

RISK FACTORS FOR ACUTE DIARRHEAL DISEASES IN CHILDREN TREATED AT THE CUANZA NORTE PROVINCIAL MATERNAL AND CHILD HOSPITAL FROM MARCH TO OCTOBER 2024

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Abstract: Acute diarrheal diseases represent one of the main causes of infant morbidity and mortality in developing countries, especially in regions with poor sanitation and limited access to potable water. This study aimed to identify the risk factors and prevalence of acute diarrheal diseases in children treated at the Cuanza Norte Provincial Maternal and Child Hospital between March and October 2024, also analyzing the prevention measures adopted. A cross-sectional descriptive study with a quantitative-qualitative approach was conducted, involving a sample of 505 children. Data collection was carried out using a data collection form. Of the 505 cases analyzed, 35 were positive for acute diarrheal diseases. The majority were female, with 22 cases (63%). The most affected age group was 1 to 5 years, with 16 cases (46%). The neighborhood with the highest incidence was Bairro Posse, with 13 cases (37%). *Escherichia coli* was the most prevalent etiological agent, with 20 cases (57%), while *Giardia lamblia* had the lowest occurrence (9%). The main risk factor identified was the consumption of contaminated water (43%), followed by insufficient breastfeeding (23%). The results show that acute diarrheal diseases are still a relevant problem in the local child population, being strongly related to environmental and behavioral factors. Investing in basic sanitation, water treatment, promoting breastfeeding, and educational campaigns are essential measures to reduce the incidence of these diseases.

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Keywords: risk factors, disease, acute diarrhea.

Introduction

There were several motivations that were the basis for the elaboration of this work, with greater emphasis on the fact that, with it, it will enable her to obtain the degree of licentiate in clinical analysis and public health. In this work, we will address the risk factors for acute diarrheal diseases in children assisted at the provincial maternal and child hospital of Cuanza Norte from March to October 2024.

Diarrheal disease still persists as a public health problem, being one of the main causes of infant mortality in underdeveloped countries, and it should be noted that such deaths are considered an indicator of situations of poverty (Sczwarcwald, 1997).

The risk factors associated with hospitalization for acute diarrhea can be explained within a multicausal model that includes a large number of interrelated socioeconomic-demographic, biological and cultural variables (Fuchs, 1996).

The World Health Organization (WHO) defines acute diarrhea (AD) as a sudden change in bowel habit, characterized by the occurrence of liquid bowel movements in three or more episodes in 24 hours, or a single semi-liquid containing mucus and blood in 12 hours. The duration of the same must not exceed a period of 15 days, (World, 1988).

In the last two decades, advances have been achieved in the recognition of new etiological agents that produce AD, as well as the mechanisms by which enteric infections produce malabsorptive effects have been better elucidated. The use of new laboratory techniques for etiological detection currently results in positive identification for pathogens in 50 to 84% of children and adults with acute diarrheal disease (Prado, 2010).

Regarding the association between environmental garbage and child diarrhea, a study carried out in Salvador, Bahia, demonstrated the risk of occurrence of the disease almost four times higher among children living in places where there was no garbage collection (Rêgo, 1996).



Among the biological determinants, several studies have shown the existence of an association between the child's age, morbidity and severity of the diarrheal episode, with the risk of death being higher among children under six months of age (Fuchs, 1996).

According to the World Health Organization (WHO), infectious and epidemiological studies in areas with a higher frequency of diarrheal disease reveal that the most common bacterial infectious agents are *Escherichia coli* (diarrheogenic strains), *Shigella* sp., *Salmonella* sp., *Campylobacter jejuni*, *Y. enterocolitica*.

Problematic situation

Human health is not disassociated from the environment in which we live, the food and water we consume daily, both for body hygiene as well as biological activities. Several studies on the etiology of diarrheal diseases have shown that the prevalence of pathogens associated with diarrhea varies widely with several factors, such as the socioeconomic class of the individuals under study, in an attempt to contribute to a better knowledge of the distribution of etiological agents of diarrhea in Cuanza Norte, we raise the following Scientific Problem:

Scientific Problem

What are the risk factors for acute diarrheal diseases in children?

General Objective

To know the risk factors for acute diarrheal diseases in children assisted at the provincial maternal and child hospital of Cuanza Norte from March to October 2024.



