

PERFIL EPIDEMIOLÓGICO DOS NASCIDOS VIVOS EM BELO HORIZONTE, MG, BRASIL

EPIDEMIOLOGICAL PROFILE OF LIVE BIRTHS IN BELO HORIZONTE, MG, BRAZIL

PERFIL EPIDEMIOLÓGICO DE LOS NACIDOS VIVOS EN BELO HORIZONTE, MG, BRASIL

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RESUMO

Objetivo: este estudo teve por objetivo descrever o perfil epidemiológico dos nascidos vivos residentes no município de Belo Horizonte/MG, no período de 1994 a 2014. **Método:** trata-se de uma pesquisa transversal, retrospectiva, de abordagem quantitativa, realizada com base nos dados secundários disponíveis no Sistema de Informações sobre Nascidos Vivos. **Resultados:** os resultados evidenciaram 738.314 nascimentos no município de Belo Horizonte/MG nesse período, sendo a maioria do sexo masculino (51,1%); a termo (90,2%); com índice de Apgar entre 08 e 10 no primeiro minuto de vida (85%); com peso ao nascer entre 2500g e 3999g (86,4%); e sem a presença de anomalias congênitas (58,2%). **Conclusão:** o Sistema de Informações sobre Nascidos Vivos representa um avanço no registro de dados e serve de subsídio para o planejamento e a implantação de políticas públicas voltadas para a saúde materno-infantil.

Descritores: Nascimento vivo; Sistemas de informação em saúde; Saúde da criança.

ABSTRACT

Objective: this study aimed to describe the epidemiological profile of live births who live in the municipality of Belo Horizonte/MG, from 1994 to 2014. **Method:** it is a cross-sectional, retrospective, quantitative approach based on the secondary data available in the Live Birth Information System. **Results:** the results showed 738,314 births in the city of Belo Horizonte/MG in this period, being the majority male (51.1%); at term (90.2%); with Apgar score between eight and ten in the first minute of life (85%); with birth weight between 2500g and 3999g (86.4%); and without the presence of congenital anomalies (58.2%). **Conclusion:** the Information System on Live Births represents an advance in the data registry and serves as a subsidy for the planning and implementation of public policies focused on maternal and child health.

Descriptors: Live birth; Health information systems; Child health.

RESUMEN

Objetivo: este estudio tuvo por objetivo describir el perfil epidemiológico de los nacidos vivos residentes en el municipio de Belo Horizonte/MG, en el período de 1994 a 2014. **Método:** se trata de una pesquisa transversal, retrospectiva, de abordaje cuantitativa, realizada con base en los datos secundarios disponibles en el Sistema de Informaciones sobre Nacidos Vivos. **Resultados:** los resultados evidenciaron 738.314 nacimientos en el municipio de Belo Horizonte/MG en ese período, siendo la mayoría del sexo masculino (51,1%); a término (90,2%); con índice de Apgar entre 08 y 10 en el primero minuto de vida (85%); con peso al nacer entre 2500g y 3999g (86,4%); y sin la presencia de anomalías congénitas (58,2%). **Conclusión:** el Sistema de Informaciones sobre Nacidos Vivos representa un avance en el registro de datos y sirve de subsidio para el planeamiento y la implantación de políticas públicas volteadas para la salud materno-infantil.

Descriptor: Nacimiento vivo; Sistemas de información en salud; Salud del niño.

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INTRODUCTION

In Brazil, since the 1970s, information on births was based exclusively on the Civil Registry System and disseminated by the Brazilian Institute of Geography and Statistics (IBGE)⁽¹⁾. Due to the existence of underreporting of births and the importance of information on live births for statistics on health, epidemiology and demography, the Ministry of Health (MH) implemented in 1990 the Information System on Live Births (SINASC)⁽²⁾.

The SINASC is based on the data contained in the Declaration of Live Birth (DLB) - official document and standardized for the whole country. The DLB is printed in three previously numbered tracks, under the responsibility of the MH, through the Department of Health Situation Analysis (DASIS - SVS). The document is distributed free of charge to the State Health Secretariats, which refer to the Municipal Health Secretariats and these, in turn, pass on to health establishments and notary offices⁽³⁾.

