94 - BIOCHEMICAL ANALYSIS OF THE SERUM IRON AND HEMOGLOBIN FOR THE DIAGNOSIS OF THE IRON DEFICIENCY ANEMIA IN QUILOMBOLA CHILDREN OF 3 TO 6 YEARS-OLD IN THE STATE OF AMAPÁ.

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INTRODUCTION

Anemia is always a secondary sign of some base disease, which may be provided by different causes. The most frequent is the iron deficiency, which is one of the most common disease in the world, with around 0,5 billion people affected. Despite the iron deficiency anemia is the most common, there are several other types of anemia, which the iron presents normal levels or even an excess. It is important to make an accurate diagnosis in order to apply the appropriate therapy (GUALANDRO,2000).

The iron deficiency anemia is a pathology, which occurs a decrease of the stored iron in the erythrocytes, which can be found in the mychrocythemic and hypochromic erythrocytes. The iron deficiency anemia is considered as one of the greatest problems, not only in the developing countries, but also in the developed ones and it is characterized by the decrease of the cycling levels of erythrocytes and iron and by the rise of transferrine (MARTINS, IGNEZ, et al, 1987). The iron deficiency anemia can also be highlighted as a nutritional lack which happens independently of the malnutrition, despite there may be a tendency of these two pathologies to be associated (BRUNKEN, GISELA, et al, 2002).

The reduction of the blood erythrocytes concentration disturbs the oxygen transportation for the tissue, which has as the major signs and symptoms the alteration of skin and the mucosa (paleness), gastrointestinal changes (stomatitis, dysphagia) fatigue, weakness, palpitation, reduction of the cognitive function and the motive development. In children, may harm the growth and even the school learning, some studies show that the iron deficiency is one of the major causes of the motive deficiency in the childhood (MS, 2005).

OLIVARES AND WALTER (2003) state that children in the kindergarten age are some of the most vulnerable group to be affected by anemia, due to the rise of iron necessities caused by the cell mass expansion and growth of tissues in this age group.

According to PAIVA et al (2000), in Brazil, there are not available data which can indicate the exact dimension of this problem; however, some studies show the rise of the prevalence of anemia in the childhood along the years. Santos et al (2004) highlight that the most recent data show prevalence in country which vary from 26,7% to 60,4% of iron deficiency anemia.

So, more than a reality, the study about the occurrence of iron deficiency anemia became a necessity, although some issues about this theme have been approached restrictedly by the public health. Therefore, the research on the prevalence of this anemia in quilombolas children in the state of Amapá represents a great important subject as a social interest, once it has not been published any study about this theme in the quilombolas communities so far.

METHODOLOGICAL PROCEDURES

SAMPLE

After the approval of the study for the Committee of Ethics in Research (CEP) of the Institute of Scientific and Technological Researches of the State of Amapá (IEPA), under the protocol n° 05/2009, and signature the "Term of Authorization and Free Consent" by the children's tutors. 86 samples of the children's peripheral blood from both sexes were collected in the age group from 03 to 06 years-old from 05 quilombolas communities of the state of Amapá during the months of August to September, 2009.

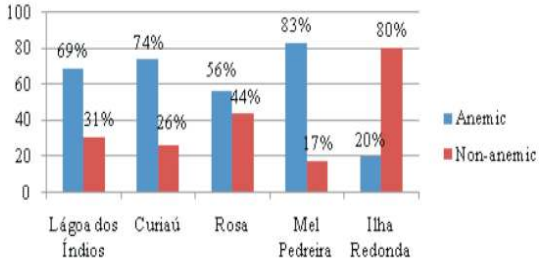
METHODOLOGY

All of the blood samples were submitted to the following laboratory analysis: hemoglobin dosage and dosage of serum iron through the use of the kits of Doles Biochemical Products, accomplished through the equipment Bioplus (Bio2000), the analysis were accomplished in the Laboratory of Hematology and Biochemistry of the Seama Clinical Center - Clinical Analysis. The technique of the dosages followed the pattern recommended by the manufacturer.

RESULTS

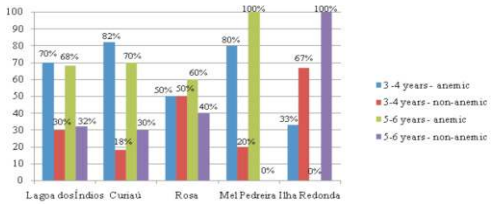
In this study, 86 quilombolas children's samples in the age group of 3-6 year-old, 43 male and 43 female from the quilombolas communities of Curiaú, Mel da Pedreira, Lagoa dos Índios, Rosa and Ilha Redonda.

The graphic 1 presents a bilateral analysis, it shows the frequency of iron deficiency anemia per quilombola community, characterized through the iron rate of the hemoglobin.