Specific objectives

Characterize the gender and age groups most affected by acute diarrheal diseases in children cared for at the maternal and child hospital of Cuanza Norte from March to October 2024;

Describe the prevention measures against acute diarrheal diseases in children assisted at the Mother and Child Hospital of Cuanza Norte from March to October 2024;

List the main etiological agents of acute diarrheal diseases in children cared for at the maternal and child hospital of Cuanza Norte from March to October 2024;

To identify the risk factors for acute diarrheal diseases in children assisted at the Mother and Child Hospital of Cuanza Norte from March to October 2024;

Justification

During the year 2019, during my stay in the Posse neighborhood, I observed many cases of diarrhea in children and also many aggravations. That is why I have raised numerous concerns such as: What are the causes of diarrheal diseases, how is it transmitted and how to prevent them?

METHODOLOGY, ANALYSIS AND INTERPRETATION OF RESULTS

Type of research

This is a cross-sectional descriptive study with a quantitative-qualitative approach based on data collection.

Descriptive Study



For Marconi, (2003) focuses on the description of a disease in a given population. It is the one that, when we intend to study a phenomenon, we have to go back to the record of existing information, whether on patients who have passed through hospital services, or on patients who have been observed (in outpatient consultations or emergency bank), or even past hospitalizations.

Cross-sectional study

For Silva, (2012) it is a type of observational study that analyzes the frequency of a condition or characteristic in a population at a given time. It is usually used to assess the health needs of a population, identify points that need intervention, plan public health policies, generate hypotheses about risk factors or causes of disease.

Quantitative-qualitative approach

It is a scientific research method that differs by the way data is obtained and analyzed. The quantitative approach is based on numbers while the qualitative approach deals with narrative and individual experiences (Marconi, 2003).

Population and sample

Silva, (2012) defines Population or universe as being a defined group of elements that share certain characteristics.

As a population, we had 505 children treated at the provincial maternal and child hospital, in the province of Cuanza Norte.

According to Marconi, (2003) the sample is a subset of a population.

Our sample consisted of 35 children treated at the provincial maternal and child hospital with



a diagnosis of Diarrheal Disease.

Sampling technique:

We used the probabilistic technique, because all the elements of the universe had the same chance of being selected for the sample, but only those selected were part of the study.

Inclusion Criteria

All children who are treated at the provincial maternal and child hospital with a clinical history of acute diarrhea during the research period.

Exclusion Criteria

All children who do not present a clinical picture of acute diarrheal diseases;

Study methods

It is a development used to address an ascertainment of accuracy, in the learning of a sapience or to approximate a definite closure.

Method of study is the component of the investigator, who at the end of his search procedure unveils and presages a complex of adventures resulting from the execution of his conjunctures (Francis Bacon).

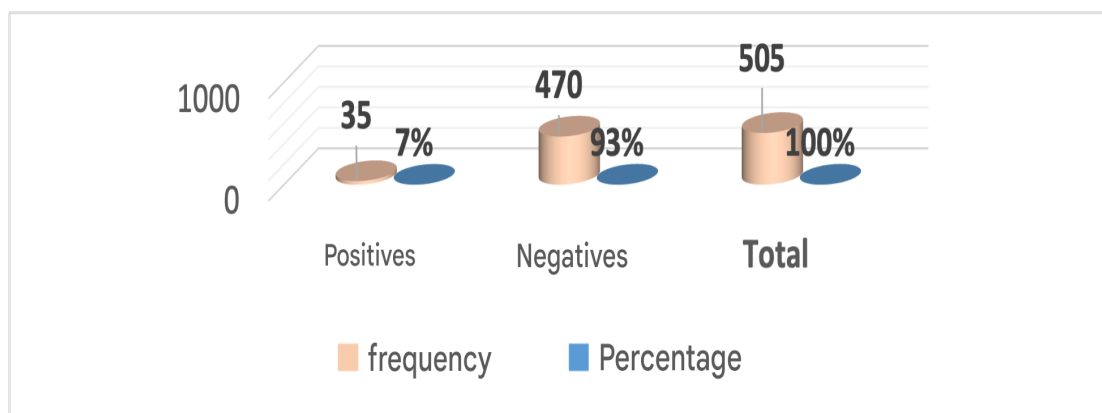


Methods in data collection instruments

The data collection necessary for this study was carried out through the application of the data collection form technique.