Through these records it is possible to subsidize interventions related to the health of women and children for all levels of care of the Unified Health System (UHS), especially care actions for pregnant women and the newborn (NB), since they are registered in DLB, data on the mother and the newborn, composing the epidemiological profile of the births. In addition, monitoring the evolution of the historical series of the SINASC allows the identification of intervention priorities, which contributes to the effective improvement of the system⁽³⁾.

The SINASC implementation process began in Belo Horizonte, MG, in the second half of 1991, and was definitively implemented as of February 15, 1992⁽⁴⁾. The municipality of Belo Horizonte is the capital of the state of Minas Gerais and currently has a population estimated at 2,491,109 inhabitants⁽⁵⁾. In view of this context, the present study aimed to describe the epidemiological profile of live births living in the city of Belo Horizonte / MG, from 1994 to 2014, based on data obtained from SINASC.

METHODS

It is a cross-sectional, retrospective, quantitative approach based on the secondary

data available in the SINASC database. This database is generated by the Department of Information Technology of the UHS (DATASUS) in cooperation with the National Center for Epidemiology (CENEPI).

The study sample consisted of all records of live births of mothers residing in the city of Belo Horizonte/MG during the period from January to December from 1994 to 2014, totaling 738,314 births declared. This period was delimited for this study because it understands all the information available in the system until the present moment.

The variables considered of interest were: gender of the newborn; birth weight; Apgar in the first and fifth minutes of life; presence of congenital anomalies; maternal age; mother's degree of education and marital status; type of pregnancy; duration of gestation; type of delivery; number of prenatal consultations and place of birth.

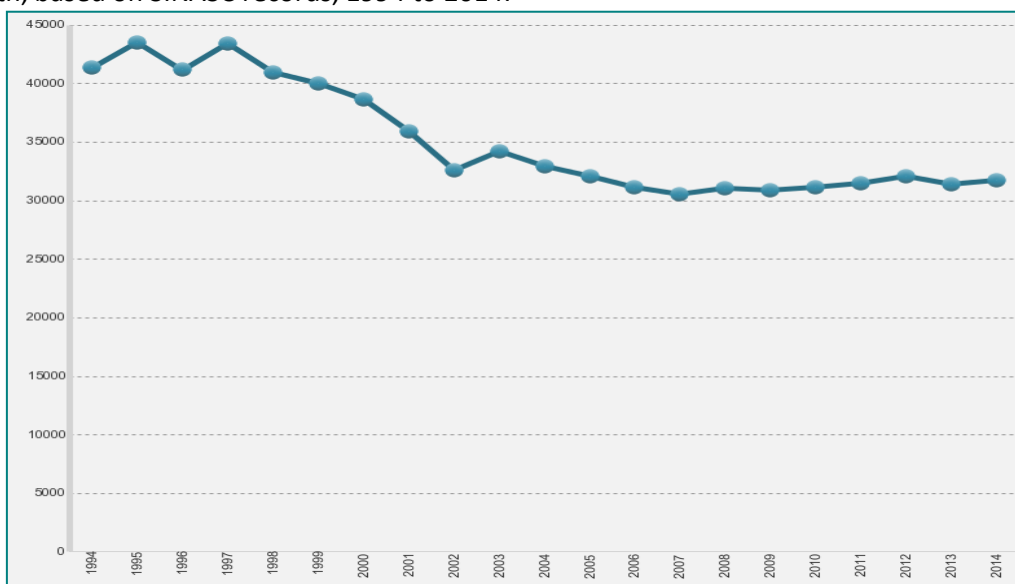
The data collected from the SINASC database were exported, organized and tabulated in the Microsoft Excel[®] program, imported and analyzed by the Statistical Package for the Social Sciences[®] application (version 23). For the analysis, descriptive statistics were used and numerical data was presented in tables, in absolute and percentage values. For the purposes of tabular presentation, the percentages were approximated to two decimal places.

