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ORIGINAL ARTICLE

Association of enteroparasitism with iron deficiency anemia and risk factors in pediatric patients

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ABSTRACT

Introduction: enteroparasitism in pediatric patients is linked to iron-deficiency anemia, since intestinal parasites cause blood loss, nutrient malabsorption, and competition for iron. Poor hygiene and lack of access to health services are predisposing risk factors.
Objective: to determine the association of enteroparasitism with iron-deficiency anemia and risk factors in pediatric patients.
Methods: an analytical cross-sectional study was conducted in the Huancayocc community, Huanta district, Ayacucho, Peru, by professionals from the National University of San Cristóbal de Huamanga during 2024. A sample of 142 out of a total of 303 pediatric patients was selected, considering variables such as age group, sex, enteroparasitism, iron-deficiency anemia, and social, behavioral, and environmental risk factors.
Results: the 6–9-year age group predominated (52,1 %), and males were more affected both in enteroparasitism (50 cases) and iron-deficiency anemia (11 cases). The most significant associations were observed with family income ($p = 0,003$), handwashing before eating ($p < 0,001$), after using the toilet ($p < 0,001$), and consumption of vegetable foods ($p = 0,004$). An association was found between enteroparasitism and iron-deficiency anemia ($p = 0,015$; OR = 8,625; CI: 1,103–67,433).
Conclusions: there is a significant association between enteroparasitism and iron-deficiency anemia in children. The main risk factors were family income, hygiene, and vegetable consumption, highlighting the need for prevention and health education strategies to improve child well-being.

Keywords: ANEMIA, IRON-DEFICIENCY; PARASITIC DISEASES; RISK FACTORS.

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INTRODUCTION

Enteroparasitism constitutes a public health problem that affects millions of patients in pediatric age worldwide, especially in developing countries. Among the various diseases caused by parasites, intestinal infections can lead to severe complications such as iron deficiency anemia. In this sense, it is of vital importance to study the relationship between enteroparasitism and iron deficiency anemia in pediatric patients, as well as with risk factors.[1,2]

During the year 2023, the World Health Organization (WHO) reported the presence of intestinal parasitism in approximately 300 million pediatric patients globally. Of these, about 70 % correspond to school-age children in regions of the African and Asian continents. In the former, Nigeria and Tanzania reported the highest prevalence, while in the latter India documents figures of up to 30 % in children under five years.[3,4]

In Latin America, the prevalence of enteroparasitism is between 15 and 20 %. Countries such as Venezuela, Peru, and Honduras present the highest rates with 37, 30, and 25 % respectively. In particular, in Peru, enteroparasitism constitutes a challenge that requires a multidimensional approach including educational and administrative actions. [2,5,6,7]

Enteroparasitism is more common in the pediatric population and includes infection by helminths (such as pinworms, Ascaris lumbricoides, and Taenia solium) and protozoa (such as amoebas and Giardia lamblia). The transmission of these parasites generally occurs through contaminated water and food, as well as by contact with infected surfaces, especially in areas with deficient sanitation and hygiene conditions. Pediatric patients, due to their greater predisposition to contact with soil and their developing immune system, are vulnerable to these infections. [1,4,8]

Regarding iron deficiency anemia, it is an important medical condition, characterized by a decrease in blood hemoglobin values, due to iron deficiency. In pediatric patients, this condition can be caused by several reasons: insufficient iron intake, blood loss (which can be caused by enteroparasites), and increased iron requirements during growth periods. Enteroparasitism is frequently associated with chronic blood loss and malabsorption of nutrients, thus contributing to the appearance of anemia.[6,9]

Several studies have demonstrated that pediatric patients with enteroparasitism present a higher prevalence of iron deficiency anemia. Parasites, by feeding on the host's nutrients, can interfere with iron absorption and cause blood loss through ulcerations in the intestinal mucosa. The combination of these factors can reduce iron availability in the organism and, therefore, cause or aggravate an anemic condition. [4,7,9]

Anemia, according to WHO figures, affects 273 million patients under five years globally, and the most prevalent form is iron deficiency anemia. In Africa and Asia, it can reach figures of up to 50 % in certain population groups. In Latin American countries Guatemala and Bolivia report around 50 % in children under five years, while Peru has identified up to 30 % in pregnant women.[8,10]

