Clinical and epidemiological profile of children admitted to a pediatric unit

Perfil clínico-epidemiológico de crianças admitidas em unidade pediátrica

Perfil clínico y epidemiológico de niños ingresados en una unidad pediátrica

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ABSTRACT
Objective: to analyze clinical and epidemiologically profile of children admitted to pediatrics at a public hospital in Rio de Janeiro State. **Method:** this quantitative, descriptive, cross-sectional study was conducted by applying a questionnaire to parents and guardians of children admitted to pediatrics. **Results:** 92 (100%) parents and guardians participated, 57 (62.0%) of whom were out of work; 27 (29.4%) had four dependents; 35 (38.0%) received family income of one minimum wage. The children were mostly infants (47; 51.1%) and diagnosed with a respiratory condition (35; 38.0%). **Conclusion:** an association was found between social determinants, especially socioeconomic factors, and the development of respiratory disorders, particularly in infants. It is recommended that specific policies, for not only curative care, but also prevention, be intensified by health education to enable families, parents and guardians to recognize the risk factors for such diseases, as well as the signs of severity.
Descriptors: Pediatric Nursing; Morbidity; Health Profile.

RESUMO
Objetivo: analisar o perfil clínico epidemiológico de crianças admitidas na pediatria de um hospital público no interior do estado do Rio de Janeiro. **Método**: estudo descritivo, transversal, de abordagem quantitativa, desenvolvido com responsáveis de crianças admitidas na pediatria, através da aplicação de questionário. **Resultados:** 92 (100%) responsáveis participaram do estudo, dos quais, 57 (62,0%) não trabalham; 27 (29,4%) possuem quatro dependentes; 35 (38,0%) perfazem renda familiar de um salário mínimo. A maior proporção das crianças foi de lactentes, 47 (51,1%); com diagnóstico de afecção respiratória, 35 (38,0%). **Conclusão:** foi evidenciada associação entre determinantes sociais, sobretudo o socioeconômico, com o desenvolvimento de afecções respiratórias, especialmente em lactentes. Sugere-se que políticas direcionadas sejam intensificadas, não apenas para ação curativa, mas preventiva, através de educação em saúde direcionadas às famílias e aos responsáveis, visando reconhecer os fatores de risco para aquisição dessas doenças, bem como o reconhecimento dos sinais de gravidade.
Descritores: Enfermagem Pediátrica; Morbidade; Perfil Epidemiológico.

RESUMEN
Objetivo: analizar el perfil clínico y epidemiológico de los niños ingresados en pediatría en un hospital público del estado de Río de Janeiro. **Método:** este estudio cuantitativo, descriptivo y transversal se realizó mediante la aplicación de un cuestionario a padres y tutores de niños ingresados en pediatría. **Resultados:** participaron 92 (100%) padres y tutores, de los cuales 57 (62,0%) estaban sin trabajo; 27 (29,4%) tenían cuatro dependientes; 35 (38,0%) recibieron ingresos familiares de un salario mínimo. Los niños eran en su mayoría bebés (47; 51,1%) y diagnosticados con una afección respiratoria (35; 38,0%). **Conclusión:** se encontró asociación entre los determinantes sociales, especialmente los socioeconómicos, y el desarrollo de trastornos respiratorios, particularmente en la infancia. Se recomienda que las políticas específicas, no solo de atención curativa, sino también de prevención, se intensifiquen mediante la educación en salud para que las familias, padres y tutores reconozcan los factores de riesgo de dichas enfermedades, así como los signos de gravedad.
Descriptores: Intercambio de Información en Salud; Pase de Guardia; Comunicación; Seguridad del Paciente.

INTRODUCTION

In the last decades, the development of studies on data analysis distributed across geographic space has been widely valued for subsidizing the planning and evaluation of actions based on the location and spatial distribution of diseases, in the provision of assistance by the health services, and in the environmental risks, as well as in other determinants[1].

In this regard, epidemiology is promising in terms of understanding the health situation of a given population, where the analyzed indicators make it possible to describe, monitor and compare the health characteristics of populations, groups of individuals and human collectives. In addition, it provides an understanding of what produces diseases, deaths, exposure factors and determinants of health conditions[1].