Analysis and interpretation of the results

Graph nº1 - Presentation of positive and negative cases

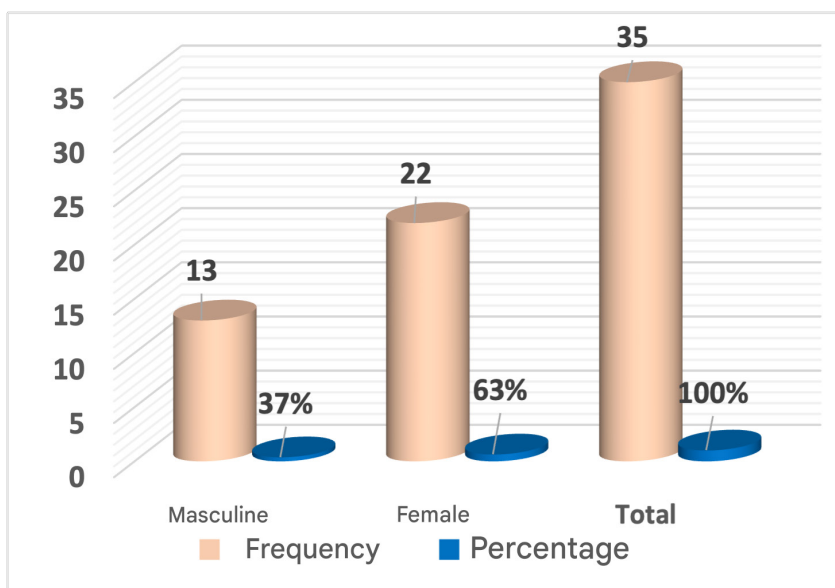


Source: data collection form.

According to the number of cases, we had 470 negative cases, which corresponds to 470, and 35 positive cases, which corresponds to 7%, in a total sample of 505 cases of the sample collected.



Graph nº2 - Distribution of the sample according to Gender

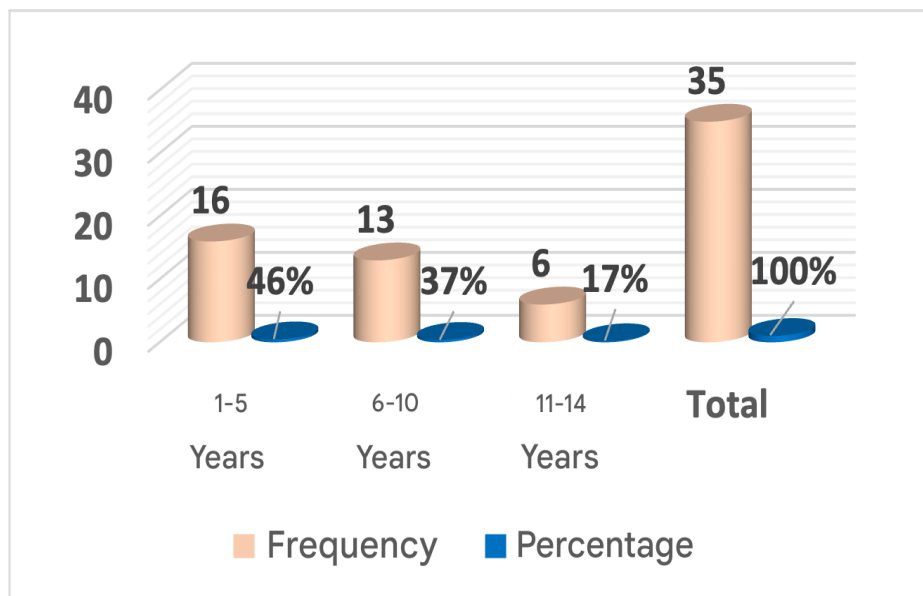


Source: Data collection sheet

According to gender, the most predominant was female, with 22 children, which corresponds to 63%, while male, there were 13 children, which corresponds to 37%.



