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Environmental determinants of health that influence respiratory diseases in childhood in Bocay, Jinotega 2021

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ABSTRACT

To explain the environmental determinants of health that influence respiratory diseases in childhood at the Ayapal Family and Community Health Center in the municipality of San José de Bocay, Jinotega I semester 2021. Material and Method: A Descriptive, Observational, Retrospective, and Cross-sectional study was carried out in 52 children under 5 years of age who were admitted for respiratory diseases at the Ayapal Health Center in the first semester of 2021. The admission and discharge form established by the Ministry of Health was taken up, in addition to implementing an instrument for collecting information, which consists of 14 items to obtain sociodemographic data, risky environmental conditions, the perception of parents and guardians, and in addition to mentioning morbidities due to respiratory conditions. Results: the average age of the children in the study was 2 years or older; The most prevalent sex in the children was male, 50% of the children in this research became ill 1 to 3 times. As for the age of parents and guardians, the most prevalent was between

15 and 24 years old, of parents and guardians, 48.1% have an incomplete primary education; where 78.8% have a low economic level and the number of children that parents or guardians have, 42.3% have 4 to 6 children; Regarding environmental conditions that are risky to health, 75% of those surveyed are not exposed to smoke, 67.3% live in overcrowding, 59.6% are not exposed to cold and humidity, and 65.4% of children have an incomplete vaccination schedule.

According to the perception of parents and guardians regarding the danger signs in respiratory diseases, 44.2% reported that getting tired was a reason to ask for help, 76.9% said that achieving a good nutritional status prevents respiratory diseases, 73.1% said that eating fruits and vegetables reduces the risk of respiratory diseases. Regarding morbidities due to respiratory conditions, 92.3% have used another type of treatment apart from that indicated by health personnel, 57.7% of children were taken to the health unit for difficulty breathing, of which 48.1% were treated and diagnosed with pneumonia. The analysis of the data using SPSS statistical tests determined that the following environmental determinants of health that influence respiratory diseases are: origin, schooling, overcrowding, socioeconomic status, and water supply. Conclusions: Most of the children who became ill due to respiratory disease were older than two years, most of them being male; who got sick 1 to 3 times in the last 6 months; most of the parents or guardians were between 15 and 24 years of age, female, from rural areas, in terms of their schooling an incomplete primary school with a low socioeconomic level, which have 4 to 6 children in each family; Regarding the risky environmental conditions for respiratory diseases, most recognize that living in overcrowding, but they have little knowledge about other risky environmental conditions such as exposure to smoke and exposure to cold and humidity; in addition, poor personal hygiene, poor hygiene of the home were observed. Of the parents or guardians interviewed, they did not consider it a sign of danger when a child turns purple, however, they know when to take the child to the health unit, and they are not very clear about the prevention of respiratory diseases. Parents identified the symptoms of respiratory diseases to go with their children to the health unit, including difficulty breathing; children who were mostly treated for pneumonia; to whom their treatment and management were indicated.

INTRODUCTION

Acute respiratory infections are a major health problem; is a chapter within childhood diseases, this being the first cause of medical consultations and morbidity associated with various social determinants of health, for which we pose the main question: What are the environmental determinants of health that influence respiratory diseases in childhood in the Family and Community Health Center of Ayapal in the municipality of San José de Bocay, Jinotega I semester 2021?

The social determinants of health are the circumstances in which people are born, grow and live, work, age, and die, including the health system, which leads to social inequalities, discrimination, poor housing, food insecurity, unhealthy living conditions in childhood and lack of work are determinants of most diseases, deaths and inequalities in health between countries and in the same municipality. (Dr. Maritza del Carmen Berenguer Gouarnaluses, 2017).

Acute respiratory infections are defined as a set of communicable diseases of the respiratory system that includes from the common cold to pneumonia, including otitis, tonsillitis, sinusitis, acute bronchitis, laryngotracheitis, bronchiolitis, and laryngitis, with evolution of less than 15 days and with the presence of one or more symptoms or clinical signs such as cough, rhinorrhea, nasal obstruction, odynophagia, otalgia, dysphonia, noisy breathing, respiratory difficulty, which may or may not be accompanied by fever. (Elizabeth Ferreira-Guerrero, 2013).

Acute respiratory infections have been recognized since the mid-1960s as one of the three most important problems affecting children's health along with diarrheal diseases and malnutrition, both from the point of view of mortality and morbidity, respiratory infections were among the top five causes of death, consultations and hospitalizations of children under five years of age throughout developing countries. (Karla Daccarett, 2020).

Accounting for up to 40% of consultations and 30% of hospitalizations worldwide. Among the complications, it has been reported that pneumonia with bacterial over infection is responsible for up to 156 million cases worldwide, whose mortality reaches 20% of the total cases in developing countries while it only represents 3% in developed countries. Data from Latin America indicate that mortality from pneumonia reaches 14% of all deaths, a figure 10 times higher than that of developed countries (Brian Iván Zurita Céspedes, 2017)

At the national level, poverty has a direct impact on access to decent housing, services, education, transportation, and other factors vital to health and general well-being. Poverty is arguably the single most important determinant of health. Poverty is the most important determinant of health in Nicaragua. 20 percent of children under five years of age suffer from chronic malnutrition, and 9 percent of children's children; are born with low birth weight. Infant mortality in Nicaragua is 11 per 100 children. These data are not general throughout the country since in Managua it is 8.7, while in Jinotega it is 14 per 100 children. Most of the social, economic, and environmental determinants hurt the state of health of the population and the response capacity of the health system. (The Nicaraguan Health System).