As this study was carried out with secondary data, with public access, it was not necessary to authorize the Research and Ethics Committee with Human Beings for its development; however, throughout the analysis and discussion of the findings, care was taken to respect the ethical principles of research involving human beings, especially regarding the beneficence and non-maleficence of studies, as recommended by Res. 466/2012 of Brazil.

RESULTS AND DISCUSSION

The SINASC records for the municipality of Belo Horizonte/MG, from January 1994 to December 2014, can be seen in Figure 1.

Figure 1 - Distribution of the number of births in the municipality of Belo Horizonte/MG, according to the year of birth, based on SINASC records, 1994 to 2014.



Source: Information System on Live Births. Belo Horizonte/MG: 1994-2014.

During the study period, 738,314 births were declared in the city of Belo Horizonte / MG; however, it is noted that the birth rate decreased since 2001, maintaining stable indices. This fact can be justified because, today, the society - world and Brazilian - lives a period called the 'obstetric transition', characterized by lower fertility rates, a greater aging of the obstetric population, a predominance of chronic-degenerative diseases associated with a growing institutionalization of childbirth⁽⁶⁾.

Regarding the clinical characteristics of the newborns, a slight predominance of live male births (51.1%) was observed; the majority (86.4%) were born weighing between 2500 and 3999 grams (considered adequate weight for full-term newborns); 10.6% were born with low weight (less than 2500 grams), 0.7% of these were born with less than 1000 grams and 2.9% were macrosomic (birth weight greater than 4000 grams), according to data presented in Table 1.

Table 1 - Clinical characterization of live births in Belo Horizonte/MG, from SINASC records, 1994 to 2014.

	Number	%
Sex		
Male	377,068	51.1
Female	360,658	48.8
Ignored	588	0.1
Weight at birth		
Less than 1000g	4,925	0.7
1000g to 2499g	73,088	9.9
2500g to 3999g	637,807	86.4
4000g to more	21,547	2.9
Ignored	947	0.1
Apgar 1st minute		
0 to 2	10,083	1.4
3 to 5	26,974	3.6
6 to 7	63,197	8.6
8 to 10	627,872	85.0
Ignored	10,188	1.4

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	Number	%
Apgar 5th minute		
0 to 2	3,958	0.6
3 to 5	4,046	0.6
6 to 7	13,636	1.8
8 to 10	704,170	95.4
Ignored	12,504	1.6
Congenital anomaly		
Yes	3,126	0.4
No	429,432	58.2
Ignored	305,756	41.4

Source: Information System on Live Births. Belo Horizonte/MG: 1994-2014.

The discrete prevalence of male newborns among live births was compatible with data from the literature. A study of secular trends in the proportion of births between genders in South America during the second half of the 20th century has shown that there is a rate of male births exceeding that of female births⁽⁷⁾. Still, in Belo Horizonte/MG, in a survey carried out in 1997, which also used the SINASC database, the proportion found was 51%⁽⁴⁾. However, one study, in a maternity unit at risk in the South, showed a discreet predominance of female NBs, which represented 50.9% of all births⁽⁸⁾.

The percentage of low birth weight, obtained in this study, was 10.6%. This index was higher than the indexes found in the municipality of Serra / ES, 8.3%⁽⁹⁾ and also in the municipality of Chapecó/SC, 9.2%⁽¹⁰⁾. Low birth weight was a characteristic of 50.3% of births in a maternity unit at risk⁽⁸⁾ and is associated with cases of severe morbidity⁽¹¹⁾ and neonatal death⁽¹²⁾.

Regarding the Apgar score, it was observed that 86.4% and 95.4% of the neonates presented values between eight and ten in the first and fifth minutes of life, respectively. There was no anomaly detection in the majority of neonates at birth (58.2%); however, this information was ignored or not filled in 41.4% of the records. Among the anomalies detected, there were more frequent malformations of the musculoskeletal system (30.9%); other malformations (10.8%); of the genitourinary tract (9.5%), feet (9.0%) and nervous system (8.4%).

