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ORIGINAL ARTICLE

RISK FACTORS ASSOCIATED WITH RESPIRATORY DISEASES IN CHILDREN

FATORES DE RISCO ASSOCIADOS A DOENÇAS RESPIRATÓRIAS EM CRIANÇAS

FACTORES DE RIESGO ASOCIADOS CON ENFERMEDADES RESPIRATORIAS EN NIÑOS

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ABSTRACT

Objective: identifying risk factors associated with respiratory disease in the daily lives of children under five years old who presented recurrent episodes. ***Method:*** a descriptive, transversal and operational study with a quantitative approach conducted with 47 mothers of children under five years old, residing in the urban area of Montadas-PB, between October 2010 and March 2011. The Research Ethics Committee approved the research project, CAAE 0151.0.133.000-11. ***Results:*** the most significant risk factors were: early weaning, low level of education; low socioeconomic conditions; smoking; household crowding; presence of domestic animals; inappropriate ceiling; and insufficient ventilation. ***Conclusion:*** if these families present a higher per capita income, as well as their parents had a higher education level, almost all risk factors for respiratory diseases could be minimized. ***Descriptors:*** Respiratory Diseases; Risk factors; Children.

RESUMO

Objetivo*:** identificar os fatores de risco associados a doenças respiratórias no dia-dia das crianças menores de 5 anos, que apresentaram episódios recorrentes. ***Método*:** estudo descritivo, transversal e operacional, com abordagem quantitativa, com 47 mães de crianças menores de 5 anos, que residem na zona urbana da cidade de Montadas-PB, entre outubro de 2010 e março de 2011. O Comitê de Ética e Pesquisa aprovou o projeto de pesquisa, CAAE 0151.0.133.000-11. ***Resultados*:** os fatores de risco mais significativos foram: desmame precoce, baixo grau de instrução, baixas condições socioeconômicas, tabagismo, aglomeração familiar, presença de animais domésticos, teto inadequado e ventilação insuficiente. ***Conclusão*:** se essas famílias apresentassem uma renda per capita maior, bem como seus responsáveis tivessem um grau maior de instrução, quase todos os fatores de risco para doenças respiratórias poderiam ser minimizados. ***Descritores: Doenças Respiratórias; Fatores de Risco; Crianças.

RESUMEN

Objetivo: identificar los factores de riesgo asociados con la enfermedad respiratoria en la vida cotidiana de los niños menores de cinco años que presentaron episodios recurrentes. ***Método:*** este es un estudio descriptivo, transversal y operacional con un enfoque cuantitativo con 47 madres de niños menores de cinco años, que residen en el área urbana de Montadas-PB, entre octubre de 2010 y marzo de 2011. El Comité de Ética en la Investigación aprobó el proyecto de investigación, CAAE 0151.0.133.000-11. ***Resultados:*** los factores de riesgo más significativos fueron: destete precoz, bajo nivel de educación; condiciones socioeconómicas bajas; fumantes; el hacinamiento de los hogares; presencia de animales domésticos; techo inadecuado; y ventilación insuficiente. ***Conclusión:*** si estas familias presentan un mayor ingreso per cápita, así como sus responsables tenían un mayor grado de instrucción, casi todos los factores de riesgo para las enfermedades respiratorias podrían minimizarse. ***Descriptores:*** Enfermedades Respiratorias; Factores de riesgo; Niños.

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INTRODUCTION

The most frequent acute respiratory infections include the common cold, tonsillitis otitis, sinusitis and pneumonia. The etiology can be viral, what happens in most cases, or bacterial, resulting in the use of antibiotics. These diseases constitute one of the main reasons for seeking consultations and hospitalizations in pediatric age group[1].

Most pneumonia frames happens after a viral infection of the upper airways (URTI)[1] Mortality has been falling for two decades and are recording a decrease of 74% among children under one year of age in the period between 1991 and 2007. In that same time period fell by 56% deaths in children 1-4 years old[2]. However, it is important to note that pneumonia is also responsible for 5% of annual deaths in children under five years old.[3].

