RESEARCH

TEMPORAL TENDENCIES IN HOSPITALIZATION OF CHILDREN FOR PRIMARY CARE-SENSITIVE CONDITIONS IN *MINAS GERAIS*, BRAZIL

TENDÊNCIAS TEMPORAIS DE INTERNAÇÕES DE CRIANÇAS POR CONDIÇÕES SENSÍVEIS À ATENÇÃO PRIMÁRIA EM MINAS GERAIS, BRASIL

TENDENCIAS TEMPORALES DE ADMISIÓN INFANTIL POR CONDICIONES SENSIBLES A LA ATENCIÓN PRIMARIA EN MINAS GERAIS, BRASIL

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ABSTRACT

Objective: to analyze the tendency of hospitalizations for primary care-sensitive conditions in children under five years of age in the state of *Minas Gerais*. **Methods:** an ecological time series study used records from the Hospital Information System, from 2008 to 2018. Tendency analyzes were performed using the Prais-Winsten method to verify tendencies: stationary (p > 0.05), decreasing (p < 0.05 and negative regression coefficient) or increasing (p < 0.05 and positive regression coefficient) by health region and by age group (up to one year and from one to four years). **Results:** there was a downward tendency in hospitalizations among children in the state (annual percentage variation = -4.96%; p < 0.05), with a reduction in hospitalizations for infectious gastroenteritis and complications, bacterial pneumonia, and asthma. An increase in hospitalizations due to anemia was observed, lung diseases and ear, nose, and throat infections. For children under one year old, it was observed that hospitalizations for diseases preventable by immunization and sensitive conditions showed an upward tendency (ß=5.69 and p < 0.05), with emphasis on congenital syphilis. **Conclusions:** the scenario of *Minas Gerais* is similar to that of other Brazilian states, in which there is a reduction in hospitalization of children up to five years old, with an increase in hospitalizations for anemia, lung diseases and ear, nose and throat infections. Although there are improvements in practices and policies aimed at children's health, the findings reinforce the planning of actions for the care of preventable diseases in primary care.

Keywords: Primary Health Care; Child Health; Time Series Studies.

RESUMO

Objetivo: *analisar a tendência das internações por condições sensíveis à atenção primária em crianças menores de cinco anos de idade, no estado de Minas Gerais.* **Métodos:** *estudo ecológico de séries temporais utilizou registros do Sistema de Informação Hospitalar, período de 2008 a 2018. As análises de tendência foram realizadas pelo método de Prais-Winsten para verificar tendências: estacionárias (p > 0,05), decrescentes (p < 0,05 e coeficiente de regressão negativo) ou ascendentes (p < 0,05 e coeficiente de regressão positivo) por região de saúde e por grupo etário (até um ano e de um a quatro anos).* **Resultados:** *houve tendência decrescente de internações entre crianças no estado (variação percentual anual = -4,96%; p < 0,05), com redução de internações por gastroenterites infecciosas e complicações, pneumonias bacterianas e asma. Observou-se aumento de internações por anemia; doenças pulmonares e infecções de ouvido, nariz e garganta. Para crianças menores de um ano, foi observado que as internações por doenças preveníveis por imunização e condições sensíveis apresentaram tendência ascendente (ß=5,69 e p < 0,05), com destaque para a sífilis congênita.* **Conclusões:** *o cenário de Minas Gerais é similar ao de outros estados brasileiros, nos quais se observa redução de internação de crianças de até cinco anos, com aumento de internações por anemia, doenças pulmonares e infecção de ouvido, nariz e garganta. Ainda que existam melhorias nas práticas e políticas voltadas para a saúde da criança, os achados reforçam o planejamento de ações para o cuidado a agravos preveníveis na atenção primária.*

Palavras-chave: *Atenção Primária à Saúde; Saúde da Criança; Estudos de Séries Temporais.*