Graph 3 - Distribution of the sample according to age group

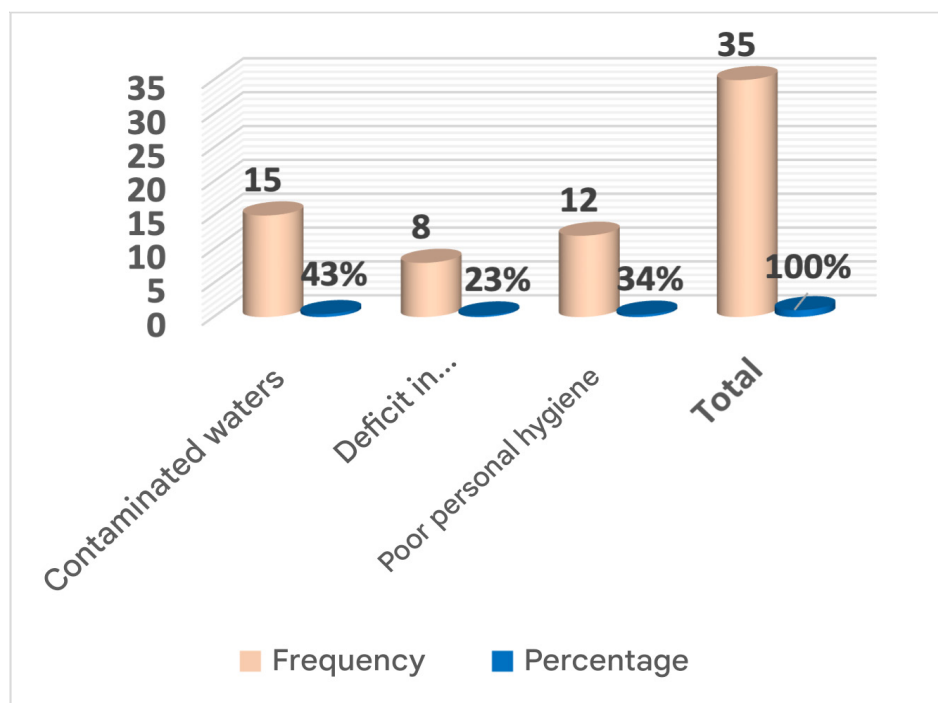


Source: data collection form.

According to the age that most predominated was 1-5 years of age, which corresponds to 46%, and the one that least predominated was 11-14 years of age, with 6 children, which corresponds to 17%.



Graph 4 - Distribution of the sample according to risk factors

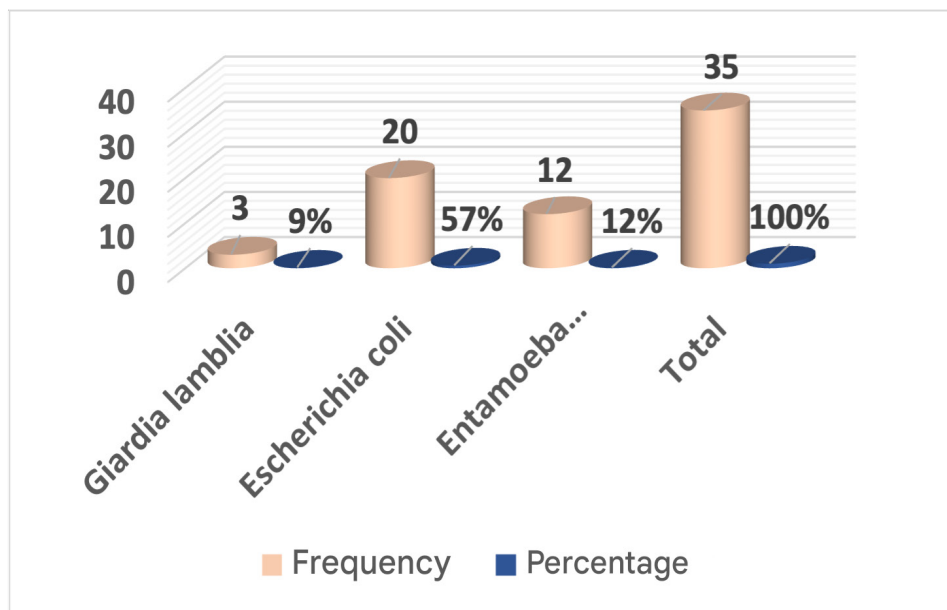


Source: Factsheet

According to the risk factors, the most prevalent was contaminated water, with 15 children, which corresponds to 43%, and the least predominant was the deficit in breastfeeding, with 8 children, which corresponds to 23%.