In general, children are more susceptible to the development of diseases and the worsening of their conditions, due to their extreme age, therefore becoming a priority group in the health field[2]. Among the health indicators, Infant Mortality (IM) stands out as the main and most sensitive indicator for assessing the health status of a population, as it is associated with the socioeconomic factors and with the determinants of the living conditions, in addition to the factors related to the public policies and health services, such as access to and quality of health care[3].

The implementation of public policies in Brazil, added to the progress that occurred in the scientific and technological field in the middle of the 20th century, resulted in a significant decline in infant mortality. Following this understanding, Brazil was effective when it reached the goal established by the Millennium Development Goals (MDGs), reaching the rate of 15.3/1,000 live births (LBs), reducing IM. However, it is observed that the goal reached was not homogeneous when assessed by region, with the North region standing out with high mortality rates ranging from 11.0 to 21.8 deaths/1,000 LBs[4], which similarly occurs in small municipalities far from main cities, in conditions of extreme poverty and with inefficient health services, unveiling social and health inequalities in the Brazilian territory[5].

Also in Brazil, inequality in income distribution, low socioeconomic status, high home density, exposure to smoking, cold, humidity, malnutrition, early weaning, low schooling and maternal age, passive smoking and family culture have been associated with differences in the risk of illness and hospitalization, in the different social strata, mainly in the less favored and in children under five years old[6].

Thus, analyzing the clinical and epidemiological profile of the child population in a given region goes beyond diagnosing the local health condition. Such action provokes a reflection on the health care model that is in production, whose actions and interventions are sometimes restricted to the hospital environment, without advancing and intervening on the real needs and problems faced by the population[1].

In this perspective, the development of studies of this nature is necessary for the control and planning of health actions on the main morbidities in the child population and their determinants. It is considered essential to inform the magnitude, evolution and places where there is higher prevalence of a disease, especially in municipalities far from large urban centers, subsidizing a better direction of actions to confront and combat the identified diseases[6].

It is therefore understood that identifying possible interventions to transform the socio-health reality of the region studied can support the decision-making process by local managers. And, when not possible, directing the actions of the health team to plan more assertive care in the hospital, minimizing possible harms from hospitalization[6].

In this directive, the study aimed to analyze the clinical epidemiological profile of children admitted to the hospitalization unit of a public hospital in the inland of the state of Rio de Janeiro

THEORETICAL FRAMEWORK

Facing the commitment assumed in the Federal Constitution of 1988 to guarantee the universal right to health, added to the creation of the Unified Health System (*Sistema Único de Saúde*, SUS) and the integral protection of the child with the Child and Adolescent Statute (*Estatuto da Criança e do Adolescente*, ECA), Brazil has been showing successful results in terms of children's health over the years, especially with a reduction in the IM rate (children under 1 year old) and childhood mortality (children under 5 years old)[7].

Understanding this aspect can only be possible when also taking into account the representations and social determinants that reflect the changes and experiences of human beings from a perspective that is not only individual, but also collective, representing the environment to which they belong. These demonstrate the living conditions to which a community is subjected, live, act, think and understand the aspects that define its health. This cannot be understood as a single determinant for health, but must be understood as the association of several interactions with the individual-environment and individual-individual[8].

In this way, adopting the view of the social determinants means understanding the value that health has for society and, at the same time, admitting that it depends on actions that, several times, are not related to the health sector. The social determinants approach demonstrates that health inequalities cannot be recognized and resolved without observing the social inequalities[9].

Health is due to the determinants that involve the context or territory in which the individual is inserted, as well as the unequal distribution of health-producing factors: material, biological, psychosocial and behavioral. Economic inequality, represented by the level of social stratification that the individual is inserted in, would determine an inequality of access to factors of good or bad health, implying an increase in the inequalities in the area. The fight against inequality seeks to increase the level of health but, for this, it is necessary to develop inter-sectoral policies (economic,

employment, income, housing, education, etc.), thus seeking to guarantee participation and autonomy/empowerment of the populations, so that they can collaborate with the transformation of society[10,11].

METHOD

A descriptive study with a quantitative approach and a cross-sectional design, developed in a public hospital located in the inland of the state of Rio de Janeiro, Brazil, specifically in the pediatric hospitalization sector.