In some children the episodes of airway infection, either in the lower or upper tract, shows current. The criteria most used to define more repetitive respiratory infection are: absence of any underlying diseases justifying recurrent infections (primary or secondary immunodeficiency, cystic fibrosis, airway malformations, immotile cilia syndrome, among others) and presence of at least one of the following conditions: six or more upper respiratory infections per year; one or more monthly respiratory infections; three or more annual respiratory lower tract infections.[4]

Considering the magnitude that this problem presents, WHO has implemented a prevention and control program of acute respiratory infections that is adopted by many countries. In Brazil, the Ministry of Health (MOH) adopted the Integrated Management of Childhood Illness (IMCI). This tool is part of the basic actions of child health that is currently built into the Family Health Strategy.[5] However, for an effective control of this problem is crucial to understand the frequency and risk factors associated with morbidity and mortality from respiratory infection.

In a study in the municipality of Montadas-PB to check the frequency of respiratory diseases in children living in urban areas, it was found that they accounted for 45,53% of all outpatient visits took place between 2004 and 2008. Regarding the factors risk it was observed only those found in the charts as gender, age and the season that occurred the consultation.[6] However, the main risk factors for the disease have not been evaluated, among which are: low family income, low maternal education, household crowding, exposure to secondhand smoke, early weaning, attendance at day care and poor environmental conditions. The identification of these and other factors is that it can serve as a subsidy to inform and sensitize parents, and support the implementation of specific health policies, thus preventing recurrences of disease in these children.[7]

Based on the above study findings, this study aimed to identify risk factors associated with respiratory disease in the daily lives of children under five years old, who presented recurrent episodes.

METHOD

It is an exploratory descriptive cross study with a quantitative approach. The research was developed in the urban area of the municipality of Montadas-PB. According to the IBGE in 2013 the Montadas municipality's population was of 5351 people.

For data collection it was conducted an interview with the mothers of children under five who had respiratory disease of repetition and residing in Montadas.

There was considered as a case of recurrent disease one with at least 3 episodes in a period of six months, which in this study varied between October 2010 and March 2011. The children were selected through the respiratory disease diagnoses in medical family records of Family Health Unit Paulo de Souza (health unit in the urban zone of the municipality). The sample was non probabilistic type, consisting of 62 families, representing the 62 children who had repeated respiratory disease during the study period. There were excluded from the sample those under 18 who had neurological disorders and, therefore, are more likely respiratory diseases.

After the selection of the sample the researchers located the homes of children through the address contained in the family records, to conduct interviews with their mothers. During the search of the households, 15 families were not found because they had changed their address, reducing the sample was increased to 47.

As data collection instrument there was used a semi-structured interview. Data were analyzed by relative frequency, and were presented in tables analyzed in the light of the literature.

To be part of the study, the mothers agreed to sign the Informed Consent (IC), after being informed of the proposed objectives, as well as the ethical aspects of research involving human subjects, so the

requirement proposal was met by the National Health, through Resolution 466/2012. The project was submitted to the Research Ethics Committee of the State University of Paraiba - UEPB and approved under number 0151.0.133.000-11. Access to medical records was made after permission from the municipal health secretary of the city and manager of primary care of the Family Health Unit Paulo de Souza.

RESULTS

The results showed that 59,6% of children were female. The age, the greatest number was between 2 and 3 and between 4 and 5 years old. About the time the child was breastfed, 9 mothers said their children were breastfed less than one month old (19,1%) and between 1 and 5,9 months old, 13 children (27,7%).

Regarding the nutritional status of 47 children assessed, only four had mild malnutrition, being not observed child with a moderate or severe level. Table 1 shows the results of these variables relating to individual risk factors.