Iron deficiency anemia can cause symptoms that include fatigue, weakness, pallor, and even difficulty concentrating. In the case of enteroparasitism, other symptoms such as abdominal pain, diarrhea, and weight loss may be present. The diagnosis of these conditions is performed through laboratory tests such as complete blood counts, serum iron determination, and coproparasitological examinations to detect the presence of parasites.[5,11]

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The treatment of iron deficiency anemia associated with enteroparasitism involves a dual approach. First, enteroparasitism must be treated through specific antiparasitics and then complement iron levels through oral supplements or, in severe cases, intravenous. Additionally, prevention measures such as improvement of hygiene and access to potable water must be implemented to reduce the incidence of enteroparasitism in the vulnerable population.[3,12]

In this sense, in the Huancayocc Population Center, belonging to the district of Huanta in Ayacucho, Peru, basic sanitation is deficient, there is scarcity of potable water, and nutrition is inadequate, poor in foods containing iron. These factors favor the presence of enteroparasitism, which affects nutrient absorption and can contribute to anemia. Given this, the present investigation was conducted, which proposed to determine the association of enteroparasitism with iron deficiency anemia and risk factors in pediatric patients.

METHODS

An analytical cross-sectional study was carried out in the Huancayocc Population Center, district of Huanta, Ayacucho, Peru, by professionals from the National University of San Cristóbal de Huamanga during the period January-December 2024. Intentional sampling was applied, as well as obtaining a sample of 142 out of a universe of 303 pediatric patients, through the following eligibility criteria:

Inclusion criteria

- Patient aged between six and 12 years, who showed availability to participate in the investigation.
- Patient whose parent or legal guardian granted informed consent to participate in the study.
- Patient who complied with the delivery of the coprological sample.

Exclusion criteria

- Patient who received antiparasitic treatment in the last seven days.
- Patient who received treatment with ferrous sulfate in the last seven days.
- Patient in whom the feces sample resulted not useful.
-

The study variables were age (six - nine and 10-12 years), sex (male or female), enteroparasitism (parasitized or not parasitized), iron deficiency anemia (positive or negative), social and behavioral risk factors (family economic income, education level of father, mother or guardian, type of housing and number of people per household), environmental risk factors (type of consumption water, destination of solid waste, excreta disposal, hand washing before eating, hand washing after going to the bathroom), risk factors of iron deficiency anemia (family economic income, education level of father, mother or guardian, consumption of foods of vegetable origin, way of vegetable consumption and consumption of foods of animal origin).

Prior to the sampling process, a questionnaire containing simple questions was applied, elaborated from the operationalization of variables. The questionnaire was made starting from a profound bibliographic analysis, which allowed studying the factors associated with enteroparasitism, iron deficiency anemia and risk factors.

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The validity of the instrument was performed through expert judgment, and its reliability was calculated by means of the Cronbach's alpha test, obtaining a value of 0,721, which indicates that there is good interrelation between the questions or elements of the questionnaire. Once all the completed questionnaires and the performed examinations were obtained, the information was verified by the main author of the investigation. The results were transcribed to the corresponding epidemiological record of each patient and delivered to the personnel in charge of the Huancayocc Health Post.

The information was recorded in an Excel spreadsheet to perform data analysis, through the Statistical Package for the Social Sciences (SPSS), version 22.0. The Chi-square test (X^2) allowed evaluating the possible relationship between the analyzed variables. Calculations were performed with a statistical significance threshold of 0.05, results are shown in texts and tables, according to the established objectives.

The Scientific Council of the National University of San Cristóbal de Huamanga, Ayacucho, Peru, authorized the investigation. Attention was paid to the confidentiality of the information through the coding of variables, the results were accessible only to the researchers and the precepts included in the Declaration of Helsinki were taken into account.[13]

RESULTS

Table 1 shows predominance of the age group of six - nine years (52,1 %), while the highest percentage of parasitized was reported in the male sex, belonging to the six - nine years group (58,0 %). Of the 95 patients with enteroparasitism, 16 were diagnosed with iron deficiency anemia (16,8 %), of them, 11 males and five females. In relation to enteroparasitism and age group, a probability (p) of 0,763 and 0,856 respectively was obtained. The p value regarding iron deficiency anemia was 0,195 and in the age group 0,052.

