	n	%	n	%
Deaths by age group	1.467	56,9	472	18,2	642	24,9	2.581	100,0
Gender								
Male	852	33,0	257	9,9	324	12,6	1.433	55,5
Female	605	23,4	215	8,3	318	12,3	1.138	44,0
Ignored	10	0,5	00	0,0	00	0,0	10	0,5
Race/Color								
White	515	20,0	186	7,2	299	11,5	1.000	38,7
Black	45	1,7	19	0,7	24	1,0	88	3,4
Yellow	03	0,1	02	0,07	01	0,03	06	0,2
Brown	812	31,5	240	9,13	286	11,17	1.338	51,8
Indigenous	02	0,1	00	0,0	06	0,2	08	0,3
Ignored	90	3,5	25	1,1	26	1,0	141	5,6
Place of death								
Hospital	1.440	55,7	452	17,44	543	21,16	2.435	94,3
Other health establishment	08	0,3	08	0,3	38	1,5	54	2,1
Home	08	0,3	10	0,4	53	2,1	71	2,8
Public road	04	0,27	01	0,03	06	0,1	11	0,4
Other	06	0,23	01	0,03	02	0,04	09	0,3
Ignored	01	0,1	00	0,0	00	0,0	01	0,1
Mother's age (years)								
10-14	13	0,5	02	0,07	04	0,16	19	0,73
15-19	183	7,2	67	2,5	60	2,3	310	12,0
20-24	283	11,03	91	3,6	134	4,97	508	19,6
25-29	310	12,03	92	3,6	121	4,57	523	20,2
30-34	282	10,93	76	3,0	95	3,57	453	17,5
35-39	176	6,8	43	1,6	64	2,5	283	10,9
40-44	66	2,5	34	1,3	35	1,43	135	5,23
45-49	03	0,11	01	0,03	07	0,28	11	0,42

Variables	Age group (days)							
	0-6		7-27		28-364		Total	
	n	%	n	%	n	%	n	%
Ignored	151	5,8	66	2,5	122	5,12	339	13,42
Mother's schooling (years)								
None	31	1,1	11	0,5	15	0,6	57	2,2
1-3	21	0,7	14	0,6	23	1,0	58	2,3
4-7	187	7,2	54	2,0	101	4,0	342	13,2
8-11	762	29,5	233	9,0	281	10,9	1.276	49,4
12 or +	223	9,0	65	2,5	72	2,4	360	13,9
Ignored	243	9,4	95	3,6	150	6,0	488	19,0
Length of pregnancy (weeks)								
< 22	132	5,1	08	0,3	13	0,5	153	5,9
22-27	508	19,6	138	5,3	67	2,7	713	27,6
28-31	185	7,2	70	2,7	55	2,1	310	12,0
32-36	215	8,3	72	2,8	87	3,3	374	14,4
37-41	249	9,6	114	4,4	214	8,3	577	22,3
≥ 42	04	0,3	01	0,1	02	0,1	07	0,5
Ignored	174	6,8	69	2,6	204	7,9	447	17,3
Type of pregnancy								
Single	1.187	45,9	371	14,3	453	17,7	2.011	77,9
Double	159	6,1	56	2,1	41	1,7	256	9,9
Triple and +	07	0,3	00	0,0	05	0,1	12	0,4
Ignored	114	4,6	45	1,8	143	5,4	302	11,8
Type of delivery								
Vaginal	720	27,9	180	6,9	200	7,8	1.100	42,6
Cesarean	627	24,3	246	9,5	289	11,2	1.162	45,0
Ignored	120	4,7	46	1,8	153	5,9	319	12,4
Birthweight (g)								
< 500	204	7,9	13	0,5	04	0,1	221	8,5
500-999	458	17,7	146	5,6	84	3,3	688	26,6
1.000-1.499	154	5,9	69	2,6	44	1,8	267	10,3

Variables	Age group (days)							
	0-6		7-27		28-364		Total	
	n	%	n	%	n	%	n	%
1.500-2.499	240	9,2	86	3,3	120	4,7	446	17,2
2.500-2.999	124	4,8	54	2,1	89	3,4	267	10,3
3.000-3.999	134	5,2	46	1,8	112	4,3	292	11,3
4.000 and +	15	0,9	07	0,3	08	0,3	30	1,5
Ignored	138	5,3	51	2,0	181	7,0	370	14,3

Source: MS/SVS/CGIAE/SIM. Minas Gerais, 2020.