Table 1. Distribution of children according to individual factors, Montadas, PB, Brazil, 2011.

Variables	n	%
Gender		
Male	19	41,4
Female	28	59,6
Age (in years)		
Less than 1	07	14,9
1 - 2	08	17
2 - 3	12	25,5
3 - 4	07	14,9
4 - 5	13	27,7
Time of breastfeeding		
Less than 1 month	09	19,1
Between 1 and 5,9 months	13	27,5
Between 6 and 11,9 months	12	25,5
ore than 1 year	13	27,5
Nutritional Status		
Normal	43	91,5
Mild malnutrition	04	8,5
Moderated malnutrition	0	0
Severe malnutrition	0	0

Table 2 shows the results of socioeconomic factors. With regard to maternal education only one mother claimed to be illiterate, 18 said they had incomplete primary education (38,3%), one full primary school, 3 incomplete high school and 24 completed high school (51,2%). No mother claimed having completed higher education.

With regard to per capita income, 43 families received less than one minimum wage per person, which corresponds to 91,5%. Not identified any family with income above 2,5 salaries per person.

Table 2. Distribution of children according to socioeconomic factors, Montadas, PB, Brazil, 2011.

Variables	n	%
Daycare		
Illiterate	01	2,1
Elementary incomplete	18	38,3
Elementary complete	01	2,1
High school incomplete	03	6,3
High school complete	24	51,2
Per capita income		
Less than 1 wage	43	91,5
Between 1 and 2,4 wages	04	8,5
Over 2,5 wages	0	0

Among the households surveyed, 36 did not have smokers. Of the 11 houses where existed smokers, in six the consumption was 1 to 10 cigarettes a day, and in five homes exceeded the consumption of 10 cigarettes/day. This finding was obtained by summing the number of cigarettes consumed by each relative who lived with the child. Only two mothers claimed to have smoked during pregnancy, which corresponds to just 4,25%, as shown in table 3

Table 3. Distribution of children according to factors related to smoking, Montadas, PB, Brazil, 2011.

Variables	n	%
Consumption of cigarettes at home		
Does not present	36	76,6
From 1 to 10 cigarretes/daily	06	12,7
Over 10 cigarettes/daily	05	10,7
Smoking in pregnancy		
Yes	02	4,25
No	45	95,75

Table 4 shows the results of variables linked to family agglomeration and to frequency to kindergartens or schools. The greater the number of people in the same house, the greater are the chances of a child getting sick, especially when that agglomeration of people occurs in the room where the infant sleeps. Attending kindergartens and schools also increase the risk of the child having some respiratory disease, due to greater contact with other minors and a consequent increase in exposure to infectious agents. It was observed that 70,2% of families were composed of more than 3 members, and 57,45% of mothers stated that their children slept with two other people, usually with their parents. Only 15 attended schools (32%), all older than three. Those with less age could not attend kindergartens due to the lack of these in the city.

Table 4. Distribution of children according to factors related to agglomeration, Montadas, PB, Brazil, 2011.

Variables	n	%
Number of residents in the home		
<=3	14	29,8
>3	33	70,2
Sleep with their child		
None	3	6,3
1	17	35,25
2	27	57,45
3 or more	0	0
Attend daycare or school		
Attend	15	32
Do not attend	32	68

With regard to the physical structure of houses, it was observed that all had walls made of brickwork, ie were adequate. Regarding the type of floor it was found that only two households were inadequate, which corresponds to 4,5%. These were made of thick concrete, surface that loose dust very easily as well as being difficult to sanitize. The ceiling considered suitable for families with children with respiratory disorders is the slab; therefore, it was identified that 76,6% of homes were inadequate. And 42,5% of them had only one window.

It was identified that in every home residents consumed treated water; however, 27,6% were located in streets that had no sewage system (Table 5).

Table 5. Distribution of families according to variables related to households, Montadas, PB, Brazil, 2011.