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Table 1. Distribution of pediatric patients with enteroparasitism, iron deficiency anemia and their association with age group and sex.

Age	Sex								Total		X^2(p)
	Male				Female						
	Enteroparasitism										
	Parasitized		Not Parasitized		Parasitado		Parasitized				
	No.	%	No.	%	No.	%	No.	%	No.	%	
6-9	29	58,0	11	42,3	20	44,4	14	66,7	74	52,1	0,856
10-12	21	42,0	15	57,7	25	55,6	7	33,3	68	47,9	
Total	50	100	26	100	45	100	21	100	142	100	
X^2 (p): 0,763											
Edad	Sexo								Total		X^2 (p)
	Masculino				Femenino						
	Anemia ferropénica										
	Positivo		Negativo		Positivo		Negativo				
	No.	%	No.	%	No.	%	No.	%	No.	%	
6-9	8	72,7	26	40,0	4	80,0	36	59,0	74	52,1	0,052
10-12	3	27,3	39	60,0	1	20,0	25	41,0	68	47,9	
Total	11	100	65	100	5	100	61	100	142	100	
X^2 (p): 0,195											

Table 2 shows the social and behavioral risk factors associated with enteroparasitism, with family economic income (p=0,003) and the education level of father, mother or guardian (p=0,003) showing the greatest association.

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Table 2. Distribution of pediatric patients with enteroparasitism and their association with social and behavioral risk factors.

Social and behavioral risk factors		Enteroparasitism				X^2 (p)
		Parasitized		Not parasitized		
		No.	%	No.	%	
Family economic income	Less than S/. 1025	77	54,2	27	19,0	0,003
	More than S/. 1025	18	12,7	20	14,1	
Education level of father/mother or guardian	Illiterate	8	5,6	0	0	0,003
	Primary	52	36,6	17	12,0	
	Secundary	31	21,9	22	15,5	
	Superior	4	2,8	8	5,6	
Type of housing	Tapial	37	26,1	19	13,4	0,445
	Adobe	48	33,8	26	18,3	
	Noble Material	10	7,0	2	1,4	
Number of people per household	3 people	7	4,9	8	5,6	0,188
	4 people	32	22,6	16	11,3	
	More than 4 people	56	39,4	23	16,2	
Number of people per rooms	1 person	7	4,9	5	3,5	0,622
	2 people	52	36,6	22	15,5	
	More than 2 people	36	25,4	20	14,1	

The association of environmental risk factors of enteroparasitism is related in table 3, specifying a statistically significant association of all ($p < 0,05$). Hand washing before eating ($p<0,000$) and after going to the bathroom ($p<0,000$) obtained the most relevant values.

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Table 3. Distribution of pediatric patients with enteroparasitism and their association with environmental risk factors.

Environmental risk factors		Enteroparasitism				X^2 (p)
		Parasitized		No Parasitized		
		No.	%	No.	%	
Type of consumption water	Treated water	60	42,3	40	28,2	0,024
	Untreated water	14	9,8	2	1,4	
	Piped water	21	14,8	5	3,5	
Destination of solid waste	Collector truck	71	50,0	47	33,1	0,003
	Burned	14	9,9	0	0	
	Burried	4	2,8	0	0	
	Open Field	6	4,2	0	0	
Excreta disposal	Toilet	17	12,0	22	15,5	0,001
	Latrine	64	45,1	16	11,3	
	Yard	7	4,9	6	4,2	
	Open Field	7	4,9	3	2,1	
Hand washing before eating	Yes	47	33,1	45	31,7	<0,001
	No	48	33,8	2	1,4	
Hand washing after going to the bathroom	Always	51	35,9	43	30,3	<0,001
	Usually	44	31,0	4	2,8	

Table 4 exhibits the risk factors associated with iron deficiency anemia, where the consumption of foods of vegetable origin (p=0,004) and animal origin (p=0,018) reached the greatest statistical relevance.

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Table 4. Distribution of pediatric patients with iron deficiency anemia and their association with risk factors.