The hospital unit presents itself as the only large municipal autarchy institution, located in the municipality of Rio das Ostras, being a pavilion unit with high patient turnover, where it receives not only the population of the municipality, but also from neighboring regions. The aforementioned institution, as it has the only reference maternity ward in the region, has a nursery, pediatric emergency room and pediatric hospitalization unit that serve patients from zero to 16 years of age with a wide variety of clinical diagnoses.

The pediatric unit consists of two wards, with three beds each and one bed intended for isolation. It has an imaging center that meets the population demand of the municipality and some neighboring municipalities, acting as a reference center for outpatient and hospital exams, configuring itself as the gateway for the requesting health units. It has four operating rooms, where it develops small pediatric surgeries; however, it does not have a pediatric and neonatal intensive care center, where in these cases it has the service of central regulation of vacancies to refer children with greater severity.

The population of this study was guardians of children hospitalized in that sector during the data collection period. The following inclusion criteria were considered: guardians who had a direct relationship with the child who was hospitalized in the pediatric sector. The exclusion criteria were as follows: guardians who, despite maintaining direct contact with the child, did not have in-depth knowledge about the children's living and health conditions.

Regarding the sample, the participants were selected for convenience during the data collection period, from December 2017 to April 2018, by means of face-to-face interviews, which followed a script prepared by the researchers, divided into two parts, where the first contained closed questions regarding the characterization of the socioeconomic profile of those guardians, such as race, schooling, marital status, family income, work, and number of dependents.

The second part included closed questions that were formulated with the purpose of favoring analysis on the epidemiological and clinical aspects, with the following variables: child's age, breastfeeding, duration of breastfeeding, guardian, medical diagnosis at hospitalization, vaccination schedule, medical follow-up, prenatal care, and number of prenatal consultations.

The questionnaires were previously tested through their application with four guardians, which would make it possible to identify possible weaknesses and necessary adaptations; however, there was no need for modifications, and none of the participants, either during or after data collection, expressed the desire to withdraw from the study.

The recruitment and selection of those guardians for the study took place in the research scenario at a time when the child was calm. The researcher introduced himself to the would-be participant, the person in charge, explaining in a detailed and clear way and with colloquial language what the research and its objectives were concerned with. In addition, it was explained that the application of the instrument, by means of an interview, would have a mean duration of 30 minutes, which would be previously scheduled and carried out in a reserved room in the sector, in a calm environment respecting their privacy and confidentiality of information.

It was clarified that their participation could generate discomfort by revisiting moments and stories experienced with children during hospitalization. In the event of discomfort of any kind, the interview would be interrupted immediately and the person in charge would be free to decide whether or not to continue participating in the study. After presenting the project and elucidating any doubts regarding the participation of the guardian in the research and, upon acceptance, free and conscious in participating in the research, the Free and Informed Consent Form (FICF) was signed. Respect for anonymity and confidentiality was guaranteed by the use of alphanumeric codes (Family 1 = FAM 1, FAM 2 and so on) for the participants, in the sequence in which the interviews were conducted. The collected data were entered into an electronic spreadsheet and processed in the R Program, which is free and allows statistical calculations and graphical representations to be developed in an integrated manner. Proportions and measures of central tendency, which make up the basic statistics, were calculated.

In compliance with the provisions of Resolution 466 of December 12th, 2012 of the National Health Council/Ministry of Health, the project was approved by the institution's Research Ethics Committee.

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RESULTS

The study included 92 guardians who accompanied the children during the data collection period, as showed in Talble 1.

TABLE 1: Distribution of the variables related to the children hospitalized in a public hospital in *Baixada Litorânea* of the state of Rio de Janeiro (n=92). Rio das Ostras, Brazil, 2018.

Variables		N	%
Age	Infant	47	51.1
	Preschool child	30	32.6
	School child	14	15.2
Gender	Female	47	51.1
	Male	45	48.9
Was breastfed	Yes	76	82.6
	No	14	15.2
	Does not remember	2	2.2
Breastfeeding time	Less than a month	4	4.4
	Up to two months	8	8.7
	Up to three months	5	5.4
	Up to four months	3	3.3
	Up to five months	9	9.8
	Up to six months	3	3.3
	Up to one year	15	16.3
	Up to two years or more	31	33.7
	Does not remember	14	15.2
Guardian	Mother	86	93.5
	Father	6	6.5

Between participants, 86 (93.5%) were mothers and six (6.5%) were fathers. Regarding the children's profile, there was a higher proportion of infants, 47 (51.1%), followed by preschoolers, 30 (32.6%), whose mean age was 2.7 years old. The gender with higher proportion was female, 47 (51.1%). Regarding breastfeeding, 76 (82.6%) children were breastfed, of which 31 (33.7%) were breastfed for two years or more.