RESUMEN

Objetivo: *analizar la tendencia de las hospitalizaciones por condiciones sensibles a la atención primaria en niños menores de cinco años, en el estado de Minas Gerais.* **Métodos:** *se realizó un estudio ecológico de series de tiempo con registros del Sistema de Información Hospitalaria, de 2008 a 2018. Se realizaron análisis de tendencias mediante el método de Prais-Winsten para verificar las tendencias: estacionaria (p> 0.05), decreciente (p <0.05 y coeficiente de regresión negativo) o ascendente (p <0,05 y coeficiente de regresión positivo) por región sanitaria y por grupo de edad (hasta un año y de uno a cuatro años).* **Resultados:** *hubo una tendencia decreciente de hospitalizaciones entre los niños del estado (variación porcentual anual = -4,96%; p <0,05), con una reducción de las hospitalizaciones por gastroenteritis infecciosa y complicaciones, neumonía bacteriana y asma. Hubo un aumento de las hospitalizaciones por anemia; enfermedades pulmonares e infecciones de oído, nariz y garganta. Para los menores de un año, se observó que las hospitalizaciones por enfermedades prevenibles por inmunización y condiciones sensibles mostraron una tendencia ascendente (ß = 5,69 yp <0,05), con énfasis en la sífilis congénita.* **Conclusiones:** *el escenario en Minas Gerais es similar al de otros estados brasileños, en los que hay una reducción en el número de hospitalizaciones de niños hasta los cinco años, con un aumento de las hospitalizaciones por anemia, enfermedades pulmonares y de oído, nariz e infecciones de garganta. Si bien existen mejoras en las prácticas y políticas orientadas a la salud infantil, los hallazgos refuerzan la planificación de acciones para la atención de enfermedades prevenibles en atención primaria.*

Palabras clave: *Atención Primaria de Salud; Salud del Niño; Estudios de Series Temporales.*

INTRODUCTION

Primary health care (PHC) is the care model that guides the *Sistema Único de Saúde* (SUS) through actions developed at an individual and collective level that cover health promotion and protection, disease prevention, diagnosis, treatment, rehabilitation and maintenance of health.[1] Actions must be integrated with other levels of care in the system and built collectively with different health professionals and community participation, seeking to respond to the health needs of a population assigned to an area.[2]

The literature emphasizes the ability of effective PHC strategies to favor health improvement and provide more efficient services and lower costs, including a reduction in hospital admissions, thus, indicators of hospital activity can be used as an indirect measure of monitoring and evaluation of health. PHC.[3] Hospitalizations for primary care-sensitive conditions (PCSC) represent a measure of PHC effectiveness, allowing analysis of the behavior of diseases and conditions for which qualified and resolute PHC actions would reduce the risk of hospitalizations.[3,4]

The Ministry of Health (MoH) specified the conditions sensitive to primary care (CSPC) in Brazil through Ordinance No. 221, of 2008. The list includes 19 causes of hospitalization and 74 diagnoses based on the 10th Revision of the International Classification of Diseases and Causes of Death (ICD-10), grouped according to the possibilities of intervention and the magnitude of the injuries.[5]

In Brazil, the most important causes of CSPC in children are bacterial pneumonia, gastroenteritis and asthma, diseases that have timely identification of signs and symptoms in the context of PHC, in addition to being treatable with low technological density resources.[6] These conditions have a management simple and inexpensive, however, its worsening has a high risk of hypovolemic shock or death, especially in infants.[7] Lung diseases are prevalent in children and it is estimated that these infections cause approximately four million deaths worldwide per year, being the leading cause of death in children under five years of age, especially those exposed to risk factors such as secondhand smoke and air pollution.[8]

Studies carried out in different states of the country reveal that the highest proportion of sensitive hospitalizations occurs in children aged one to four years, which reinforces the need to seek resolute assistance.[8,9] The condition recognized as the main cause of hospitalizations in children of up to four years in the state of Rondônia, in the period from 2008 to 2017, was infectious gastroenteritis with its complications.[10]

The high rates of PCSC in children triggered the formulation of public policies in order to reduce these rates and reduce the mortality coefficient among children.[11] Since the implementation of the PCSC list, studies on sensitive hospitalizations in children have been carried out in the country, and strategies have been adopted to ensure access and quality of child health care.[12]

There is a gap in the knowledge of PCSC in children in *Minas Gerais* (MG) and the need for recognition in order to favor the direction of actions that address the real problem, reducing hospitalizations, deaths, and unnecessary costs. In this direction, the study aims to analyze the tendency of hospitalizations due to primary care-sensitive conditions (PCSC) of children under five years of age in the state of *Minas Gerais*.