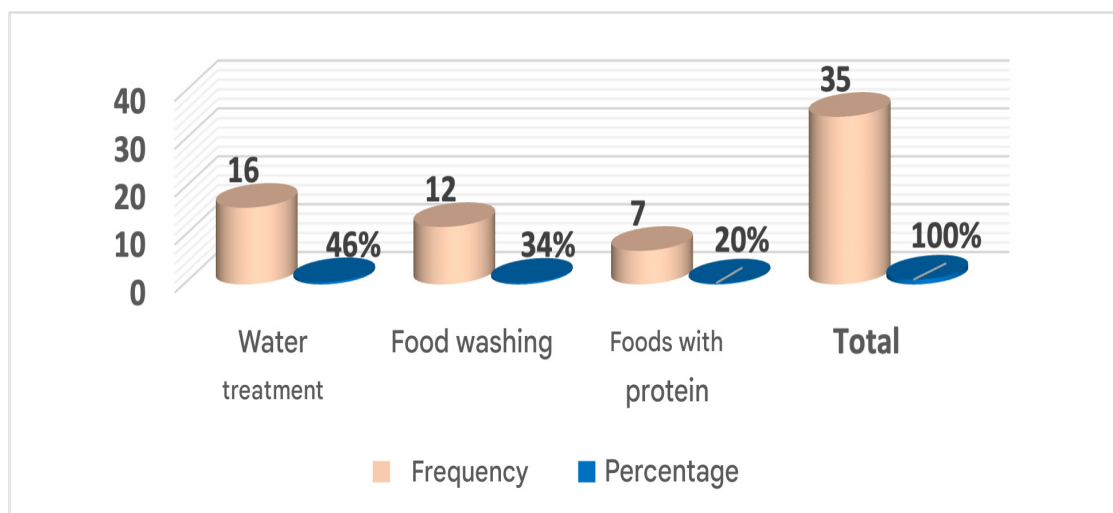
Graph nº5 - Distribution of the sample according to etiological agents



Source: Data collection sheet

According to the etiological agent, the one that predominated was Escherichia coli with 20 children, which corresponds to 57% and the least predominant was Giardia lamblia, with 3 children, which corresponds to 9%.

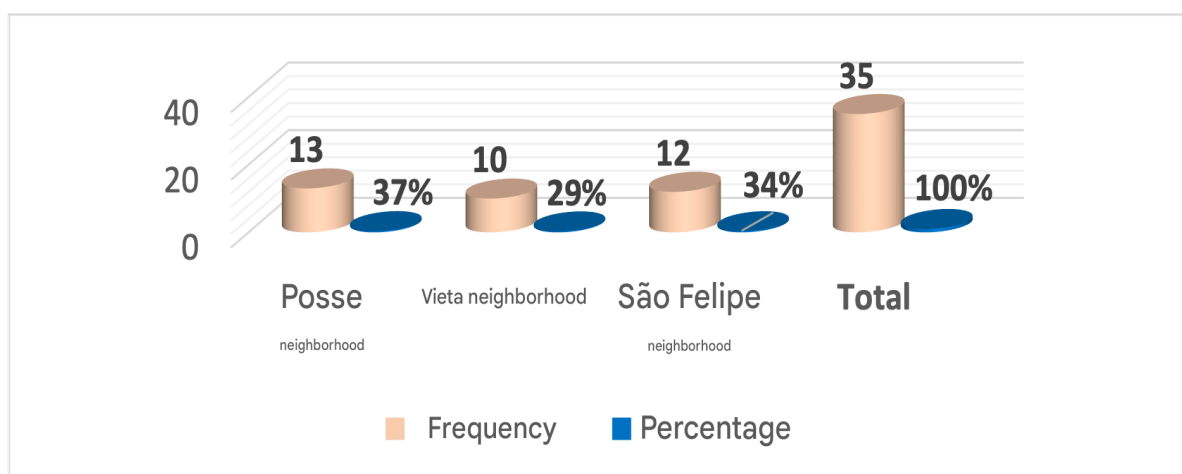
Graph 6 - Distribution of the sample according to forms of prevention



Source: data collection form.

According to the forms of prevention, it was water treatment with 16 children, which corresponds to 46%, what was less predominant was foods with proteins, with 7 children, which corresponds to 20%.

Graph nº7 - Distribution of the sample according to the origin of the cases



Source: data collection sheet.

According to provenance, the neighborhood that most predominated was the possession with 13 children, which corresponds to 37% and the one that least predominated was Vieta, with 10 children, which corresponds to 29% children.

DISCUSSION

According to the World Health Organization (WHO), in the last two decades, there has been a significant reduction in mortality from infectious diarrhea in children under the age of five globally. And in the present study, it shows that children aged 1-5 years were more frequent with 46%.