Risk Factors		Iron deficiency anemia |				X^2 (p)
		Positive		Negative		
		No.	%	No.	%	
Family economic income	Menor a S/. 1025	13	9,2	91	64,1	0,442
	Mayor a S/. 1025	3	2,1	35	24,6	
Education level of father/mother or guardian	Analfabeto	3	2,1	5	3,5	0,090
	Primaria	6	4,2	63	44,5	
	Secundaria	5	3,5	48	33,8	
	Superior	2	1,4	10	7,0	
Consumption of foods of vegetable origin	Siempre	5	3,5	86	60,6	0,004
	A veces	11	7,7	40	28,2	
Way of vegetable consumption	Crudas	3	2,1	12	8,5	0,306
	Cocidas	8	5,6	52	36,6	
	Ambas	5	3,5	62	43,7	
Consumption of foods of animal origin	Siempre	4	2,8	71	50,0	0,018
	A veces	12	8,5	55	38,7	

Regarding the association between enteroparasitism and iron deficiency anemia, a p=0,015 was determined, which indicates a statistically significant relationship between the analyzed variables. The Odds ratio (OR) of 8,625 suggests that the exposure is associated with a considerable increase in the probability of the event in question, while the confidence interval (CI), although broad, does not include 1, which reinforces this association.

Table 5. Association of enteroparasitism with iron deficiency anemia in pediatric patients.

Enteroparasitism	Iron deficiency anemia				Total		X^2 (p)	OR (IC al 95 %)
	Positive		Negative					
	No.	%	No.	%	No.	%		
Parasitized	15	10,6	80	56,3	95	66,9	0,015	8,625 (1,103-67,433)
Not parasitized	1	0,7	46	32,4	47	33,1		
Total	16	11,3	126	88,7	142	100		

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DISCUSSION

Public health is a field that demands special attention, given that pediatric patients are particularly vulnerable to diverse medical conditions. Among the multiple problems that can affect their well-being, enteroparasitism and iron deficiency anemia are two of the most prevalent, and their interrelation deserves a deeper analysis. In this sense, elements for discussion are presented below. Of the 142 pediatric patients a high percentage was diagnosed with enteroparasitism. Similar results were obtained by Cabanillas Lizana,[14] who determined a high prevalence and various epidemiological factors associated with enteroparasitism in 104 schoolchildren from a Peruvian educational institution. The collected feces samples were analyzed by the Tello spontaneous sedimentation technique, which allowed determining an enteroparasitism prevalence of 65,4 %.

Sanguinetty et al.,[15] reported a prevalence of 62,1 % of enteroparasitism in a group of 180 pediatric patients aged seven to eight years in Maracaibo, Venezuela. The predominant sex was the male sex, so that the results of the present investigation coincide with those reported in the aforementioned study.

Regarding iron deficiency anemia, of the 142 pediatric patients studied, 11,3 % presented iron deficiency anemia. The results coincide with those reported by Sanguinetty et al.,[15] who found 12,2 % of pediatric patients with iron deficiency anemia. Similarly, Hannaoui et al.,[16] reported 11,2 % of iron deficiency anemia in children from the state of Sucre-Venezuela, with predominance of the male sex and ages between nine and 12 years. Similar results were obtained in the present study.

Regarding family economic income, it is observed that 104 pediatric patients live in households with a monthly income below the minimum wage S/1,025, while only 38 come from families with incomes greater than S/1,025. When determining Chi-square, a significant association was found between economic income and intestinal parasitism. These findings coincide with the study by Villavicencio,[17] who found a significant relationship between family economic income and enteroparasitism in pediatric patients under five years.

Regarding the father's education level associated with intestinal parasitism, it was found that, of 142 pediatric patients, 8 (5,6 %) fathers are illiterate, 52 (36,6 %) have primary education, 31 (21,8 %) secondary and 4 (2,8 %) higher education. The aforementioned denotes that there is a significant relationship of this factor with intestinal parasitism, which was confirmed through the Chi-square test. The result coincides with that obtained by Rodríguez Ulloa et al.,[18] who identified that the mother's education level turned out to be a risk factor associated with enteroparasitism.

Regarding the association of hand washing before eating with enteroparasitism, it was observed that, of 92 pediatric patients who wash their hands, 47 (33,1 %) were parasitized, while, of the 50 children who do not wash their hands, 48 (33,8 %) presented enteroparasites. The Chi-square statistical test showed a significant association between hand washing and the prevalence of enteroparasitism.