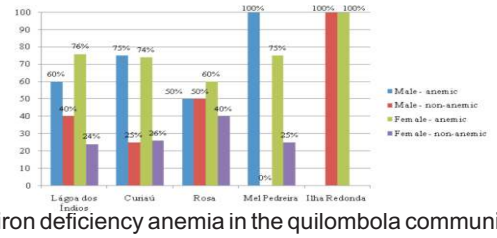
GRAPHIC 1 – Frequency of iron deficiency anemia per quilombola community.

The graphic 2, shows the prevalence of iron deficiency in the participant children of this study. In the communities from Lagoa dos Índios and Curiaú, 70% and 82% respectively of the children in the age group from 3 to 4 year-old presented anemia. The other communities show anemic children in the age group from 5-6 year-old.



GRAPHIC 2 – Frequency of iron deficiency anemia in the quilombola communities according to the age group.

In the graphic 3 presents the frequency of anemic children according to their sex. Our study showed the prevalence of female children with iron deficiency anemia in the communities from the Lagoa dos Índios, Rosa and Ilha Redonda. In the other communities male sex had a higher prevalence of iron deficiency anemia than the female one.



GRAPHIC 3 – Frequency of iron deficiency anemia in the quilombola communities related to the age.

DISCUSSION

Anemia can be considered as pathological processes, it has a higher prevalence in children and pregnant women. In children and adolescents, anemia is associated to the increase of the mortality, retard of the mental development, of the motive development, of cognitive skills and reduction of the school performance. It also harms the homeostasis of the immune system (CANTO et. al, 2004).

Anemia for iron deficiency, elevates the heart effort, for the maintenance of the normal levels of oxygenation, and it reduces the physical capacity to work, resulting in symptoms as dysmenorrheal, anorexia, sleepiness, migraine, vertigo, muscular weakness, tingling and, the largest sequel, the spontaneous abortion (CANTO et. al, 2004).

According to OSÓRIO et. Al (2002), social economic status of the population is a relevant factor for the appearance of iron deficiency anemia, mainly because the lack of nutritional education, food which is rich in iron is not consumed, once they believe that those foods are expensive.

The social economic status of these people results into difficulties to afford rich feeding nutrients, which is harmful in isolated regions, because they live at subsistence culture base, once they eat according to the harvest season, which is sometimes harmful because of the instability of the nature, causing damages to live. (OSÓRIO, et al 2002).

The graphic 1, shows that all the five studied quilombola communities quilombolas the state of Amapá presented children with iron deficiency anemia. Of these, Mel da Pedreira community was the one that presented a larger frequency of children with iron deficiency anemia, because this community is the most distant community from the capital and the poorest social and economic. When we analyzed those rates we verified that the cause is related to the condition of those children's life, because all of the studied communities are distant from the capital and they eat from what they get to cultivate in their plantations, and this interferes directly in the children's health.

In our study, we found three quilombolas communities whose children presented anemia in the age group from 03 to 04 years and the other communities, the anemic children are in the age group from 05 to 06 (graphic 2). This result matches with what we found in the literature, where children under 10 year-old are at a higher risk to develop iron deficiency anemia due to their social economic status as well as their motive development (CANTO et. al, 2004; HEIJBLON and SANTOS, 2007).

According to ALVES, et. al., 2007, the iron deficiency anemia presents a higher prevalence among the male sex. That happens due to the largest rapid growth presented by the boys, when they have a larger necessity of iron in the organism, which is not supplied by their diet. In our study this rate was confirmed in the communities from Curiaú (75%) and from Mel da Pedreira (100%), however the communities from Ilha Redonda, Rosa and Lagoa dos Índios the girls presented a higher rate of iron deficiency than boys. That prevalence is related with the fact that in those communities we collected a larger amount of female blood samples (graphic 3).

The suitable criteria index of the World Health Organization to diagnose anemia is based on the hemoglobin concentration, which is considered anemic men the ones whose values of hemoglobin are lower than 13g/dL, women in fertile age and children from 7 to 14 years (values must be lower than 12 g/dL) and children under 6 years old (values must be lower than 11g/dL) (Ministry of Health, 2004).

From the 86 studied samples, 66% presented a dosage of hemoglobin lower than 11g/dl. This result was confirmed by the dosage of serum iron, where all of the samples presented values lower than 40ug/dl. All of the diagnosed children with iron deficiency anemia were sent to the nearest Health Center in order to be properly treated.

Afterwards, we analyzed and associated our results to those which are present in the literature; we believed that it is extremely important the diagnosis and the establishment of preventive actions to fight against the iron deficiency anemia quilombola communities. That was the first study accomplished in the state of Amapá in the quilombolas communities which investigates the prevalence of iron deficiency anemia in those communities' children.

CONCLUSION

- From the 86 blood samples of quilombola children from the five studied communities, 66% presented iron deficiency anemia;
- The quilombola community Mel da Pedreira was the one which had a higher frequency of children with iron deficiency anemia;
- The major cause associated to the emergence of iron deficiency anemia in quilombola children is related to their social and economic condition;
- That was the first study on iron deficiency anemia accomplished in quilombola children in the state of Amapá.