METHODS

This is an ecological time series study, with data referring to the hospitalization of children under five years of age in the state of *Minas Gerais*, from 2008 to 2018. The state of *Minas Gerais*, located in the Southeast region, is the fourth with the largest territorial area and the second most populous in the country, with approximately 21.1 million inhabitants. It has 853 municipalities in its territory and the Health Regionalization Master Plan is organized into 76 micro-regions and 13 health macro-regions: *Triângulo Sul*, *Triângulo Norte*, South, Southeast, West, North, Northwest, Northeast, East, Southeast, *Jequitinhonha*, Center-South, and Center.[13]

Hospital admission data of patients registered in the Hospital Information System (HIS) from 2008 to 2018 in *Minas Gerais* were collected, made available via the SUS Informatics Department (DATASUS). *HIS-SUS* is the system that processes authorizations for hospital admissions (AIH), providing information on the main causes of hospitalizations in Brazil, the list of procedures performed monthly in each hospital, the number of beds available for each specialty and the time average length of stay of the patient in the hospital.

Study variables were determined based on the list of hospitalizations for conditions sensitive to primary care. The diagnoses were analyzed and grouped according to the possibilities of intervention and diseases prevalent in children who had the corresponding ICD-10 in DATASUS. Thus, dependent variables were the hospitalization rates for: immunization-preventable diseases and sensitive conditions; infectious gastroenteritis and complications; anemia; nutritional deficiencies; ear, nose, and throat infections; bacterial pneumonias; asthma; and lung diseases. The year of occurrence, the age group (stratified from zero to one year and from one to four years) and the health macro-region were considered as independent variables.

Hospitalization rates were calculated by the ratio between the total number of CSPCs and the number of children under five years of age residing per year analyzed, multiplied by 10,000. Population data, stratified by age group and health macro-region of MG, were collected from the last *Instituto Brasileiro de Geografia e Estatística* (IBGE) census, in 2010.

The analyzes were performed using the Statistical Software for Professional (Stata), version 14.0. The significance level was set at 5%. Initially, the prevalence and 95% confidence intervals (CI%) of the variables of interest were calculated. The prevalence of PCSCs were stratified according to age and health macro-region in *Minas Gerais*. Generalized linear regression was used using the Prais-Winsten method, with robust variance. The choice of method considers the serial autocorrelation and the absence of residuals of the equation as independent and avoids possible errors that overestimate the goodness of fit measures.[14] The tendencies were classified as stationary (p > 0.05), decreasing (p < 0, 05 and negative regression coefficient) or ascending (p < 0.05 and positive regression coefficient), in each region.

The regression coefficient of the model, beta (β), indicates the average annual variation of increase or decrease in prevalence in the study period, presented in percentage points, that is, when the sign of the average annual variation is positive, it will indicate the average annual increase in the prevalence for each year (increasing) and, in the case of a negative sign, it will indicate the reduction (decreasing).

The coefficient values 'b1' and 'e' (standard error), generated by the statistical analysis program, were used to calculate the annual percentage change (APC) and the CI%. To identify the APC), the corresponding b1 coefficient values were applied in the following formula: APC= -1+10 [b1]*100%. Next, the CI% of the variation measures were calculated, using the following formulas: CI%minimum= -1+10 [b1-t*e]*100%); and IC%maximum= -1+10 [b1+t*e]*100%. The t refers to the t-Student and corresponds to 10 degrees of freedom (2.2281), related to the 11 years of analysis.[14]

The project complied with the ethical principles contained in Resolution 466/2012 of the National Health Council (CNS) and was approved by the Research Ethics Committee (COEP) of the *Universidade Federal de Minas Gerais* (UFMG). Opinion Report No. 3,230,972.