In recent decades, there has been a significant reduction in infant mortality due to diarrheal diseases. UNICEF data indicate that, globally, the mortality rate in children under five years of age has decreased by 51% since 2000. In Brazil, this reduction was even more significant, reaching 60% in the same period. This positive trend can be attributed to improvements in sanitation conditions, greater access to health services, and effective prevention and treatment programs.

The World Health Organization (WHO) highlights that environmental factors play a crucial role in the incidence of diarrheal diseases in children. In 2012, it was estimated that 26% of deaths and 25% of the total burden of disease in children under five years of age could be avoided by reducing environmental risks, such as contaminated water, lack of basic sanitation, and inadequate hygiene. These data corroborate the findings of the present study, where the main source of infection identified was the consumption of contaminated water, representing 43% of the cases.

Diarrhea in children can be caused by a variety of pathogens, including viruses, bacteria, and parasites. Studies indicate that *Escherichia coli* is one of the main etiological agents, with frequencies ranging between 25% and 40%. In the present study, *E. coli* was responsible for 57% of the cases, which is in line with the existing literature. Accurate identification of the causative agent is essential to direct appropriate treatment and implement effective preventive measures.

According to the 2015-2016 Multiple Indicators and Health Survey (IIMS), the prevalence of diarrhea in Angolan children under five years of age was 15.6%. It was observed that children between 6 and 23 months had a higher rate, reaching 27%, while those between 48 and 59 months had the lowest prevalence, with 6%. These data indicate that diarrhea affects children in the early stages of development more significantly.

The same survey revealed that the prevalence of diarrhoea is slightly higher in urban areas (16.1%) compared to rural areas (14.8%). In addition, lack of access to adequate basic sanitation has been identified as a significant risk factor for increased incidence of diarrhoea among children. These findings highlight the importance of improvements in sanitation and water supply infrastructures for disease prevention.



Studies carried out at the Bengo General Hospital have identified several pathogenic agents responsible for diarrheal conditions in children, including viruses, parasites and bacteria. Although rotavirus is often highlighted as one of the main etiological agents in developed countries, in Angola, *Escherichia coli* has also been pointed out as a significant cause of childhood diarrhea. Accurate identification of these agents is crucial to target appropriate therapeutic and preventive interventions.

CONCLUSION

Acute diarrhoea remains a significant public health challenge in Angola, especially among children at an early age, where vulnerability is accentuated by socio-economic and environmental factors. The research revealed that poor sanitation, consumption of untreated water and lack of knowledge about hygiene practices directly contribute to the spread of diarrhoeal diseases, perpetuating cycles of morbidity that affect child development and overload the health system.

The prevalence of pathogens such as *Escherichia coli* reinforces the need for constant epidemiological surveillance and sustainable prevention strategies, such as community health education programs, distribution of oral rehydration solutions, and encouragement of exclusive breastfeeding in the first months of life. In addition, family breakdown and inequalities in access to health services accentuate the vulnerability of certain groups, making it even more urgent to implement public policies that integrate health, education, and social assistance.

To mitigate the impacts of diarrheal diseases and reduce infant mortality rates, it is essential to strengthen primary health care, ensure the expansion of vaccination coverage, and promote regular awareness campaigns. Building a community support network, combined with investments in sanitation infrastructure and water supply, is crucial to transform the reality of the most affected communities. Thus, the prevention and control of these diseases involve the articulation of intersectoral efforts that prioritize comprehensive child health care, promoting, in the long term, a significant improvement in the quality of life of the population.



SUGGESTIONS

After analyzing and concluding the present work, we suggest the following:

1- That the management of the Provincial Mother and Child Hospital of Cuanza Norte carry out more routine diagnostic tests in order to control and combat the etiological agents of DD.

2- Carrying out massive awareness campaigns on acute diarrheal diseases in order to provide greater prevention of the disease.

3- Encourage the participation of parents in lectures on parasitic diseases in general.

1. Improvement of Sanitation and Water Supply

Access to drinking water: Installation of water treatment systems in communities.

Construction of safe latrines: To prevent fecal contamination in the environment.

Waste management: Promote proper garbage and sewage disposal practices.

2. Promotion of Personal and Food Hygiene

Hand washing: Encourage hand washing with soap after using the toilet and before meals.

Safe food preparation: Store and cook food thoroughly to eliminate pathogens.

3. Exclusive Breastfeeding

Breastfeeding up to 6 months: Protects against gastrointestinal infections, strengthening children's immunity.

4. Community Education and Awareness

Awareness campaigns: To teach the population about the modes of transmission of the disease.