The International Classification of Diseases No. 10 (ICD-10) is published by the World Health Organization (WHO) and aims to standardize the coding of diseases and other health-related problems. The ICD-10 provides codes for the classification of diseases and a wide variety of symptoms, abnormal aspects, complaints, social circumstances and external causes for injuries or illnesses. Thus, in this study, there was a predominance of infant deaths whose main cause was some condition originating in the perinatal period (n=1,592; 61.6%), followed by congenital malformations, deformities and chromosomal anomalies (n=646; 25.0%) (Table 2).

Table 2 - Profile of the main causes of infant deaths according to the International Classification of Diseases No. 10 (ICD-10) and the age group of the LB. Minas Gerais, Brazil, 2020

International Classification of Diseases No. 10 (ICD-10)		Age range (days)							
		0-6		7-27		28-364		Total	
Chapter	Description	n	%	n	%	n	%	n	%
I	Some infectious and parasitic diseases	06	0,2	03	0,1	40	1,6	49	1,9
II	Neoplasms (tumors)	03	0,1	00	0,0	04	0,2	07	0,3
III	Diseases of the blood and hematopoietic organs and some immune disorders	00	0,0	00	0,0	08	0,3	08	0,3
IV	Nutritional and metabolic endocrine diseases	01	0,1	02	0,07	16	0,6	19	0,77
V	Mental and behavioral disorders	00	0,0	00	0,0	01	0,15	01	0,15
VI	Diseases of the nervous system	00	0,0	06	0,25	22	0,85	28	1,1

International Classification of Diseases No. 10 (ICD-10)		Age range (days)							
		0-6		7-27		28-364		Total	
Chapter	**Description**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
IX	Diseases of the circulatory system	01	0,1	00	0,0	23	0,8	24	0,9
X	Diseases of the respiratory system	00	0,0	01	0,03	36	1,4	37	1,43
XI	Diseases of the digestive system	00	0,0	00	0,0	19	0,7	19	0,7
XII	Diseases of the skin and subcutaneous tissue	00	0,0	01	0,03	03	0,12	04	0,15
XIII	Diseases of the musculoskeletal system and connective tissue	01	0,1	00	0,0	00	0,0	01	0,1
XIV	Diseases of the genitourinary system	00	0,0	00	0,0	05	0,2	05	0,2
XVI	Some conditions originating in the perinatal period	1.114	43,1	333	12,9	145	5,6	1.592	61,6
XVII	Congenital malformations, deformities and chromosomal anomalies	318	12,3	115	4,4	213	8,3	646	25,0
XVIII	Symptoms, signs and abnormal clinical and laboratory findings	16	0,6	07	0,27	59	2,23	82	3,1
XX	External causes of morbidity and mortality	07	0,3	04	0,15	48	1,85	59	2,3
Total		1.467	56,9	472	18,2	642	24,9	2.581	100,0

Source: MS/SVS/CGIAE/SIM. Minas Gerais, 2020. T

he IMR can be seen in a comparative way in Table 3, which shows the IMR of the states of south-west Brazil (Espírito Santo, Minas Gerais, Rio de Janeiro and São Paulo). It was found that Minas Gerais' IMR is the second highest among the other states in the Southeast region (10.4%), behind only Rio de Janeiro (12.5%) (Table 3).

Table 3 - Mortality rate in the Southeastern states. Minas Gerais, Brazil, 2020

State	Taxa de Mortalidade(*)			
	ENTMR	LNTMR	PNMR	IMR
Espírito Santo	5,2	1,6	2,8	9,7
Minas Gerais	5,9	1,9	2,5	10,4
Rio de Janeiro	6,2	2,5	3,7	12,5
São Paulo	5,0	1,9	2,8	9,8
TOTAL	22,3	7,9	11,8	42,4

Source: MS/SVS/CGIAE/SIM. Minas Gerais, 2020. (*) Mortality rate values are multiplied by 1,000, this value being a demographic constant. ENTM = Early Neonatal Mortality Rate (between zero and six days). LNTMR = Late Neonatal Mortality Rate (between seven and 27 days). PNMR = Post-Neonatal Mortality Rate (between 28 and 364 days). IMR = Infant Mortality Rate (between zero and 364 days).

DISCUSSION

In a study carried out in the states of Goiás[6] and Minas Gerais[16], there was a prevalence of infant deaths in male children who were born with extremely low birth weight. These data corroborate the findings of this study. Male babies, when compared to female babies, are more vulnerable to some types of diseases whose causes are external, such as diarrhea, hemorrhages and pneumonia. In addition, male fetuses have a high rate of miscarriage as a result of genetic alterations.[17] Therefore, neonatal weight loss could predispose and potentiate the increase in IMR.