RESULTS

Between 2008 and 2018, the rate of PCSC among children up to one year old was 677.29/per 10,000 and that of children from one to four years old was 229.16/10,000. The statewide average rate in the two age groups was 316.5/10,000. The variation of these rates was similar in both age groups in the studied period. It can be observed that there was a tendency to reduce these conditions, with APC -4.96% (p < 0.05). Figure 1 presents data on the tendency of hospitalization of children under five years old, stratified by age in the state.
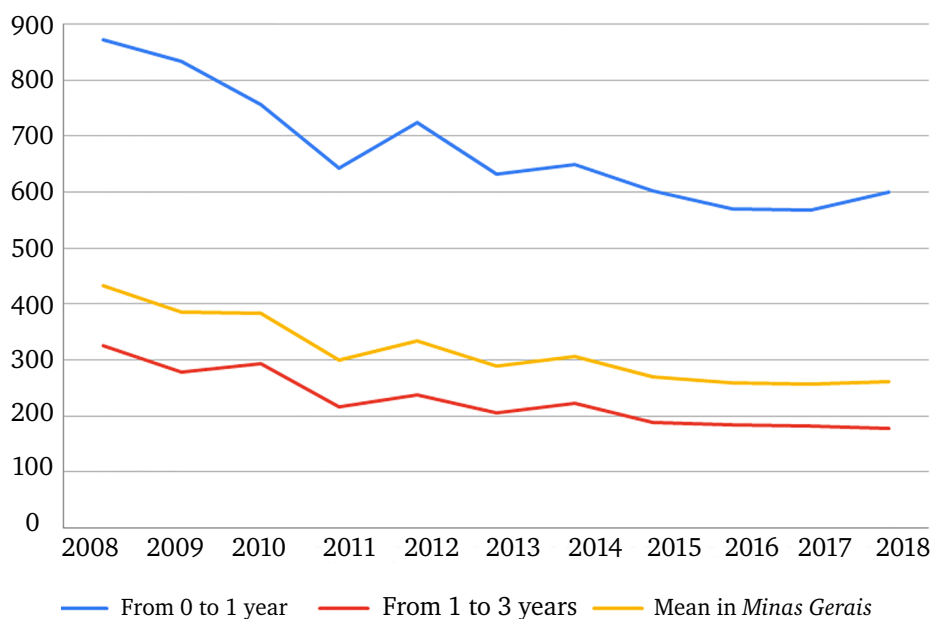

Figure 1 - PCSC rate in all macro-regions (per 10,000 inhabitants) for children under one year old and for children aged one to four years in the entire state of *Minas Gerais*, from 2008 to 2018

For children up to one year of age, it was inferred that hospitalizations for immunization-preventable diseases and sensitive conditions (β=5.69 and p<0.05); anemia (β=0.13 and p≤0.05); ear, nose, and throat infections (β=0.84 and p<0.05); and pulmonary diseases (β=5.40 and p<0.05) showed a temporal tendency to increase. It is noteworthy that among the diseases preventable by immunization and sensitive conditions, congenital syphilis (CS) was the one that grew the most, with 4.20/10,000 cases in 2008 to 56.1/10,000 in 2018. Nutritional deficiencies showed a stationary tendency in this age group and the other conditions analyzed, a decreasing tendency, as shown in Table 1.

Similar to what was recorded in the age group of children under one year of age, hospitalizations for anemia in the age group of one to four years (β=0.08 and p <0.05); ear, nose, and throat infections (β=0.48 and p<0.05); and lung diseases (β=0.32 and p≤0.05) showed a tendency to increase in the analyzed period. On the other hand, immunization-preventable diseases and sensitive conditions in children aged one to four years showed a stationary tendency (β=-13.64 and p>0.05). Infectious gastroenteritis and complications, nutritional deficiencies, bacterial pneumonia, and asthma had a decreasing tendency.

Table 1 - Tendency of hospitalizations for primary care-sensitive conditions by group of causes in children under one year of age. *Minas Gerais*, 2008-2018