The analysis of the variables related to the health of the hospitalized children is presented in Table 2.

TABLE 2: Distribution of the variables related to the health of the children hospitalized in a public hospital in *Baixada Litorânea* of the state of Rio de Janeiro (n=92). Rio das Ostras, Brazil, 2018.

Variables		N	%
Medical diagnosis	Respiratory system	35	38.0
	Digestive system	12	13.0
	Integumentary system	15	16.3
	Metabolic system	1	1.1
	Urinary system	16	17.4
	Orthopedic	3	3.3
	Neurological system	1	1.1
	Hematological system	6	6.5
	Immunological system	2	2.2
Vaccine up to date	Yes	85	92.4
	No	7	7.6
Medical follow-up	Yes	68	73.9
	No	23	25.0
Attended prenatal consultation	Yes	89	96.7
	No	3	3.3
Number of prenatal consultations	Two to four consultations	6	6.5
	Five consultations	8	8.7
	Six consultations	10	10.9
	Seven consultations	61	66.3
	Eight consultations	7	7.6

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A higher proportion was found for medical diagnosis in the respiratory system, 35 (38.0%), and the urinary system, 16 (17.4%). Regarding vaccination, the highest proportion of children with the vaccines up to date was observed, 85 (92.4%). Of the total number of children analyzed, 68 (73.9%) were under medical supervision. For the prenatal care performed by the child's mother, 89 (96.7%) stated they had performed prenatal care. Regarding the number of prenatal consultations, the highest value was found in the stratum with seven consultations, 61 (66.3%).

The variables related to the children's guardians re showed in Table 3.

TABLE 3: Distribution of variables related to the guardians of children hospitalized in a public hospital in *Baixada Litorânea* of the state of Rio de Janeiro, Rio das Ostras, RJ, Brazil, 2018.

Variables		N	%
Gender	Female	86	93.5
	Male	6	6.5
Race of the guardian	Black	23	25.0
	Brown	41	44.6
	White	28	30.4
Marital status of the guardian	Married	43	46.7
	Stable union	10	10.9
	Single	35	38.0
	Widow	1	1.1
	Divorced	2	2.2
Guardian works	Yes	35	38.0
	No	57	62.0
Family income	Up to one minimum wage	35	38.0
	One-Two minimum wages	31	33.7
	Two-Three minimum wages	17	18.5
	Three-Four minimum wages	1	1.1
	Four minimum wages or more	5	5.4
Number of dependents	Two dependents	7	7.6
	Three dependents	25	27.2
	Four dependents	27	29.4
	Five dependents	21	22.8
	Six dependents	9	9.8
	Seven dependents	2	2.2
	More than eight dependents	1	1.1
Guardian's schooling	Complete Elementary I School	4	4.4
	Incomplete Elementary I School	22	23.9
	Incomplete Elementary II School	12	13.0
	Complete High School	28	30.4
	Incomplete High School	13	25.0
	Complete Higher Education	1	1.1
	Incomplete Higher Education	2	2.2

Source: Elaborated by the authors (2018)

There was the highest proportion of brown-skinned people, 41 (44.6%), married, 43 (46.7%), with complete secondary education, 28 (30.4%), who do not work, 57 (62.0%), and with incomes up to a minimum wage, 35 (38.0%). In the analysis of the number of dependents, the highest proportion among four or more dependents was observed, 27 (29.4%).

DISCUSSION

Results showed that the infants were hospitalized in a greater proportion when compared to other age groups, whose prevalent medical diagnosis were disorders of the respiratory system. As for the social determinants of these children and their families, it can be seen that some factors, in line with the literature, may have contributed to the occurrence of this type of health problem, especially maternal schooling associated with low family income, in addition to the large number of dependents in disagreement with the *per capita* income of the families, therefore being the main findings of the present investigation.