Regarding hand washing after going to the bathroom and its association with enteroparasitism, of 94 pediatric patients who always wash their hands, 51 (35,9 %) resulted parasitized, while of the 48 who wash their hands sometimes, 44 resulted parasitized. The Chi-square test showed a significant association between hand washing after going to the bathroom and enteroparasitism.

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Likewise, the results obtained by the authors of the present study agree with those of Urrutia Amao.[19]

It is the authors' criterion that the fact of not washing hands after going to the bathroom constitutes one of the most important risk factors for the proliferation of enteroparasites. Contaminated hands function as a vehicle in the transmission of intestinal parasites, facilitating the ano-hand-mouth infection cycle. Therefore, it is important to keep nails short and hands clean.

According to vegetable food consumption associated with iron deficiency anemia, of 91 pediatric patients who reported always consuming vegetables, 5 (3,5 %) presented iron deficiency anemia, while of the group of 51 who sometimes consumed vegetables, 11 (7,7 %) presented iron deficiency anemia. It is noteworthy that the results of this research work coincide with those reported by Paredes Flores,[20] who reported a significant relationship between vegetable food consumption and iron deficiency anemia.

The authors of the current research consider that the results obtained could be due to a deficit in the consumption of iron-rich vegetable foods. In this sense, they verified that most parents had deficient economic income.

Regarding the consumption of foods of animal origin, 12 (8,5 %) pediatric patients sometimes consume foods of animal origin. These results are related to those reported by Paredes Flores,[20] who also found a significant relationship between inadequate consumption of foods of animal origin and the prevalence of iron deficiency anemia, observing that pediatric patients who sometimes consumed fish, 36,9 % did not have anemia, while those who never consumed fish, represented a greater proportion of iron deficiency anemia.

Huachuhuillca and Janampa,[21] indicate that the main sources of iron are beef, poultry and fish, and that this mineral is absorbed more efficiently when it comes from foods of animal origin. Although some vegetable foods also contain iron, their absorption is less efficient compared to animal products.

When analyzing the relationship between enteroparasitism and iron deficiency anemia, it was found that, of 16 (11,3 %) pediatric patients with anemia, 15 (10,6 %) presented intestinal parasitism and only 1 (0,7 %) did not present it. The Chi-square test indicates that there is an association between iron deficiency anemia and enteroparasitism, since the majority of anemic children had a high parasitic load. 56,3 % (80) pediatric patients were parasitized, but did not present anemia.

Regarding the Odds ratio value, it can be stated that there is a significant relationship between the prevalence of iron deficiency anemia and enteroparasitism. This indicates that a pediatric patient who presents enteroparasitism has 8,625 times more probability of developing iron deficiency anemia than those who are not parasitized.

The study provides valuable information about how enteroparasitism and anemia are related in the pediatric population object of study. Its scope includes determining risk factors such as hygiene and access to sanitation services. However, its limitations lie in the inability to establish causality, since it only offers a temporal glimpse of the variables, without considering the length of exposure to enteroparasites and their long-term impact. However, these findings are essential to design effective public health interventions and improve community well-being.

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It is concluded that there is a significant association between enteroparasitism and iron deficiency anemia in children. The main risk factors were economic income, hygiene, and vegetable consumption, which highlights the need for prevention strategies and health education to improve child well-being.

Conflicts of interest
The authors declare no conflicts of interest.

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Authors' contributions
SRG: Conceptualization, Data curation, Formal analysis, Research, Methodology, Project management, Resources, Software, Supervision.
FVA: Conceptualization, Data curation, Formal analysis, Research, Methodology, Project management, Resources, Software, Supervision.
LUMG: Conceptualization, Data curation, Research.
RGGM: Conceptualization, Data curation, Methodology.
RRP: Conceptualization, Data curation, Methodology.