Similar results were found in a study carried out between 2001 and 2005 in Espírito Santo⁽⁹⁾. In the study conducted in Chapecó/SC, it was observed that 97.4% (n = 5,764) of the newborns reached Apgar \geq 8 in the 5th minute of life⁽¹⁰⁾ and

lower than that of a maternity unit at risk in Southern Brazil , 9.7%⁽⁸⁾. It is noteworthy that Apgar scores lower than seven in the fifth minute of life of the neonate can indicate severe neonatal morbidity and difficulty of extra-uterine adaptation⁽¹¹⁾.

Through the result, it was possible to verify that of all the variables, the DLB field presence of anomalies had a greater number of unknown or unfilled information (41.4% of the registers), so that, among the available information, 0.4 % of the neonates had some type of anomaly or malformation, being more frequent: musculoskeletal malformations (30.9%); other malformations (10.8%); of the genitourinary tract (9.5%), feet (9.0%) and nervous system (8.4%). A study of malformations and abnormalities found as malformations of the nervous system and circulatory system as common causes⁽¹³⁾.

It should be noted that malformations or anomalies can cause negative impact and psychological disorders for mothers such as stress, anxiety and depression⁽¹⁴⁾. In a study with mothers of children with abnormalities, it was identified that the majority already knew the diagnosis before birth and these had better adaptation strategies, as well as those whose children were hospitalized for prolonged periods. Women who were diagnosed at delivery or after birth were more likely to be isolated. It was also found that 84% of the mothers presented psychological stress in the resistance phase (excessive emotional sensitivity with periods of intense irritability) and the rest was in a period of exhaustion, that is, in an adaptive process. The mothers who were in this period were diagnosed in prenatal care⁽¹⁴⁾, indicating the importance of early diagnosis for mother and family adaptation. In addition,

congenital malformation is also a predictor of severe neonatal morbidity⁽¹¹⁾.

The presentation of live birth data according to maternal characteristics can be seen in Table 2.

Table 2 - Sociodemographic characterization of mothers of live births living in Belo Horizonte/MG, based on SINASC records, between 1994 and 2014.

	Number	%
Mother's age		
10 to 19 years	106,590	14.5
20 to 34 years	527,248	71.5
35 or more	101,175	13.7
Ignored	2,228	0.3
Marital status		
Single	242,782	32.9
Married or consensual union	232,681	31.5
Widow	1,449	0.2
Separated judicially	8,930	1.2
Ignored	252,472	34.2
Mother's instruction		
None	5,576	0.8
1 to 3 years	17,008	2.3
4 to 7 years	217,073	29.4
8 to 11 years	295,548	40.0
12 years or more	147,845	20.0
Ignored	55,264	7.5

Source: Information System on Live Births. Belo Horizonte/MG: 1994-2014.

Regarding maternal age, it was observed that there was a predominance of the age group from 20 to 34 years of age (71.5%). Research conducted in Aracaju/SE, in 2010, found a proportion of 72.1% for this same age group⁽¹⁵⁾. Already in study in Belo Horizonte/MG, 77% were found in 1992 and 75.7% in 1994⁽⁴⁾. Also, a study conducted in Maringá/PR in 2014 found 72.5% of mothers in the 20-34 age group⁽¹⁶⁾, which shows that this age profile has been maintained in Brazil for at least two decades.

Adolescent pregnant women accounted for 14.5% of the mothers of the city of Belo Horizonte/MG during the study period. This percentage was lower than that observed in other studies such as in Santa Maria / RS ⁽¹⁷⁾, 17.2%, in Aracaju/SE⁽¹⁵⁾ with a percentage of 15.5% and in the municipality of Chapecó/SC - 16.0 %⁽¹⁰⁾.

A predominance of single women (32.9%) was observed, and with a fixed partner (31.5%) in

the analyzed period. However, this item was ignored in most statements (34.2%). Studies on the profile indicated that the majority of mothers did not have a fixed partner or declared themselves single in the following proportions: Aracaju/SE, 70.4%⁽¹⁵⁾; Chapecó/SC, 18.2%⁽¹⁰⁾; region of South Brazil, 57.2%⁽⁸⁾.