Environmental factors are one of the main sources of pollution that directly influence the appearance of respiratory diseases since they produce toxic particles that are inhaled when breathing the atmosphere and thus contaminated, triggering diseases such as bronchial asthma, allergic rhinitis, pneumonia, lung cancer, which are the most frequent occurrences in

the population. We conclude that, worldwide, all of us as inhabitants of the same planet, have the responsibility to generate a positive change in our actions to improve our quality of life and thus prevent the spread of respiratory diseases due to environmental factors; otherwise, we will be affected more and more, not only us but generations to come. (Aucay Tabara, Ullauri Palacios, 2017).

The prevention, control, and cure of these diseases must become the priority

For radical decision-making in health worldwide, from the training of professionals to awareness campaigns to take appropriate measures to prevent morbidity and mortality in infants and young children. (Parrales Suarez Katherine Geomar, 2019)

MATERIALS AND METHODS.

The present study has a quantitative approach. The environmental determinants of health that influence early childhood respiratory diseases are identified.

Type of research: Descriptive, Retrospective, and Cross-sectional.

(Retrospective since a period that has already passed was studied, cross-sectional because I am taking a six-month cut).

Universe: A total of 267 children under 5 years of age were treated for respiratory diseases with antibiotics at the Ayapal Family and Community Health Center in the municipality of San José de Bocay.

Sample: Corresponds to 52 children under 5 years of age diagnosed with respiratory diseases at the Ayapal Family and Community Health Center and who met eligibility criteria (inclusion and exclusion criteria), which were rigorously applied during the selection process, to make the sample as homogeneous as possible.

SELECTION CRITERIA:

Inclusion:

- Children under five years of age admitted to the health unit.
- Children with respiratory diseases
- Children with complete medical records
- Children managed and treated with antibiotics.
- Mothers who agree to be interviewed

- Mothers who come to the Ayapal health center with children under five years of age in the period established in this study.

Exclusion:

- Children diagnosed in outpatient care without clinical records.
- Children who were admitted with incomplete medical records
- Children treated with acute respiratory infections without antibiotics.
- Mothers who do not cooperate to participate in the survey
- Mothers with children over five years of age.

Data collection technique: Through direct and indirect interviews in the selected protagonist households and the review of complete clinical records of children under five years of age who were admitted in the last six months of 2021.

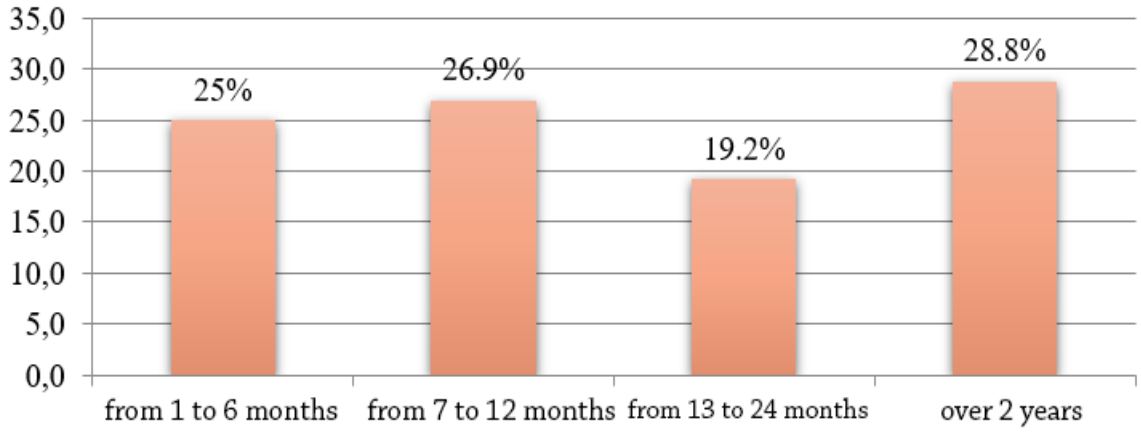
Data collection instrument: An information collection instrument was developed, which consists of 16 items, of which 5 correspond to sociodemographic characteristics, 5 risk environmental conditions, 4 according to initial symptoms, and 2 to morbidities due to respiratory conditions and in direct interviews with the mothers or guardians under study.

RESULTS

About Specific Objective No. 1: To describe the sociodemographic characteristics of the population under study and its tutor, the following was found:

Graph 1

Age of the Child



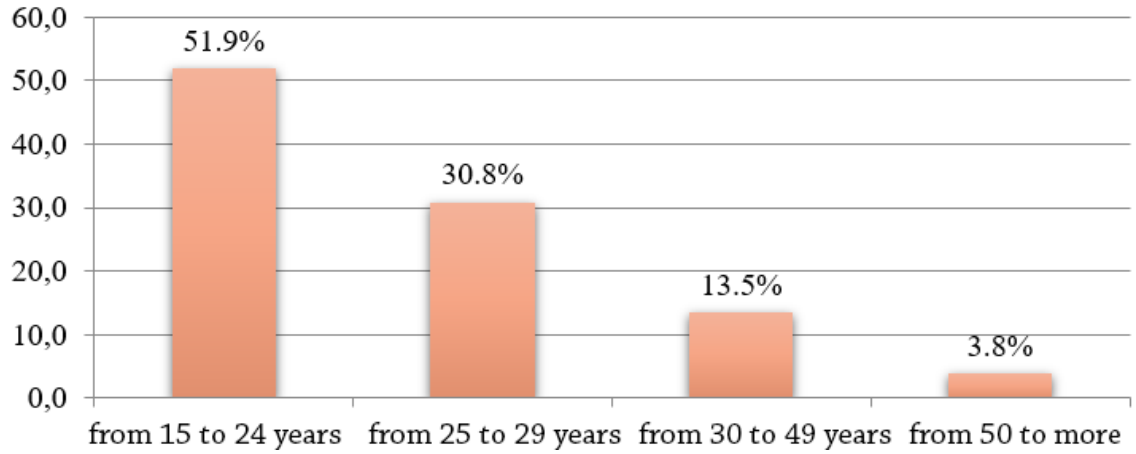
Source: Survey of data collection carried out by the researcher.