BIBLIOGRAPHIC REFERENCES

1. Alarcón L, Terán Ventura E. Enteroparasitosis en escolares de Huaricana y Viacha. UNITEPC [Internet]. 2021 [citado 27/01/2025]; 8(2): 44-52. Disponible en: https://investigacion.unitepc.edu.bo/revista/index.php/revista-unitepc/article/view/162

2. Iannacone J, Osorio Chumpitaz M, Utia Yataco R, Alvariño Flores L, Ayala Sulca Y, Del Águila Pérez C, et al. Enteroparasitosis en Perú y su relación con el índice de desarrollo humano. Rev Med Inst Mex Seguro Soc [Internet]. 2021 [citado 27/01/2025]; 59(5): 368-76. Disponible en: http://revistamedica.imss.gob.mx/editorial/index.php/revista_medica/article/view/4023

3. Fernández Gonzáles P, Hierrezuelo Rojas N, Monje Labrada A, Carbó Cisnero Y. Anemia ferropénica en niños de hasta cinco años de edad atendidos en el policlínico "Ramón López Peña". Rev electron Zoilo [Internet]. 2021 [citado 27/01/2025]; 46(2): e2693. Disponible en: https://revzoilomarinello.sld.cu/index.php/zmv/article/view/2693

4. Estrada Rodríguez DR, Molina Martínez LL, Delgado Medina IR, Castro Canales LA. Relación del estado nutricional con la prevalencia de anemia ferropénica en niños y niñas escolares del Recinto "San José" del Cantón Babahoyo, Provincia de Los Ríos del periodo junio 2022-mayo 2023. Rev Pertinenc Academ [Internet]. 2024 [citado 27/01/2025]; 8(4): 34-44. Disponible en: https://revistas.utb.edu.ec/index.php/rpa/article/view/3252

5. Lagos Castillo MA, Lazon Mansilla DF, Astete Medrano DJ, Cárdenas Mendoza WW. Anemia, parasitosis intestinal y rendimiento escolar. CIENCIAMATRIA [Internet]. 2023 [citado 27/01/2025]; 9(1): e1062. Disponible en: https://cienciamatriarevista.org.ve/index.php/cm/article/view/1062

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6672

6. Oncebay Sotelo AD, Roman Araujo YM. Parasitosis intestinal y anemia en niños menores de 10 años de la Institución Educativa 22314, Los Aquijes-Ica, Marzo-Agosto 2018. Repositorio Institucional [Tesis de grado]. Perú: Universidad Nacional San Luis Gonzaga; 15/12/2021 [Internet]. 2021 [citado 27/01/2025]. Disponible en: https://repositorio.unica.edu.pe/items/457cb0c7-d328-4505-af80-2128213b3315

7. Colque Flores C, Calle Cruz H. Parasitosis intestinal y malnutrición en niños de prekínder y primero de primaria de la Unidad Educativa Avelino Mérida y Colegio Adventista de Bolivia. RCCS [Internet]. 2024 [citado 27/01/2025]; 17(2): 32-9. Disponible en: https://rccs.upeu.edu.pe/index.php/rc_salud/article/view/2100

8. Chele Chele MA, Mero Regalado GV, Mina Ortiz JB. Anemia e infección intestinal por protozoarios en niños escolares. MQRInvestigar[Internet]. 2024[citado 27/01/2025]; 8(1): 5445-5468. https://doi.org/10.56048/MQR20225.8.1.2024.5445-5468

9. Andrade Trujillo CA, Párraga Acosta JS, Guallo Paca MJ, Abril Merizalde L. Anemia, estado nutricional y parasitosis intestinales en niños de hogares de Guayas. Boletín Malariol Sal Ambient [Internet]. 2022 [citado 27/01/2025]; LXII(4): 696-705. Disponible en: https://docs.bvsalud.org/biblioref/2023/01/1412153/544-1667-2-pb.pdf

10. Cachay Cerquín WO. Anemia y parasitosis intestinal en niños de 6 a 36 meses de edad atendidos en el Puesto de Salud de Namora, Cajamarca 2019. Repositorio Institucional [Tesis de grado]. Perú: Universidad Nacional de Cajamarca[Internet]; 2021 [citado 27/01/2025]. Disponible en: https://repositorio.unc.edu.pe/handle/20.500.14074/4379

11. Ramos Mancheno ADJ, Jácome Valverde CV, Sulbarán Brito MJ, Paguay Sani LJ. La Parasitosis Intestinal como una de las Causas para el Desarrollo de Anemia en la Población Infantil en Zonas Rurales del Ecuador. Ciencia Latina [Internet]. 2024 [citado 27/01/2025]; 8(5): 215-28. Disponible en: https://ciencialatina.org/index.php/cienciala/article/view/13290