PCSC	Beta	Error	p	APC	Tendency
Immunization-preventable diseases and sensitive conditions	5.69 (3.96 — 7.42)	0.76	p<0.05*	25.63 (-43.57 — 179.69)	increasing
Infectious gastroenteritis and complications	-7.52 (-9.66 — -5.37)	0.94	p<0.05*	-8.34 (-9.74 — -6.91)	decreasing
Anemia	0.13 (-0.002 — 0.27)	0.06	p≤0.05*	1.55 (0.05 — 3.08)	increasing
Nutritional deficiencies	0.15 (-0.33 — 0.64)	0.21	p>0.05	1.41 (-3.46 — 6.53)	stationary
Ear, nose, and throat infections	0.84 (0.46 — 1.23)	0.16	p<0.05*	4.88 (2.65 — 7.17)	increasing
Bacterial pneumonia	-26.42 (-33.90 — -18.93)	3.31	p<0.05*	-56.25 (-56.83 — -55.66)	decreasing
Asthma	-6.55 (-7.60 — -5.50)	0.46	p<0.05*	-9.61 (-10.31 — -8.92)	decreasing
Lung diseases	5.40 (2.48 — 3.32)	1.28	p<0.05*	3.80 (1.80 — 5.84)	increasing
Overall	-28.51 (-39.00 — -18.02)	4.63	p<0.05*	-4.02 (-5.14 — -2.88)	decreasing

Source: prepared for the purposes of this study.
*statistical relationship.
PCSC - primary care sensitive conditions
APC - annual percentage change

Table 2 - Tendency of hospitalizations for primary care-sensitive conditions by group of causes in children aged between one and four years. *Minas Gerais*, 2008-2018

PCSC	Beta	Error	p	APC	Tendency
Immunization-preventable diseases and sensitive conditions	0.03 (-0.009 — 0.08)	0.20	p>0.05	5.58 (-53.58 — 140.18)	stationary
Infectious gastroenteritis and complications	-3.88 (-4.87 — -2.88)	0.44	p<0.05*	-7.44 (-8.91 — -5.96)	decreasing
Anemia	0.08 (0.01 — 0.14)	0.02	p<0.05*	1.70 (0.40 — 3.01)	increasing
Nutritional deficiencies	-0.08 (-0.11 — -0.04)	0.01	p<0.05*	-4.50 (-4.50 — -4.50)	decreasing
Ear, nose, and throat infections	0.48 (0.33 — 0.63)	0.64	p<0.05*	6.49 (3.63 — 9.42)	increasing
Bacterial pneumonia	-8.70 (-12.14 — -5.26)	1.51	p<0.05*	-6.91 (-8.71 — -5.08)	decreasing
Asthma	-1.67 (-2.36 — -0.97)	0.30	p<0.05*	-4.41 (-5.92 — -2.88)	decreasing
Lung diseases	0.32 (0.00 — 0.65)	0.14	p≤0.05*	3.18 (0.26 — 6.19)	increasing
Overall	-13.64 (-17.27 — -10.02)	1.60	p<0.05*	-5.68 (-6.69 — -4.66)	decreasing

Source: prepared for the purposes of this study.
*statistical relationship.
PCSC - primary care sensitive conditions
APC - annual percentage change

The tendency of sensitive hospitalizations in children under five years of age was analyzed in the state stratified by health macro-region, with a downward tendency being identified in all 13 macro-regions with a APCof -4.96 (CI$_{95}$% = -6.08; -3, 83), according to data from Table 3.

DISCUSSION

The tendency of hospitalizations for sensitive conditions in children under five years of age in the state of *Minas Gerais* was decreasing in the analyzed period (APC = -4.96%; p<0.05). A decreasing tendency of hospitalizations for infectious gastroenteritis and complications, for bacterial pneumonia and for asthma among children under one year and among children aged between one and four years can be highlighted. On the other hand, there was an increase in hospitalizations due to anemia; ear, nose, and throat infections; and by lung diseases, in both age groups. For children under one year of age, hospitalizations for immunization-preventable diseases and sensitive conditions (β=5.693 and p<0.05) tended to increase, especially for congenital syphilis.

Children's health improved in Brazil after the country assumed the guarantee of the universal right to health, with the Constitution of 1988, and the integral protection of children with the Child and Adolescent Statute, in 1990. In addition, the country ratified international pacts, treaties, and conventions on the rights of the child and achieved Millennium Development Goal (MDGs) number four 'By 2015, reduce

child mortality to two-thirds of the level in 1990.'[15] Reducing mortality can be achieved. justified in the literature by the increase in the per capita income of the Brazilian population, more access to basic sanitation and even by the dynamics of the Family Health Strategy, since there is a multidisciplinary team accompanying each family in an intimate way.[16]