According to the age of the children in the study, the predominant age group was the group over 2 years of age with 28.8%, followed by the age range of 7 to 12 months with 26.9%,

and from 1 to 6 months with 25%, and lastly from 13 to 24 months with 19.2%, about studies carried out on the knowledge that tutors have on the prevention of respiratory infections in terms of age The data that coincide with this study is the age over 2 years with 28.5% followed by 27.9% in the group of 7 to 12 months.

Graph 2

Age of parents and guardians

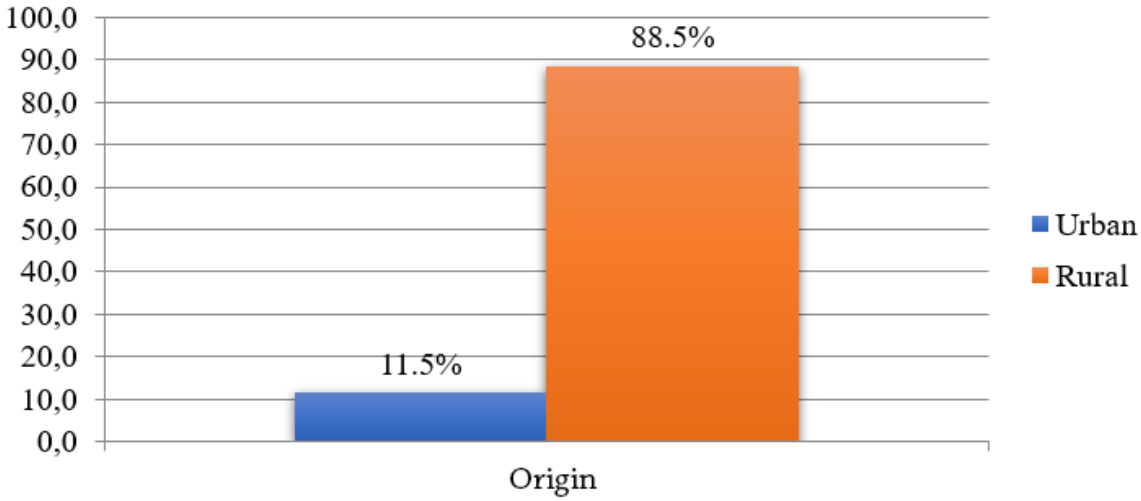


Source: Survey of data collection carried out by the researcher.

Regarding the sociodemographic characteristics of the population under study surveyed, it was found that the predominant age range was the group of 15 to 24 years, followed by the age range of 25 to 29 years, followed by the group of 30 to 49 years, and lastly the group of 50 years and older. This indicates that most of the children in the study are in the care of mothers between 15 and 24 years of age.

Graph 3

Origin of parents and guardians.

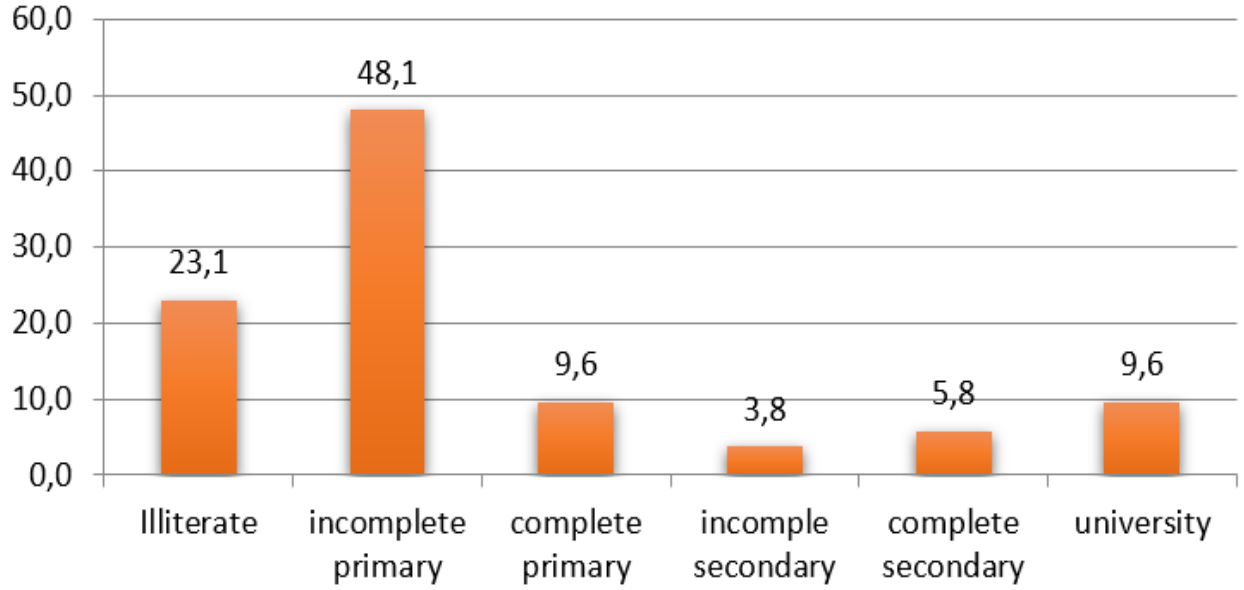


Source: Researcher-based data collection survey

About the sociodemographic characteristics of the population in studies surveyed according to origin, rural areas were found in the first place and urban areas in second place. This indicates that most of the children in the study belong to rural and inaccessible communities.