Regarding the level of education of the mothers, the majority (40%) had between eight and 11 years of schooling, 20% had more than 12 years (complete or higher secondary education) and 0.8% were illiterate. The low schooling, however, for reasons not justifiable, was presented as a protection factor for operative/cesarean deliveries, when analyzed the DLB information on maternal schooling and type of delivery⁽¹⁷⁾. The variables related to gestation are given in Table 3

Table 3 - Clinical characterization of gestations of live births living in Belo Horizonte/MG, based on SINASC records, from 1994 to 2014.

	Number	%
Type of pregnancy		
Singlet	720,901	97.6
Double	15,822	2.1
Tripple or more	856	0.2
Ignored	735	0.1
Typet of birth		
Vaginal	392,224	53.1
Caesarean	343,203	46.5
Forceps	2,005	0.3
Ignored	882	0.1
Duration of gestation		
< 37 weeeks	62,155	8.4
37 - 41 weeks	665,691	90.2
42 weeks or more	6,418	0.9
Ignored	4,050	0.5
Prenatal consultation		
None	9,003	1.2
1 to 3 consultations	28,115	3.8
4 to 6 consultations	175,647	23.8
7 or more consultations	416,916	56.5
Ignored	108,633	14.7
Place of birth		
Hospital	735,417	99.6
Other establishment	418	0.05
Home	1,462	0.2
Other	414	0.05
Ignored	603	0.1

Source: Information System on Live Births. Belo Horizonte/MG: 1994-2014.

It was observed that gestation was unique in 97.6% of the cases. A similar result was found in the Being Born in Brazil study, a national hospital-based study, which found that 98% of pregnancies were unique and that multiple gestation may result in premature birth, increasing the neonatal mortality rate⁽¹²⁾.

Despite the predominance of vaginal delivery (53.1%), there was a high rate of cesarean delivery, representing 46.5% of all birth routes. There was a high rate of cesarean delivery (48.4%) performed in Belo Horizonte/MG between 2002 and 2011, exceeding that recommended by the World Health Organization, which currently stands at 15%⁽¹⁸⁾.

The proportion of cesarean sections has increased significantly in recent years in Brazil, from 37.8% in 2000 to 43.2% in 2005 and 52.2% in 2010⁽¹⁹⁾.

In Viçosa, a city in the state of Minas Gerais, the proportion of surgical deliveries increased from 56.8% in 2001 to 63.3% in 2007⁽²⁰⁾.

However, the World Health Organization, in its caesarean rates report, published in 2015 from an ecological study based on the best scientific evidence, suggests that these rates should not exceed 10%⁽¹⁸⁾. It was concluded that cesarean section is an effective intervention to save lives, when indicated for justifiable reasons; however, cesarean rates above 10% were not associated with a reduction in mortality and increased rates of complications⁽¹⁸⁾. This statement also suggests that health care providers who attend births adopt the Robson Classification to identify who should undergo cesarean delivery and its possible outcomes⁽²¹⁾.

Full-term births (37-41 weeks of gestation) accounted for 90.2% of all live births; however, the high number of preterm births (8.4%) is noteworthy. A study carried out in Belo Horizonte/MG shows that the proportion of pre-terms in 1992 was 5.2%, increasing to 5.8% in 1994⁽⁴⁾.

Prematurity is a Public Health problem and it is estimated that 15 million children are born prematurely/year, that is, every ten births, one is premature; one million newborns die as a result of prematurity; in addition to being a major cause of pneumonia mortality in children under five years of age. Worldwide, the rate of prematurity varies from 5 to 18%, and we must point out that Brazil ranks 10th in the ranking of countries with the highest number of premature births (279,000) - 11.7%⁽²²⁾.

An increase in the number of preterm live births is observed, concomitantly with the increase in the number of cesarean deliveries, which leads us to the reflection that, possibly, there is influence of the birth route on premature births. Authors further point out that a considerable number of preterm infants are born by caesarean section, mainly in cases of pregnancy with advanced maternal age (above 35 years of age)⁽²³⁾.