12. Bermúdez A, Medina JJ, Salcedo Cifuentes M. Correlación entre deficiencias de hierro y enteroparasitismo en menores de 14 años de seis cabildos indígenas urbanizados de Colombia. Rev Pediatr Aten Primaria [Internet]. 2021 [citado 27/01/2025]; 22(88): 187-96. Disponible en: http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1139-76322020000500004&lng=es

13. Rodríguez Puga R. Actualización de la Declaración de Helsinki, avances en ética y protección de la investigación médica. Rev cuban salud trabajo [Internet]. 2025 [citado 27/01/2025]; 26: e917. Disponible en: https://revsaludtrabajo.sld.cu/index.php/revsyt/article/view/917

14. Cabanillas Lizana LK. Prevalencia y factores epidemiológicos asociados a la parasitosis intestinal en la Institución Educativa Pública Mixta No38984-15 "San Juan de la Frontera". Ayacucho, 2018. Repositorio Institucional [Tesis de grado]. Perú: Universidad Nacional de San Cristóbal de Huamanga[Internet]; 2020 [citado 27/01/2025]. Disponible en: https://repositorio.unsch.edu.pe/bitstreams/133051d5-917c-4ee5-abde-889a81f17146/download

15. Sanguinetty N, Quintero B, Hernández J, Quintero J, La Cruz J. Anemia ferropénica y parasitosis intestinal en una población infantil de Maracaibo-Venezuela. Rev Universidad del Zulia [Internet]. 2021 [citado 27/01/2025]; 12(33): 416-28. Disponible en: https://produccioncientificaluz.org/index.php/rluz/article/view/35850

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6672

16. Hannaoui E, Capua F, Rengel A, Cedeño F, Campos M. Prevalencia de anemia ferropénica y su asociación con parasitosis intestinal, en niños y adultos del Municipio Sucre, Estado Sucre, Venezuela. Multiciencias [Internet]. 2017 [citado 27/01/2025]; 16(2): 211-7. Disponible en: https://produccioncientificaluz.org/index.php/multiciencias/article/view/22745

17. Villavicencio Acosta LS. Factores de riesgo de parasitosis en niños menores de cinco años de un asentamiento humano-Perú, 2020. Rev Vzlana Sal Pub. [Internet]. 2021 [citado 27/01/2025]; 9(2): 65-76. Disponible en: https://revistas.uclave.org/index.php/rvsp/article/view/3470

18. Rodríguez Ulloa C, Rivera Jacinto M, Cabanillas Vásquez Q, Pérez Huancara M, Blanco Burga H, Gabriel Gonzales J, Suarez Ventura W. Prevalencia y factores de riesgo asociados a parasitosis intestinal en escolares del distrito de Los Baños del Inca, Perú. Revucv-Scientia [Internet]. 2011 [citado 27/01/2025]; 3(2): 181-6. Disponible en: https://revistas.ucv.edu.pe/index.php/ucv-scientia/article/view/909

19. Urrutia Amao LV. Prevalencia de enteroparasitosis pos desparasitación en escolares de la institución educativa primaria 38031 Mariscal Guillermo Miller Acos Vinchos-Ayacucho, 2018. Repositorio Institucional [Tesis de grado]. Ayacucho: Universidad Nacional de San Cristóbal de Huamanga; 2018 [citado 27/01/2025]. Disponible en: https://alicia.concytec.gob.pe/vufind/Record/UNSJ_d5730edef55d3154af3f5f1dc31ee39f

20. Paredes Flores D. Factores relacionados a la anemia en niños de 6 a 23 meses de edad, atendidos en el puesto de salud intiorko, Tacna año 2014. RMB [Internet]. 2016 [citado 27/01/2025]; 10(1): 4-10. Disponible en: https://revistas.unjbg.edu.pe/index.php/rmb/article/view/588

21. Huachuhuillca Carbajal Y, Janampa Mayta SL. Hábitos alimentarios y anemia ferropénica en niños de 6 a 24 meses de la IPRESS Huancán, 2021. Repositorio Institucional [Tesis de grado]. Huancayo: Universidad Continental; 2022 [citado 27/01/2025]. Disponible en: https://repositorio.continental.edu.pe/handle/20.500.12394/12064