Variables	n	%
Type of materials used in the walls		
Suitable	47	100
Non suitable	0	0
Type of the floor		
Suitable	45	95,5
Non suitable	02	4,5
Ceiling type		
Suitable	11	23,4
Non suitable	36	76,6
Number of windows		
None	0	0
1	20	42,5
2	09	19,1
3	06	12,9
4 or more	12	25,5
Consumption of treated water		
Yes	47	100
No	0	0
Sewage network		
Yes	34	72,4
No	13	27,6

With respect to domestic animals 25,5% of households owned cats and/or dogs. Just a mom said don't use gas stove. (Tabela 6)

Table 6. Distribution of families according to the presence of domestic animals and the use of gas stove, Montadas, PB, Brazil, 2011.

Variables	n	%
The presence of dogs and/or cats		
Present	12	25,5
Does not present	35	74,5
Gas stove		
Use	46	97,9
Does not use	01	2,1

DISCUSSION

The variables studied in this research showed that respiratory diseases may be caused by several factors, making it difficult to pinpoint the cause that makes these children have respiratory problems of repetition. Also, the possibility of more than one risk factor be responsible for the problem.

The data showed that most of the children were female, corroborating the finding by Porto in 2010, when analyzing 1263 consultations between 2004 and 2008 in the city of Montadas-PB, it was found that 53,68% occurred in girls;[6] however, countered the results found in the study conducted in the city of Almirante Tamandaré-PR, where respiratory diseases most affecting gender males[9]. It is observed in the literature that males may be more affected due to factors related to the smaller caliber of airways.[10]

With regard to age, it determined a greater number of bouts in children 3-5 years old in opposition to that found in a study conducted in the city of Tangara da Serra-MT, that, through bulletins records of outpatient events of the basic health units from 2004 to 2005, and when dividing its sample into 4 age groups: 0-1, 1-4, 5-9 and 10 to 14 years old, there was verified a decline in the number of consultations as the age increased.[11]

It was found that only 8,5% of children had malnutrition still in a slight degree. A number three times lower than that found in a survey conducted in the city of Cuiaba-MT. Importantly, unlike this research, the results obtained in Cuiaba there were cases of moderate malnutrition and severe.[12]

With regard to early weaning risk factor it was found that about 47% of the mothers breast-fed children for less than 6 months, minimum time recommended by the World Health Organization (WHO). It is known that breastfeeding is considered the optimal

nutrition for babies and therefore there its importance to the health of children, as it offers immunological protection.[13-4]

Concerning maternal education factor, it was observed that approximately 40% of the mothers had not even finished elementary school, so that only 1 was called illiterate. This high rate was also found in a survey conducted in Cuiaba-MT that by combining the IRA occurrences of the educational level of mothers, found a higher occurrence in the children of those who had a lower level of education.[12]

The index of families with per capita income less than one minimum wage was fairly representative, reaching 91,5%. This data shows itself worrisome; because of respiratory diseases in children less than five years old are strongly associated with low socio-economic level[15].

Among the families who characterized the sample, 23,4% had mother and/or father smoking. In an observational study took place in Cuiaba health centers, there were evaluated factors associated with symptoms and respiratory illnesses of 2.037 children less than five years old, which had the highest association was smoking in the household. Despite the strong impact of parental smoking on respiratory symptoms, note that when both and even more family members smoke, there are more serious results produced on respiratory health of children, suggesting an increase in the dose of exposure.[15]

The child's exposure to tobacco was also quantified in a study in Pelotas-RS that, like this, aimed to investigate the risk factors for respiratory disease. It was then found that in approximately 40% of families who had at least one smoker; had a consumption of more than 10 cigarettes per day.[16] This index corroborated this finding in our study that was of 45%.