Graph 4

Schooling of parents and guardians.

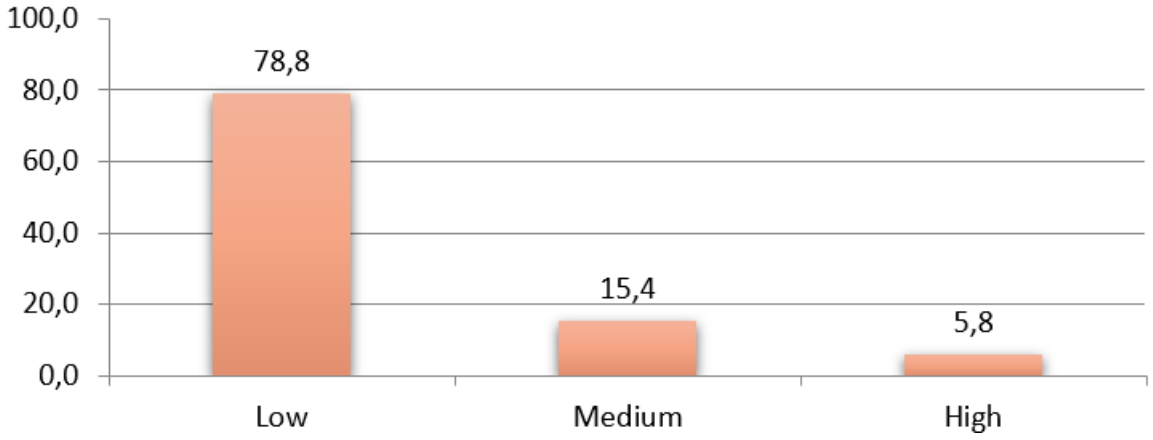


Source: Survey of data collection carried out by the researcher.

According to schooling, 48.1% had incomplete primary schooling, 23.1% had no schooling, 9.6% had completed primary school, 9.6% are university students, followed by 5.8% had completed secondary school and finally 3.8% had incomplete secondary school; in comparison with studies carried out in Analysis in health situation data that coincided with this study, it is described that 22% affect the population with illiteracy.

Graph 5

Socioeconomic Level



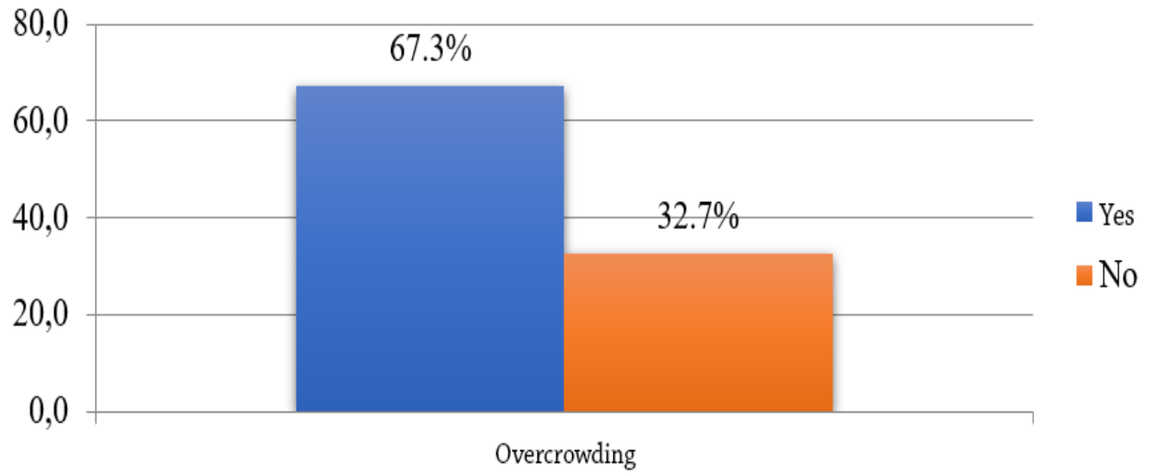
Source: Survey of data collection carried out by the researcher.

Regarding the socioeconomic level of parents and guardians, it was found that 78.8% have a low economic level, followed by 15.4% with a medium economic level and 5.8% with a high economic level, which, According to ENDESAS data, describes that 78% of the population has a low socioeconomic level, with Jinotega being one of the departments with unmet health needs.