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BIOCHEMICAL ANALYSIS OF THE SERUM IRON AND HEMOGLOBIN FOR THE DIAGNOSIS OF THE IRON DEFICIENCY ANEMIA IN QUILOMBOLA CHILDREN OF 3 TO 6 YEARS-OLD IN THE STATE OF AMAPÁ.

ABSTRACT

This study had as objectives to analyze the prevalence of the iron deficiency anemia in quilombolas children in the age group from 3 to 6 years-old, in five quilombolas communities of the State of Amapá through the hemoglobin dosage and confirmed by the dosage of the serum iron concentration. It was studied 86 blood samples of quilombolas children from both sexes. Of the 86 studied samples, 66% of the researched children presented iron deficiency anemia, this result is directly related to the life's condition of those children, who live in a poor and far communities from the capital of the state. This was the first study accomplished in the state of Amapá where the rate of iron deficiency anemia was assessed in quilombolas children.

KEY-WORDS: Iron deficiency anemia. Quilombolas children. Iron deficiency.

ANALYSE DE LA BIOCHIMIE DE FER SÉRIQUE ET DE L'ÉMOGLOBINE POUR LE DIAGNOSTIC DE L'ANÉMIE, LA CARENCE CHEZ LES ENFANTS DU QUILOMBOLAS DE 3 À 6 ANS DE L'ÉTÂT DE L'AMAPA.

RÉSUMÉ

Cette étude a eu comme objectifs d'analiser la prévalence de l'anémie , la carence chez les enfants quilombolas entre 3 à 6 ans, en cinq communautés quilombolas de l'État de l'Amapá , à travers du dosage de l'émoglobine et de confirmer par le dosage la concentration du fer sérique. Fûrent étudiés 86 échantillons de sang des enfants quilombolas des deux sexes . Dans les 86 échantillons étudiés , en 66% de ces enfants ,les recherches ont présentées une carence anémique , ce résultat est directement en rapport avec la condition de vie de ces enfants , qui vivent dans de pauvres communautés lointaines de la capitale de l'État. Ceci fût la première étude réalisée dans l'État de l'Amapá où Il y a eu une évaluation de l'indice de carence en

anémie chez les enfants quilombolas.

MOTS –CLÉ : Carence Anémique. Enfants quilombolas. Déficience en fer.

ANALISIS BIOQUÍMICO DEL HIERRO SÉRICO Y HEMOGLOBINA PARA EL DIAGNOSTICO DE LA ANEMIA EN LOS NIÑOS QUILOMBOLAS DE 3 A 6 AÑOS DE EDAD EN EL ESTADO DE AMAPÁ –AP

RESUMEN

Este estudio tuvo como objetivo analizar la prevalencia de la anemia ferropénia en los niños quilombolas en las edades de 3 a 6 años de edad, en cinco comunidades quilombolas del Departamento de Amapá através del dosaje de hemoglobina y confirmado por el dosaje de concentración de hierro sérico.Fueron estudiadas 86 muestras de sangre de niños quilombolas de ambos sexos . De las 86 muestras estudiadas 66% de los niños presentaron anemia ferropénia, ese resultado está directamente relacionado con la condición de vida de esos niños , que viven en comunidades pobres y distantes de la capital del Estado.

Ese fue el primer estudio realizado en el Estado de Amapá donde se evalúo el índice de anemia ferropénia en los niños quilombolas.

PALABRAS – LLAVE: Anemia ferropénia. Niños quilombolas. Deficiencia de hierro.

ANÁLISE BIOQUÍMICA DO FERRO SÉRICO E HEMOGLOBINA PARA O DIAGNÓSTICO DA ANEMIA FERROPRIVA EM CRIANÇAS QUILOMBOLAS DE 3 A 6 ANOS DE IDADE DO ESTADO DO AMAPÁ – AP.

RESUMO

Este estudo teve como objetivo analisar a prevalência da anemia ferropriva em crianças quilombolas na faixa etária de 3 a 6 anos idade, em cinco comunidades quilombolas do Estado do Amapá, através da dosagem de hemoglobina e confirmada pela dosagem da concentração do ferro sérico. Foram estudadas 86 amostras de sangue de crianças quilombolas de ambos os sexos. Das 86 amostras estudadas, 66% das crianças pesquisadas apresentaram anemia ferropriva, esse resultado está diretamente relacionado com a condição de vida dessas crianças, que vivem em comunidades carentes distantes da capital do estado. Esse foi o primeiro estudo realizado no estado do Amapá onde se avaliou o índice de anemia ferropriva em crianças quilombolas.

PALAVRAS-CHAVE: Anemia ferropriva. Crianças quilombolas. Deficiência de ferro.

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