Most infant deaths occur in the early neonatal period. Brown skin color had a higher prevalence in this study, in line with data from another study carried out in 2018.18 In contrast, a Brazilian study carried out between 2007 and 2017 showed a prevalence of infant deaths in the indigenous population.[19] In this study, a prevalence of children of young mothers aged between 25-29 years with a high level of schooling was observed. In an ecological study carried out in the municipality of Pirapora, Minas Gerais, the mothers were aged between 20 and 34 and had a high level of schooling.[16] Other similar results which corroborate the data in this study were found in a study carried out in the Eastern Macroregion of Minas Gerais.[3]

In the study carried out in Criciúma (SC), between 2015 and 2019, infant deaths were more recurrent between 37 and 41 weeks, with pregnant women whose delivery was by cesarean section and whose pregnancy was a single one.5 The findings of this study show a higher rate of infant deaths in pregnant women with gestational age (GA) that is early for fetal development, but corroborates with the type of delivery and the type of pregnancy. GA is an important variable which is intrinsically associated with the risk of infant death, with a view to spontaneous abortion, if GA is less than 20 weeks, or premature birth, if GA is greater than 20 weeks and less than 37 weeks. The earlier the birth, especially below 20 weeks, the greater the risk of death. Caesarean section in high-risk pregnancies is considered a relevant procedure for reducing perinatal morbidity and mortality,[20] and there is a protective association between operative delivery for high-risk pregnancies.[21] As for the type of pregnancy, multiple pregnancies increase the risk of premature birth and are determining factors in the prevalence of low birth weight NBs, compromising the health of the NB and therefore being more associated with death.[22]

With regard to the cause of death, most of these were due to some condition originating in the perinatal period, followed by congenital malformations, deformities and chromosomal anomalies. A similar result was found in a study carried out in municipalities in the Serra Geral micro-region (MG) between 2008 and 2016, in which there was a prevalence of deaths due to conditions originating in the neonatal period, followed by congenital anomalies. In addition to infectious and parasitic diseases, diseases of the nervous system and diseases of the respiratory system.[23] The results of another study carried out in the municipality of Parnaíba (PI) corroborate the main causes

of infant deaths found in Minas Gerais, which are diseases of the perinatal period, followed by congenital malformations, deformities and chromosomal anomalies and infectious and parasitic diseases.[24] In Francisco Beltrão (PR), bacterial septicemia, followed by pulmonary hypoplasia and dysplasia, and respiratory distress syndrome, are the three main causes of neonatal death.[25]

In an investigation carried out in the Brazilian states (2007-2017) on the IMR of the Southeastern states, a neonatal mortality rate of 7.96% was observed, with the state of Minas Gerais in second place with an IMR of 8.15%, behind the state of Rio de Janeiro.[19] The results converge with the findings of this study in which the IMR of Minas Gerais is the second most prevalent, behind only the IMR of Rio de Janeiro. On the other hand, the study carried out on IM in Brazilian states showed that, among the states that make up the Southeast, Minas Gerais had the highest IMR in 2015, with 13.07%, ahead of Rio de Janeiro.[14]

CONCLUSION

Through this study, it can be concluded that the high rate of infant deaths reported in Minas Gerais in 2020 has important gynecological and obstetric precedents that can have a direct impact on the increase in IMR during the early neonatal period. Early pregnancy, especially during childhood and adolescence, increases the risk of premature birth, as well as the number of emergency cesarean deliveries and, consequently, the birth of extremely low birth weight neonates. In highly educated women, biopsychosocial and family factors can contribute to an increase in these rates, given that the pregnancy was unwanted and the family did not accept it, as well as the psycho-emotional anticipation of the impossibility of raising a child, which can culminate in miscarriages or stillbirths. Ineffective prenatal care is a predictor of an increase in infant deaths, as most perinatal conditions and possible congenital malformations, deformities and chromosomal anomalies can be diagnosed during prenatal care. It should be noted that the IMR in the state of Minas Gerais was the second highest compared to the other states in the Southeast.

The study identified the need for greater investment in implementing good practices and care resources focused on PHC and related to prenatal care, the postnatal period, childcare and monitoring growth and development (CD) in order to ensure the health services that are the right of pregnant women and children, allowing timely access to quality services in order to minimize risks and infant deaths. It is clear that the state of Minas Gerais needs to focus on maternal and child health in order to reduce infant mortality. To this end, it is necessary to invest in improving primary care and strengthening public policies on maternal and child health, since infant deaths are most often linked to these services.

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