With regard to smoking in pregnancy, only 4,25% of mothers said they had smoked during pregnancy, almost three times less than that found in a survey in São Paulo[17]. The habit of smoking in this period is related to low birth weight baby and the restriction of intra-uterine growth.[18]

In this study, 70,2% of families consisted of more than 3 people. Already in a study done in Rio Grande-RS, half of them were 5 to more members. According to the authors of this research, the agglomeration is one of the risk factors better established for acute respiratory infections, as there is a clear association between these diseases and the agglomeration or the variables related to it, such as birth order in the family, number of children under five in the household and how often the nursery or schools.[19]

Regarding the number of people who sleep with the child, it became clear that 57,4% of them slept with two people, usually parents, which characterize agglomeration. In the survey conducted in Pelotas-RS, 65,8% of asthmatic infants shared the same dorm with two other people.[16]

The rate of children attending schools was approximately 32%; however, this rate could have been higher if there were kindergartens in the city.

Just over 25% of homes had the presence of dogs or cats, especially the first, well below the rate found in the study in Rio Grande-RS, where there was 62%[19]. In a survey on the environmental conditions that favor the occurrence of asthma attacks it was observed that the previous or current exposure to pets is a risk factor for more graves cases.[2º]

When comparing the number of households that use gas stove in this study and performed in Rio Grande - RS results approach, with 98% and 90% of households, respectivelly.[19] It can realize that it is practically zero, this research, the chance of children becoming ill due to the release of pollutants to wood stoves.

Regarding housing, 76,6% of households had no ceiling slab or type material PVC, which are considered suitable in homes with children with recurrent respiratory diseases. It is estimated positively the fact that 100% of homes have adequate walls, built with bricks, and 95,5% have adequate floor, beaten and made of smooth concrete or ceramic coated. This type of flooring is easy to clean, avoiding disease-causing agents like dust and animal hair. These findings exceeded those found in a survey in São Paulo on the housing conditions related to respiratory disease occurrence. At that time there was 94,5% of households with proper walls and 74,5% with adequate floors[8].

By comparing these two surveys on the number of windows per household it was found that in this study 42,5% of households only present a window even all of them containing at least two rooms. This presents a problem with regard to ventilation for almost half of the house. This finding underperformed found in the São Paulo study, where the average of windows per household was more favorable, reaching almost three. According to these authors, ventilation problems in the home are shown associated in a statistically significant way, the health morbid conditions[8].

All mothers interviewed said that in their homes is consumed treated water, so it is inferred that this factor is not the cause of illness in children. A 27% of the houses are located on streets where there is no sewage system. Lower percentage to that found in a study conducted in São Paulo that was 47%[8]. World Health Organization data show that in recent decades the country has been improving population figures on the use of safe water and access to housing with sanitation[21].

CONCLUSION

There was a predominance of females among those surveyed and the age group with the highest prevalence was 4-5 years old. In relation to nutritional status, 91% came within international standards of normality, even with per capita income less than minimum wage. No correlation was noticed between respiratory diseases and smoking in most homes, considering that 76% of them was not smoking. It was observed relationship between the state of agglomeration and recurrent respiratory diseases as regards the number of persons per household, for 57,45% of children with 2 persons sleeping in the same room. Much of the households did not have suitable roofs, plus a number of windows that offered favorable conditions of ventilation. However most of them proved suitable as the other risk factors.

It is noteworthy that these families present a higher per capita income as well as their parents had a higher schooling level, almost all risk factors for respiratory diseases could be minimized, since most of them stems from poor socioeconomic conditions.

Among the limitations for this study was the restricted number of similar searches and for comparative purposes. The studies carried out in other cities took place a few years ago, and should be considered that the socioeconomic conditions could be different to those of today.

This work can contribute to the improvement of services offered to the population, by providing a better understanding of the causal mechanisms of respiratory diseases and support the implementation of specific programs for their control. It can also serve as a basis for family health teams to check the children assigned to feature replay for respiratory disease, from home visits, identify possible risk factors that are associated with those occurrences.

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