According to the World Health Organization, respiratory diseases have a major impact on the health of the population, making up 8% of the total deaths in developed countries and 5% in developing countries, with emphasis on pneumonias that account for 20% to 40% of the hospitalizations of children in developing countries. Its prevalence is also high at the national level, reaching 16% of the hospitalizations in the SUS, mainly affecting children under five years old[5]. Thus, respiratory diseases are an important public health problem, as they represent the main cause of mortality in this population segment[12], which implies the need for further investigation of the social determinants associated with their occurrence in local/regional studies.

In this sense, age stands out as a variable of great importance in the acquisition of diseases, especially among children under 5 years old, because they are more susceptible to the aggravation of diseases due not only to the very fragility that is imposed, but also in their great majority for belonging to low-income families determining greater vulnerability, added to the fact that the epithelium of the airways in this segment is more susceptible to pollutants and etiological agents concomitant to the immaturity of the physiological and immunological system[13].

In this directive, it is important to point out an important finding in this study dissonant to the premise of the literature that, despite the large proportion of children performing medical follow-up, a large part of these children were hospitalized with the predominant medical diagnosis of respiratory system disorders. However, the literature has shown the reduction in the rate of child hospitalization in recent decades, and that this reduction is linked to the targeting of programmatic actions aimed at prevention and recovery of health, such as follow-up of growth and development; vaccination coverage; encouragement of breastfeeding, as well as the control of diseases prevalent in children in basic health care services[5]. Therefore, these findings point to gaps in the care and follow-up of children in the primary care services of the municipality under study, which therefore need to be recognized by local managers for the definition of specific actions and strategies that promote childhood health and minimize preventable harms.

Also in this regard, it is observed that Hospitalizations for Primary Care Sensitive Conditions (HPCSCs) are conditions particularly avoided by means of preventive and early care of the disease, therefore being diagnosed at an opportune time and effectively treated with patients who seek the first level of health care[14], which again indicates the need for local investments in this directive, based on the results now found.

In view of this, it is possible to infer a range of factors responsible for the hospitalization of the analyzed population such as knowledge, attitudes and practices of the family and the community that determines the moment for the recognition of the disease; weaknesses in the levels of primary health care, and the identification of the most prevalent groups. Thus, the search for families for medical follow-up on the children's health condition would allow for the restructuring of programs and policies, in addition to being an important data for the reformulation of actions aimed at the most incident diseases in specific regions[15].

In this regard, the literature mentions that high hospitalization coefficients for treatable causes on an outpatient basis can indicate fragmented and punctual care, resulting in the inefficiency of the health services, such as difficulty in accessing the service, lack of medications and poor performance in care. It should be noted that primary care has as its main objective to reduce and avoid hospitalizations for these causes[16], which is crucial for the healthy and harmonious development of children.

In relation to breastfeeding, a small number of children was found who were breastfed until the age of two or more. In this regard, a number of studies show that breastfeeding, as well as the duration of this practice, brings several benefits to the infant population such as, for example, reduction in mortality[17], improvement of the nutritional and immunological conditions and quality of life, among other benefits, consequently contributing to the improvement of the health indicators in Brazil[18].

Regarding this aspect, it should be noted that the Ministry of Health (MoH) recommends breastfeeding for two years or more, being exclusive in the first six months, acting as a protective factor against the acquisition of infections and consequently reducing hospitalizations and deaths from preventable causes[19], including respiratory conditions.

Another aspect that goes against what is recommended in the literature was the high proportion of immunized children who, despite this protection, had a high rate of hospitalization for respiratory diseases. On this aspect, a study evidenced that vaccines consist of a protective factor of great importance for the population, especially for children, because they certify the prevention and protection of diseases acquired through immunobiologicals, strengthening the immune system; thus, it is understood that on-time vaccination confers protection against pathologies in these individuals, opposite to the data evidenced in this study[20].

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Other evidence reports that respiratory system diseases comprise an important part of hospital admissions, where pneumonia is the major cause of admission for respiratory disease, representing one of the five main causes of death in children, especially in developing countries and that, among the main factors associated with the acquisition of this morbidity, is the incomplete vaccination status[21].