Regarding prenatal care, 56.5% of the mothers studied had seven or more consultations and 1.2% did not have any consultations. This finding is in agreement with the study carried out in Serra/ES, which revealed that most (53.3%) of the women had had seven or more prenatal consultations and 1.9% had not performed any⁽⁹⁾. A study carried out in João Pessoa/PB found that 90% of pregnant women had more than six prenatal consultations⁽²⁴⁾.

It should be noted that the objective of prenatal care is to welcome the woman from the beginning of her pregnancy. Prenatal control should begin early, have universal coverage, be performed periodically and be integrated with other preventive and curative actions. In addition, in order to be considered appropriate, a minimum of six consultations should be carried out⁽²⁴⁾.

There was a predominance of births in the hospital environment, representing 99.6% of the cases surveyed in Belo Horizonte/MG. Home births occupy the second position with 0.2% of deliveries. A movement of encouragement and incentive, to the home birth with the presence of relatives, and being assisted by medical professionals and trained nurses, has been observed. This occurrence is relatively rare and is

practiced mainly by women with high socioeconomic and cultural conditions.

The study, Being Born in Brazil, which traced the profile of Brazilian births, found an association between low birth weight, high risk pregnancies, and conditions of neonatal adjustment with an increase in the number of neonatal deaths. According to this study, the pilgrimage to a bed of intensive care (neonatal ICU) is still an assistance gap in high-risk pregnancies, and deaths due to asphyxia and prematurity reflect the lack of quality of care, because in these cases, the chance of avoidability is large and is associated with prenatal care and delivery⁽¹²⁾.

One must highlight the large number of information ignored in all variables investigated, especially: presence of anomaly (41.4%); maternal marital status (34.2%), number of prenatal consultations (14.7%); mother's degree of instruction (7.5%), Apgar score in the fifth minute (1.6%) and in the first minute (1.4%), and duration of gestation (0.5%).

According to current classification, it can be said that the DLB variables had excellent completion when the variable had less than 5% of incomplete filling; good (5.0 to 9.9%); regular (10.0 to 19.9%); (20.0 to 49.9%); and very bad (50.0% or more)⁽²⁵⁾. Thus, the anomaly and marital status variables had poor completion; number of prenatal consultations was considered regular and the other information was considered good or excellent. However, as in another study that evaluated the variables and classified their completeness as good or excellent⁽²⁵⁾, the authors emphasize that, because it is a secondary data, it is not possible to evaluate their reliability.

In view of the above, we mention that this study had, as a limitation, the use of secondary information produced by SINASC and, as previously mentioned, there is no way to guarantee the reliability of the presented data. It is necessary to emphasize the importance of correct completion of the DLB, providing accurate and reliable information, in order to rethink health policies and strategies for the birth of healthy NBs.

CONCLUSIONS

From the results obtained in the city of Belo Horizonte/MG, between 1994 and 2014, the profile of live births was: almost all of the births occurred in hospitals and with a single pregnancy; there was a predominance of full-term male newborns with Apgar scores between eight and ten in the first and fifth minutes of life, birth

weight between 2500g and 3999g and without the presence of congenital anomalies; the majority of mothers were between 20 and 34 years of age, were single and had eight to 11 years of schooling; there was a high percentage of cesarean deliveries and seven or more prenatal consultations.

A considerable number of newborns with Apgar lower than eight in the first minute of life are also observed; of information ignored in the item 'congenital anomaly'; gestation in adolescence; mothers with little or no instruction; preterm live births and less than six prenatal visits. This demonstrates the need for comprehensive health care for women and the neonate, from pregnancy planning to the first years of the child's life.

SINASC makes it possible to characterize the profile of live births through the provision of fundamental information found in DLB. Despite the difficulties related to feeding the database and adequate filling of DLB, SINASC represents an advance in the data registry and serves as a subsidy for the planning and implementation of public policies focused on maternal and child health.

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