About Specific Objective No. 2: To classify the environmental conditions that are harmful to acute respiratory infections in households, the following was found:

Graph 6

Hazardous environmental conditions

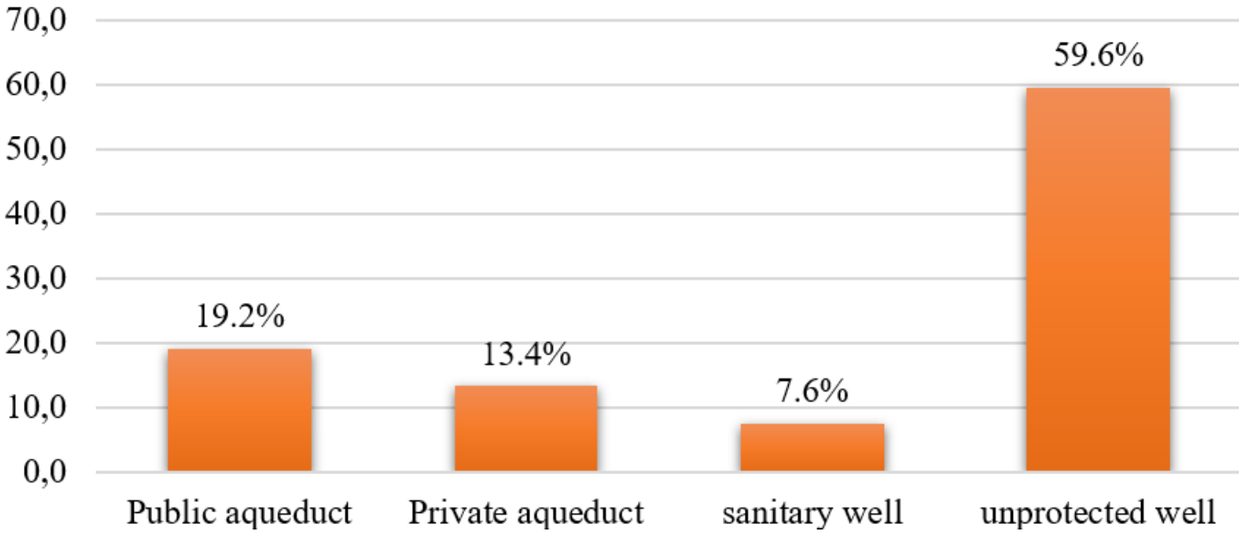


Source: Survey of data collection carried out by the researcher.

Regarding the environmental conditions for respiratory diseases in the homes, 35 families were found to live in overcrowding, which is a risk condition for respiratory diseases, and the respondents, 17 do not live in overcrowding, not being a risk condition for respiratory infections. This indicates that living in overcrowding is a risky condition for respiratory diseases.

Graph 7

Hazardous environmental conditions (water supply)



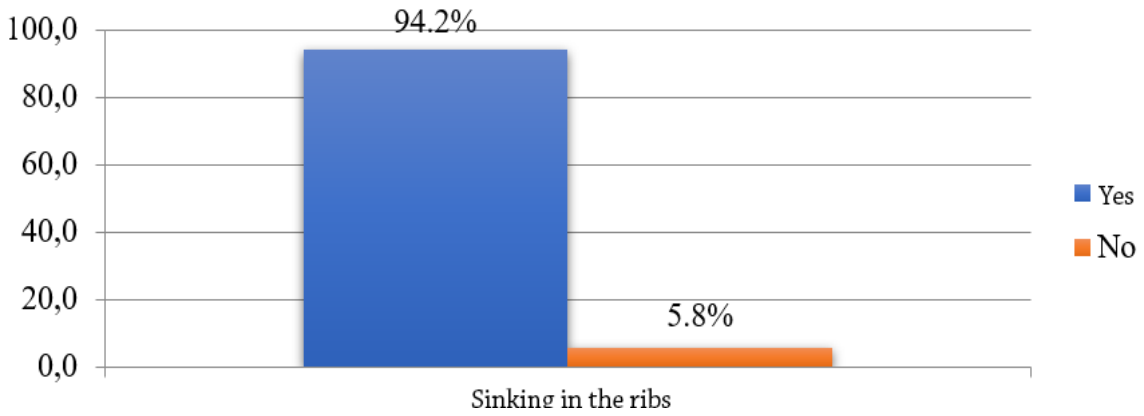
Source: Survey of data collection carried out by the researcher.

About the environmental conditions for respiratory diseases in terms of water supply, it was found that 31 of the homes visited are supplied with water from unprotected wells, 10 of the homes are supplied by a public aqueduct, 7 of the homes visited are supplied by private aqueduct and 4 of the homes visited are supplied by sanitary wells. This indicates that most of them are supplied with water from unprotected wells being very susceptible to contamination, it should be noted that families who are supplied with water in public aqueducts do so every 8 days when there is a shortage of water. We found no previous studies that addressed water supply as a risky condition for respiratory infections.

Objective 3. To identify the behavior of parents or guardians about the initial symptoms of Acute Respiratory Infection, the following was found:

Graph 8

Danger Signs in Respiratory Diseases (Rib Plunge)