Another study states that, among the bacterial etiologic agents involved in the genesis of community-acquired pneumonia (CAP), *Streptococcus pneumoniae* is the main cause of illness in children and adults. Thus, CAPs are responsible for causing great morbidity, corresponding to the occurrence of 13.8 million new cases worldwide each year. Nearly 6%-16% of the CAP cases require hospitalization, especially in children under five years old. The disease, mainly of bacterial etiology, is responsible for 20%-40% of the hospitalizations in the American continent alone, and in Brazil, in 2004 and 2006, pneumococcal diseases were responsible for nearly 34,000 hospitalizations, strongly justifying the importance of vaccination coverage as prevention for hospital admissions in this age segment. Therefore, despite the high rate of children vaccinated in this study, a small portion was not up to date with the vaccination schedule, so care and management strategies need to be employed to increase vaccination coverage in the municipality, which will contribute to the reduction of preventable diseases in childhood[22].

The findings of this study testify that the guardians of the children, mostly women/mothers, claimed to have attended seven consultations during the prenatal period. On this aspect, a study reports that pregnant women who attend a greater number of consultations are those who have a higher level of schooling and who live in the inland of the states, due to the convenience of being allocated close to basic health units. Given the facts, it is highlighted that, in part, the findings corroborate this statement, regarding the municipality where the study was conducted. On the other hand, maternal schooling showed higher strata among those who did not reach higher education, going against the premise of the study[23].

With regard to the socioeconomic determinants, it was observed that the large proportion of guardians do not have an employment relationship, have four dependents, and maintain a family income of one minimum wage. In addition, the data relating to the socioeconomic conditions are in accordance with the literature, since the main risk factors for respiratory diseases prevalent in this study are low maternal schooling, family agglomeration, and poor housing conditions. The development of a study evidenced family income as a determinant capable of influencing the quality of life of individuals, showing higher prevalence of respiratory disease among children under five years old with lower socioeconomic levels, increasing by up to 2.2 times the chance of the child presenting asthma and bronchitis. Regarding this fact, it is understood that families with high *per capita* income are more likely to effectively take care of their children's health, resulting in a lower incidence of diseases and hospitalizations[6].

On the other hand, unfavorable socio-environmental factors such as high home densities, unhealthy housing and less access to health, among other factors, can contribute individually, or when associated, can increase the likelihood of acquisition and/or recurrence of morbidities in children in early childhood[6], which is consistent with the sociodemographic profile herein surveyed.

In view of this context, the schooling of those responsible in this study showed the greatest stratum among those who did not reach or have not completed high school. This data refers to what was presented in another study, where maternal schooling is pointed out as a risk factor for children's hospitalization. It is a fact that mothers or guardians with higher schooling have more access to different types of information, knowledge and access to health services. In addition, low schooling is directly associated with a lower understanding of the evolution and severity of the disease, health education, home and food hygiene, correct follow-up of medical guidelines, in the presence of health problems, as well as prevention and health promotion, which results in the individual's hospitalization[5].

It is therefore understood that maternal schooling enables a plurality of actions that protect the health of their children such as, for example, greater adherence to health care services and preventive care measures, which reduce morbidity. Thus, maternal schooling is shown as a predictor of child health, which reinforces the view that this factor is the most important sociodemographic determinant of general health conditions, as well as the acquisition of disease among children[6].

STUDY LIMITATIONS

This study has as a limitation its development in only one center without privileging other hospital units, which can present different health indicators in face of their local reality and social context. And, as a potentiality, in terms of informing the magnitude, evolution and places where there is higher prevalence of this type of disease, especially in inland cities far from the large main cities, subsidizing better direction of the aforementioned actions in facing and fighting this problem, reinforcing the importance of local studies.

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CONCLUSION

Analyzing the clinical and epidemiological profile of children in that municipality allowed inferring a relationship between social determinants, especially maternal schooling associated with low family income, in addition to the large number of dependents at odds with the *per capita* income of the families, with the development of respiratory disorders, mainly in infants.

However, respiratory system morbidities are mostly considered diseases of preventable causes or conditions sensitive to primary care so, when diagnosed in a timely manner, they are treated and generally do not progress to hospitalization. Thus, it is suggested that policies aimed at this age group be intensified, not only for healing action, but also preventive, through health education actions directed to families and guardians, aiming to recognize the risk factors for the acquisition of these diseases, as well as the recognition of the signs of severity, in addition to the training of human resources in the management of this morbidity. These actions are expected to reduce indicators related to child morbidity and mortality.

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