The state of *Minas Gerais* adopts national policies directed by the Ministry of Health, as well as develops actions aimed at the health and quality of life of children. Examples of these policies are *Rede Viva Vida*, *Rede Cegonha* and the *Mães de Minas* program. The *Rede Viva Vida* was implemented in 2005, as was the *Rede Cegonha*, which has been present in the state since 2011. It is a strategy that aims to guarantee children the right to a safe birth and healthy growth and development.[17]

The *Mães de Minas* program is a set of actions aimed at protecting pregnant women and children, with the aim of reducing maternal and child mortality, which in 2013 was 12.68 deaths per 100,000 born in the state. The program emerged with the challenge of monitoring 100% of pregnant women from *Minas Gerais* and strengthening the network of existing policies. The monitoring of this program indicated, for example, that in 2013 the highest incidences of maternal and infant mortality were concentrated in the Northeast and *Jequitinhonha* regions, and the lowest in the Center and *Triângulo Norte*.[18]

In *Minas Gerais*, from 1999 to 2007, the conditions that most affected children up to four years of age were gastroenteritis, followed by bacterial pneumonia and asthma. Only

Table 3 - Tendency of hospitalizations for primary care-sensitive conditions by health macro-region in *Minas Gerais*, 2008-2018

Region	Beta	Error	p	APC	Tendency
Triângulo Sul	-10.17 (-17.70 — -4.64)	3.32	p<0.05*	-2.70 (-4.58 — -0.79)	decreasing
Triângulo Norte	-14.19 (-28.53 — 0.14)	6.33	p≤0.05*	-4.10 (-8.24 — 0.22)	decreasing
South	-18.19 (-25.47 — -10.92)	3.21	p<0.05*	-5.49 (-7.17 — -3.77)	decreasing
Southeast	-28.62 (-38.78 — -18.46)	4.49	p<0.05*	-5.79 (-5.98 — -5.60)	decreasing
West	-14.09 (-18.14 — -10.04)	1.79	p<0.05*	-0.57 (-1.89 — 0.76)	decreasing
North	-9.21 (-12.53 — -5.90)	1.46	p<0.05*	-3.51 (-3.61 — -3.41)	decreasing
Northwest	-9.63 (-14.98 — -4.28)	2.36	p<0.05*	-4.76 (-7.37 — -2.09)	decreasing
Northeast	-25.16 (-30.70 — -19.61)	2.45	p<0.05*	-5.22 (-6.05 — -4.39)	decreasing
Leste do Sul	-21.47 (-32.59 — -10.34)	4.91	p<0.05*	-6.48 (-9.50 — -3.36)	decreasing
East	-11.25 (-17.96 — -4.55)	2.96	p<0.05*	-2.77 (-4.40 — -1.11)	decreasing
Jequitinhonha	-35.31 (-44.27 — -26.34)	3.96	p<0.05*	-6.87 (-9.04 — -4.64)	decreasing
Center-South	-21.74 (-31.83 — -11.65)	4.45	p<0.05*	-6.18 (-8.60 — -3.69)	decreasing
Center	-15.50 (-20.09 — -10.91)	2.02	p<0.05*	-5.01 (-6.17 — -3.83)	decreasing
MG	-16.61 (-21.42 — -11.79)	2.12	p<0.05*	-4.96 (-6.08 — -3.83)	decreasing

Source: prepared for the purposes of this study.
*statistical relationship.
APC - annual percentage change

these three conditions accounted for more than 50% of the cases in the period.[19] Currently, this scenario still resembles the reality identified in the country, marked by high rates of hospitalization for gastroenteritis and bacterial pneumonia, followed, in turn, by hospitalizations due to lung diseases.[4]

It can be seen, therefore, that the state of *Minas Gerais* has a different scenario from the rest of the country, due to the reduction of hospitalizations for gastroenteritis, bacterial pneumonia, and asthma, which can be justified by the implementation of targeted policies, such as basic sanitation, strengthening of health care networks and monitoring of the maternal and child population. As in *Minas Gerais*, the tendency to reduce hospitalizations for infectious gastroenteritis was identified in the state of *Rio Grande do Sul*, in the same period, for children under one year old, and is related to the increase in public policies aimed at basic sanitation and the provision of drinking water in the South region.[7] In the state of *São Paulo*, bacterial pneumonias were also the ones with the greatest tendency to decline, decreasing by 7.1% over the six years of study.[20]