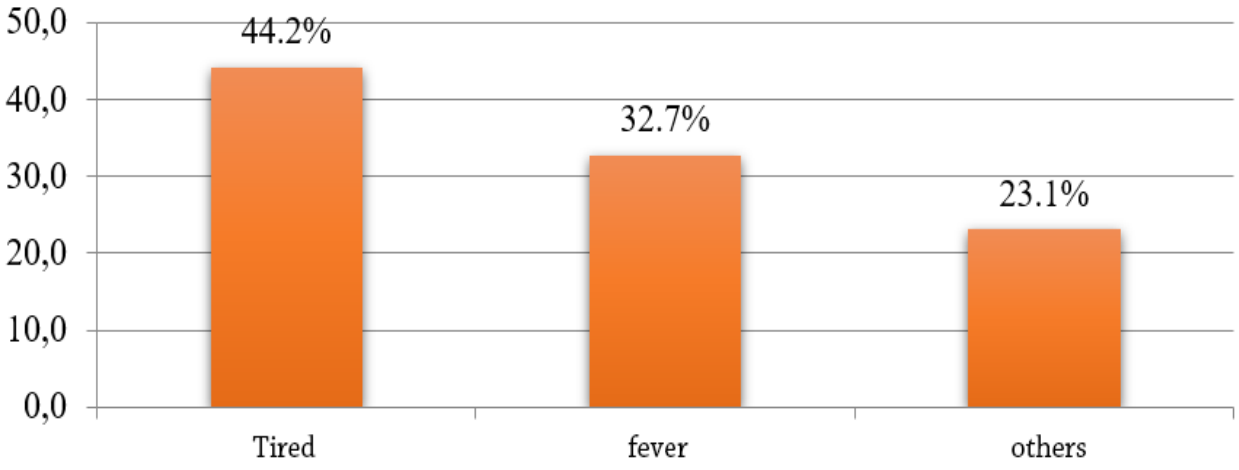


Source: Survey of data collection carried out by the researcher.

About the danger signs of respiratory infection in children under five years of age, out of 49 interviewees they considered that noticing sinking in the ribs in children is a danger sign and 3 of the interviewees did not consider it a danger sign of respiratory diseases. This indicates that they consider the sinking of the ribs a dangerous sign of respiratory diseases.

Graph 9

Perception of parents or guardians regarding the warning signs (when to take the child to the health unit)



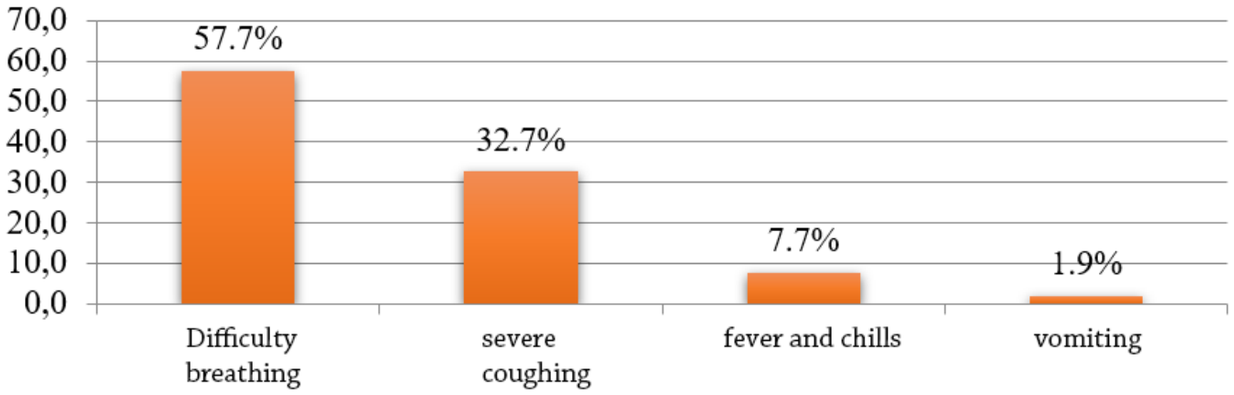
Source: Survey of data collection carried out by the researcher.

In the interview carried out, the parents or guardian considered when to take the child to the nearest health unit, they considered: 23 of the interviewees when a child feels tired, 17 of the interviewees considered that when they have a fever, and 12 of the interviewees said that when they present symptoms such as diarrhea, vomiting, among others, which indicates that they do know when they should take the child to the nearest health unit. We found no previous studies that showed when to take the child to the health unit.

Objective 4. Knowing the morbidities due to acute respiratory conditions suffered in children under five years of age, the following was found:

Graph 10

Symptoms for which the children were treated were taken to the health unit

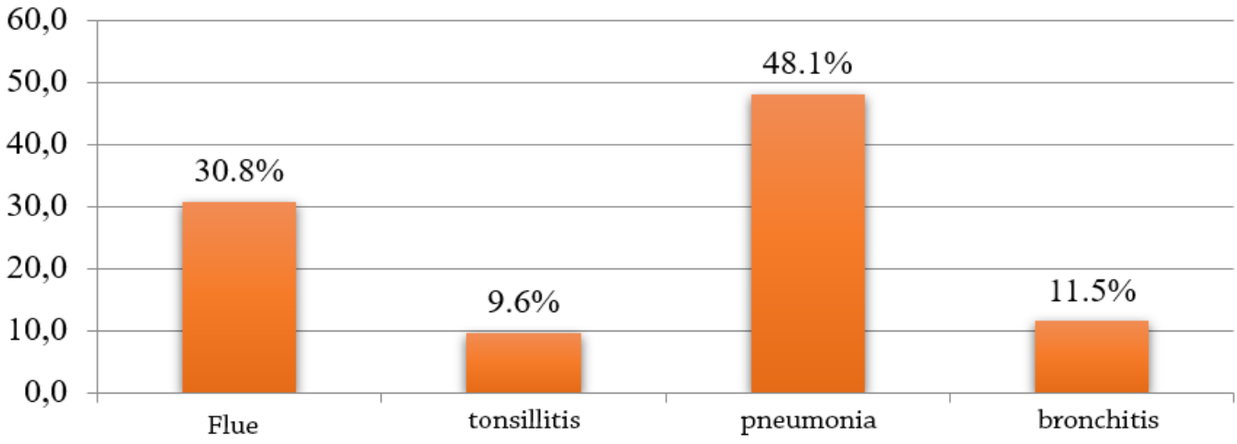


Source: Survey of data collection carried out by the researcher.