Training of community health workers: To promote good hygiene practices and identify suspected cases early.

5. Vaccination and Prophylaxis



Rotavirus vaccination: Significantly reduces severe cases of diarrhea.

Periodic deworming: To eliminate worms that cause gastrointestinal disorders.

6. Improving Access to Health Care

More equipped health centres: For rapid diagnosis and appropriate treatment.

Oral Rehydration Serum (ORS): Distribute and teach families how to use it to prevent dehydration.

7. Epidemiological Monitoring and Surveillance

Identification of outbreaks: For authorities to intervene quickly.

Water quality analysis: Check and correct contaminated sources.

REFERENCES

Alexandraki, I., Smetana, G. W. (2023) Acute viral gastroenteritis in adults. UpToDate.

Asmus, G. F.; Seixas, S. R. C.; Gonzalez, E. (2017) Acute diarrhea in Caraguatatuba: epidemiological situation and suggestions for monitoring. Health and Environment.

Braunwald, E., Kasper, D. L., Fauci, A. S., Jameson, J. L., Longo, D. L., & Hauser, S. (2002). Harrison - Internal Medicine (15th ed.). The McGraw-Hill Companies.

BRAZIL. Ministry of Health. (2007). Breaking the Chain of Disease Transmission General Coordination of Human Resources Development for the SUS.

BRAZIL. Ministry of Health. (2012) Training and Monitoring of Diarrheal Diseases. Coordination of Surveillance of Waterborne and Foodborne Diseases.

BRAZIL. Ministry of Health. (2016) Epidemiological Surveillance. Communicable diseases.

Duncan, B. Bruce. (2006) Outpatient Medicine: Evidence-Based Primary Care Conducts. Artmed, Porto Alegre.



Dupont, H. L. (2005). Travelers ‘ diarrhea : antimicrobial therapy and chemoprevention. *American Journal of Gastroenterology*, 2(4), 191–198. doi:10.1038/ncpgasthep0142.

Fuchs, A. R.; Victora, C. G. & Fachel, J., (1996), Hierarchical model: A modeling proposal applied to the investigation of risk factors for severe diarrhea. *Journal of Public Health*, 30:168-178.

Harris, J.B. & Pietroni, M. (2022) Approach to the child with acute diarrhea in resource-limited countries.

Larocque, R. & Harris, J. B. (2023) Approach to the adult with acute diarrhea in resource-rich settings. *UpToDate*.

Marconi, A. M. & Lakatos, M., E. (2003). *Fundamentals of scientific methodology*. 5th Ed. Atlas. São Paulo.

Muller, L., Korsgaard, H., & Ethelberg, S. (2012). Burden of acute gastrointestinal illness in Denmark 2009: a population-based telephone survey. *Epidemiology and Infection*, 140, 290–298.

OMS, O. M. da S.; UNICEF, U. N. C. F. (2009) *Diarrhoea: Why children are still dying and what can be done*. New York: World Health Organization.

Silva, J. B. (2012). *Statistics for Human Sciences*. Angola/Luanda: Gráfica Lito-Tipo, Lda.

Pinto, A. M. (2007). *Pathophysiology - Fundamentals and Applications* (1st ed.). Lidel.

Ponce, P. (2010). *Manual de Terapêutica Médica* (2nd ed.). Lidel.

Rêgo, R. C. F., (1996). *Destination of Waste, Garbage and Diarrhea* Master’s thesis, Salvador: Institute of Collective Health, Federal University of Bahia.

Santos, J. M., Cavacas, A., Silva, A. S., Zagalo, C., Evangelista, J. G., Oliveira, P., & Tavares, V. (2007). *General Anatomy - Moreno* (4th ed.). Egas Moniz Publications.

Sczwarcwald, C. L.; Leal, M. C.; Castilho, E. A. & Andrade, C. L. T., (1997). Infant mortality in Brazil: Belindia or Bulgaria? *Cadernos de Saúde Pública*.



Thomas, P., Forbes, A., Green, J., & Howdle, P. (2003). Guidelines for the investigation of chronic diarrhoea. *Gut*. Retrieved from http://gut.bmj.com/content/52/suppl_5/v1.short

World Health (1988) Organization. Persistent diarrhea in children in developing countries, Memorandum from a WHO meeting. *Bull WHO*;66:709-17.

World (2012) Gastroenterology Organisation World Global Guideline - Acute diarrhoea in adults and children: a global perspective