For children aged one to four years, hospitalizations for asthma showed a decline in the state. The municipality of *Governador Valadares*, located in the eastern health macro-region, in *Minas Gerais*, showed a 95% decline in hospitalizations for asthma from 2002 to 2010, after a massive distribution of inhaled corticosteroids along with the strengthening of pharmaceutical care in PHC.[21] This is an example of the importance of health networks, which were built with the aim of integrating services in a horizontal way. Asthma is a disease that still generates many hospitalizations that can be avoided through the implementation of effective public policies. In addition to the importance of increasing the quality of life by reducing these hospitalizations, it is important to emphasize the cost savings created by the reduction of these hospitalizations.[22]

Although efforts are being made to promote the health of children, tendencies have been detected towards an increase in hospitalization rates for anemia, ear, nose, and throat infections and lung diseases among children under one year of age and in the age group of one to four years. In relation to anemia, there are efforts to combat this disease, such as the creation of the National Iron Supplementation Program in 2005 by the MoH, which consists of prophylactic iron supplementation for all children from six to 24 months of age and pregnant women when they start prenatal care and supplementation of pregnant women with folic acid. However, adherence and quality of treatment also depend on socioeconomic and cultural factors. Family members who are instructed to perform iron supplementation do not always do it correctly, impairing the acquisition of hemoglobin.[23]

Immunization-preventable diseases and sensitive conditions increased in children under one year of age and were stationary among children aged one to four years. It is noteworthy that CS was the disease that presented the greatest increase in this group in children up to one year of age. Despite the existence of a set of guidelines launched by the Ministry of Health to control this disease, the low quality of prenatal care is undoubtedly a factor responsible for the increase in hospitalizations.

In Brazil, CS has also been the biggest cause of hospitalizations among newborns.[4] Recognizing the causes for delay or non-vaccination of children was the objective of a study carried out in the south of the country, which revealed as main causes the lack of vaccines in the services and forgetfulness by those responsible regarding compliance with the vaccination schedule established by the National Immunization Program (NIP). The authors also highlighted that the children of adolescent mothers and parents with low education are the ones who are most delayed in receiving vaccines.[24]

In the last five years, vaccination coverage has decreased by 10 to 20 percentage points in Brazil.[24] In 2020, *Minas* did not reach any vaccination target for children under four years of age. Although these low values specifically last year are justified by the quarantine due to the coronavirus, since 2016 they have not been satisfactory.[25] Furthermore, activists of the anti-vaccination movement disseminate wrong information about the use of vaccines and this information can confuse the population. Efforts to ensure immunization include effective communication strategies, encouraging vaccination and conveying the truth.[25]

PHC must be resolute and meet the real health needs of the population, reducing access barriers and intervening in the social determinants of health. Failure to address health needs, failure to provide care for various reasons, access difficulties or any other factor that prevents or hinders the necessary intervention in PHC-sensitive conditions can generate the need for more complex services.

The limitations of this study were the restricted scope of the PCSC index, as it only considers data from hospitalizations through the SUS, and this number may even be higher. It is also important to consider the possibility of underreporting, possible failures in the diagnostic classification and the non-stratification of the data analyzed by gender. The possibility of possible failures in the access and quality of prenatal services by primary care is recognized, and it is important to carry out studies that analyze this correlation, as well as the correlation with sociodemographic aspects.

CONCLUSIONS

In this study, although a decreasing tendency of hospitalizations sensitive to primary care in children under five years of age was identified, in the analyzed period, hospitalizations for conditions that could be intervened in primary care, such as anemia, lung diseases and infections were observed. of the ear, nose, and throat, especially among children from one to four years of age. It is evident that the scenario of *Minas Gerais* is similar to that of other Brazilian states, and it is therefore important to consider the need for child health care by PHC professionals, through training, elaboration of protocols or public policies. In addition, possible bottlenecks that prevent or hinder the adequate flow between the different levels of the system must be analyzed, being important the strengthening of care networks and epidemiological surveillance, elements that allow the coordination of care by primary health care.

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