Regarding morbidities due to respiratory conditions the symptoms for which the children were taken to the health unit in the surveys carried out with parents or guardians, 30 of the children were treated for difficulty breathing, 17 children were treated for having many coughs, 4 children were treated for fever and chills and finally, 1 child was treated for vomiting. This indicates that most children were taken to the health unit for difficulty breathing. We did not find other similar studies that have analyzed respiratory symptoms as reasons for consultations.

Graph 11

Morbidities due to respiratory conditions (diagnoses)



Source: Researcher-based data collection survey

Regarding the morbidities due to acute respiratory conditions suffered in children under five years of age, about the diagnosis with which it was managed and treated, it was found; that 25 children were treated for pneumonia, 16 were treated for colds, 6 were treated for bronchitis and finally 5 were treated for tonsillitis. This indicates that all were treated for respiratory diseases, most of which were pneumonia.

DISCUSSION

The sociodemographic characteristics of the study population surveyed the age range of the children in the study, the one that had the greatest predominance was the group over 2 years old, followed by the age range of 7 to 12 months, followed by the age range of 1 to 6 months and lastly from 13 to 24 months. From what has been observed, it is evident that the age where children mostly get sick from respiratory diseases is the group over two years of age, which indicates that it is a highly vulnerable group in terms of its development, interaction with the environment, stage in which the child takes everything within its reach, acquiring greater contamination to bacteria and microorganisms. About studies carried

out on the knowledge that the tutors have about the prevention of respiratory infections in terms of the age of the child, data that coincide with this study is the age over 2 years, followed by the group of 7 to 12 months.

Regarding the sociodemographic characteristics of the population under study surveyed, it was found that the predominant age range was the group of 15 to 24 years, followed by the age range of 25 to 29 years, followed by the group of 30 to 49 years, and lastly the group of 50 years and older. This indicates that most of the children in the study are in the care of mothers between 15 and 24 years of age. Compared to the study carried out, the highest percentage of age groups is in the 15 to 24 age group, this being an important piece of data, which coincides with this study in terms of age, parents, or guardians.

About the sociodemographic characteristics of the population in studies surveyed according to the origin, rural areas were found in first place and urban areas in second place. This indicates that most of the children in the study belong to rural and inaccessible communities. Compared to studies carried out in the Health Situation in Nicaragua, it is found that the majority of the population under study was from rural areas, which reaches a higher percentage coinciding with this study in terms of origin.

When considering the level of schooling of the parents or guardians interviewed, it was obtained that the highest percentage had incomplete primary schooling, followed by those who did not have any schooling, later it was found that five of the interviewees had completed primary school, five are university students, followed by three who had completed secondary school and two who had incomplete secondary school. This indicates that most parents or guardians did not manage to complete primary school, and this is a factor that influences the care of minors. In comparison with studies carried out in the Analysis of health situation data that coincided with this study, it is described that the population is affected by illiteracy.

Regarding the socioeconomic level of parents or guardians, it was found that most interviewees have a low economic level, followed by eight who have a medium economic level and three of the interviewees have a high economic level. This indicates that poverty prevails in the population under study. According to data from ENDESAS the majority of the population has a low socioeconomic level, with Jinotega being one of the departments with unmet health needs.

Regarding the environmental conditions for respiratory diseases in the homes, 35 families were found to live in overcrowding, which is a risk condition for respiratory diseases, and the respondents, 17 do not live in overcrowding, not being a risk condition for respiratory infections. This indicates that living in overcrowding is a risky condition for respiratory diseases.

We found no previous studies that addressed overcrowding as a risky condition for respiratory infections in childhood.

About the environmental conditions for respiratory diseases in terms of water supply, it was found that 31 of the homes visited are supplied with water from unprotected wells, 10 of the homes are supplied by a public aqueduct, 7 of the homes visited are supplied by private aqueduct and 4 of the homes visited are supplied by sanitary wells. This indicates that most of them are supplied with water from unprotected wells being very susceptible to contamination, it should be noted that families who are supplied with water in public aqueducts do so every 8 days when there is a shortage of water. We found no previous studies that addressed water supply as a risky condition for respiratory infections.

About the danger signs of respiratory infection in children under five years of age, out of 49 interviewees they considered that noticing sinking in the ribs in children is a danger sign and 3 of the interviewees did not consider it a danger sign of respiratory diseases. This indicates that they consider the sinking of the ribs a dangerous sign of respiratory diseases. No previous studies were found with data referring to considering rib collapse as a sign of danger, however, according to PAHO it is among the signs of danger in children under five years of age in terms of respiratory diseases

In the interview carried out, the parents or guardian considered when to take the child to the nearest health unit, they considered: 23 of the interviewees when a child feels tired, 17 of the interviewees considered that when they have a fever, and 12 of the interviewees said that when they present symptoms such as diarrhea, vomiting, among others. This indicates that they do know when to take the child to the nearest health unit. We found no previous studies that showed when to take the child to the health unit.

Regarding morbidities due to respiratory conditions the symptoms for which the children were taken to the health unit in the surveys carried out with parents or guardians, 30 of the children were treated for difficulty breathing, 17 children were treated for having many coughs, 4 children were treated for fever and chills and finally, 1 child was treated for vomiting. This indicates that most children were taken to the health unit for difficulty breathing. We did not find other similar studies that have analyzed respiratory symptoms as reasons for consultations.

Regarding the morbidities due to acute respiratory conditions suffered in children under five years of age, about the diagnosis with which it was managed and treated, it was found; that 25 children were treated for pneumonia, 16 were treated for colds, 6 were treated for bronchitis and finally 5 were treated for tonsillitis. This indicates that all were treated for respiratory diseases, most of which were pneumonia. Compared to studies carried out in Situación en Salud, this study coincides, since there is a high incidence of respiratory diseases in children under

five years of age, with pneumonia being the one that most affects this population, which has a decrease in morbidity and an increase in mortality.

CONCLUSIONS

Most of the children who fell ill due to respiratory disease were over two years old, most of them being male; who got sick 1 to 3 times in the last 6 months; Most of the parents or guardians were between 15 and 24 years of age, female, from rural areas, in terms of the schooling of the parents or guardians have an incomplete primary school, with a low socioeconomic level, who have 4 to 6 children in each family.

Regarding the environmental conditions for respiratory conditions, most live in overcrowding, exposed to smoke, cold, and humidity, regular cleanliness was observed inside and outside each home, as for the supply of water most are supplied with water from unprotected wells being very susceptible to contamination, it should be noted that families that are supplied with water in public aqueducts do so every 8 days existing at the same time a shortage of it.

Of the parents or guardians interviewed regarding the behavior of the initial symptoms of respiratory infections, most considered sinking in the ribs, loss of appetite, and in a child with a cough turning purple as initial symptoms for respiratory conditions, they also reported that noticing a tired child is a reason to take him to the health unit. This is related to the fact that if they identify the signs, but for reasons of living in rural and difficult-to-access areas, it is difficult for them to go to the health unit in a timely or periodic manner.

The morbidities due to acute respiratory conditions suffered in children under five years of age, in terms of the most frequently presented symptoms, were shortness of breath, which were mostly managed and treated as pneumonia.

RECOMMENDATIONS

To Health Center staff:

Medical and nursing personnel as members of the health team and in compliance with their preventive and promotional actions must continue to carry out continuous and permanent educational activities aimed at mothers and the population in general, emphasizing the recognition of warning signs, risk factors, and preventive measures of respiratory diseases and above all alert mothers of the need to go to a health facility promptly to avoid complications and reduce the risk of mortality.

Provide educational talks in outpatient clinics, health units, posts, and base houses on the identification of risk factors, and danger signs of respiratory diseases or others.

Brigadiers or volunteer contributors.

Reinforce house-to-house visits by health promoters and brigade members already trained in talks with emphasis on the care of children under 5 years of age who have respiratory diseases or any other pathology.

To mothers, fathers, and guardians.

Go to the nearest health unit in the first instance if you have signs of danger for respiratory or other diseases.

WORK CITED

Aucay Tábara, I. J., & Ullauri Palacios, Y. V. (2017). Environmental factors that influence the appearance of respiratory diseases. Retrieved from http://repositorio.unemi.edu.ec/handle/123456789/3688

Brian Iván Zurita Céspedes, B. I. (2017). Frequency of acute respiratory infections in children under 5 years of age, Rio Blanco Health Center, 2017. Rio Blanco. Retrieved from https://orcid.org/0000-0001-8949-7217.

Dr. Maritza del Carmen Berenguer Gouarnaluses, D. A. (2017). Social determinants in Cuban family health. Retrieved from http://scielo.sid.cu/scielo.

Elizabeth Ferreira Guerrero (2013). Acute respiratory infections in children and warning signs identified by parents and caregivers in Mexico. Retrieved from http://www.scielo.org.mx/scielo.

The Nicaraguan Health System. (n.d.). Retrieved from http://www.access2insulin.org/el-sistema-de-salud-nicaragense.html.

Karla Daccarett, L. M. (2020). Level of knowledge about warning signs of acute respiratory infections.

Parrales Suárez, Katherine Reamar, r. m. (2019). Environmental factors that influence diseases. La Libertad, Santa Elena. Retrieved from http://repositorio.upse.edu.ec/handle/46000/4887

Ramírez M, Cárdenas A, Dávila D. (2019). Factors associated with acute respiratory infection in children under five years of age. http://casus.ucss.edu.pe

Behram R. (1986). Treatise on Pediatrics. Nueva Editorial México Interamericana.

Benguigui, And. (2007). Infections Respiratory in children. Pan American Health Organization.

Epidemiological Bulletin Pan American Health Organization. Social determinants of health in the Region of the Americas. DC. PAHO. December 2017, Vol. 16. https://paho.org/es/temas/determinantes-sociales-salud

Gutiérrez Castillo Gamaliel, Sánchez Palma Luís: Knowledge, attitudes and practices of mothers about respiratory infections in children under 5 years of age in the municipality of Ocotal- Nueva Segovia September-October 2002

Iris A, Roque V, Canalejo M. Educational level of mothers and Knowledge, Attitudes and Practices in the face of acute respiratory infections in their children. American Journal of Public Health. 1999; 6(6):400–7.

Ramírez Luis. Control of Acute Respiratory Infection in Children. Medical Journal of Child Survival. Acute Respiratory Infection, page 27, October 1999.

Fernández Mario. Predisposing factors of Acute Respiratory Infection in children. 1998. Cuba. HTTP.www.med.gen.com

Tammala Okiski. Protecting the child from Respiratory Infection. University of Chile, 2010. Htpp/www.pediatraldia.com

Ministry of Health. Integrated Care for Prevalent Childhood Illnesses. Clinical IMCI. Managua, Nicaragua. 2009.