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ORIGINAL ARTICLE

Relationship between socioeconomic factors of parents and chronic malnutrition in children in Ecuador

Relación de los factores socioeconómicos de padres de familia con la desnutrición crónica de niños en Ecuador

Relação entre fatores socioeconômicos dos pais e desnutrição crônica em crianças no Equador

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ABSTRACT

Introduction: childhood malnutrition is a public health problem that affects millions of children worldwide, especially in developing countries. In Ecuador, it is a critical public health challenge. **Objective:** to identify and analyze the relationship between socioeconomic factors that characterize parents and chronic malnutrition in children under two years of age, in the Julio Andrade Parish, Ecuador, from January to May 2024. **Method:** a quantitative, descriptive, and correlational study was conducted. Surveys were administered to parents (n=43) to collect information on family income, access to basic services, and general living conditions. An analysis of the children's anthropometric data was also performed, allowing for a precise quantification and assessment of their nutritional status. **Results:** a high incidence of low income was revealed among the surveyed families: 76.7% received less than USD 200.00 per month. Furthermore, 65.1% had restricted access to government bonds and significant deficiencies in basic services such as drinking water (53.5% with piped water supply) and sewage (55.8% used septic tanks). As a direct consequence, an alarming proportion of children presented moderate or severe stunting. **Conclusion:** poverty and the lack of basic services are key determinants of chronic childhood malnutrition in Ecuador. Comprehensive public policies are needed, including financial assistance, nutrition education programs, and substantial improvements to health infrastructure.

Keywords: chronic malnutrition; socioeconomic factors; Ecuador; children

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RESUMEN

Introducción: la desnutrición infantil es un problema de salud pública que afecta a millones de niños en todo el mundo, especialmente en países en vías de desarrollo. En Ecuador es un desafío de salud pública de magnitud crítica. **Objetivo:** identificar y analizar la relación existente entre los factores socioeconómicos que caracterizan a los padres de familia con la desnutrición crónica en niños menores de dos años, en la Parroquia Julio Andrade, Ecuador, en el periodo enero-mayo de 2024. **Método:** se realizó una investigación cuantitativa, descriptiva y correlacional. Se aplicaron encuestas dirigidas a los padres de familia (n=43) para recopilar información sobre ingresos familiares, acceso a servicios básicos y condiciones de vida en general. Se efectuó, además, un análisis de los datos antropométricos de los niños, lo que permitió cuantificar y evaluar con precisión el estado nutricional. **Resultados:** se reveló una alta incidencia de bajos ingresos económicos entre las familias encuestadas: el 76.7 % percibe menos de USD 200.00 al mes. Asimismo, se encontró que el 65,1 % poseía un acceso restringido a bonos gubernamentales y deficiencias significativas en servicios básicos como agua potable (53,5 % con suministro de agua entubada) y alcantarillado (55,8 % utiliza fosas sépticas). Como consecuencia directa, una proporción alarmante de niños presentó talla baja moderada o severa. **Conclusión:** la pobreza y la carencia de servicios básicos son determinantes fundamentales en la desnutrición crónica infantil en Ecuador. Se requiere la implementación de políticas públicas integrales que abarquen asistencia económica, programas de educación nutricional y mejora sustancial de la infraestructura sanitaria.

Palabras clave: desnutrición crónica; factores socioeconómicos; Ecuador; niños

RESUMO

Introdução: a desnutrição infantil é um problema de saúde pública que afeta milhões de crianças no mundo todo, especialmente em países em desenvolvimento. No Equador, este é um desafio de saúde pública de magnitude crítica**. Objetivo:** identificar e analisar a relação entre os fatores socioeconômicos que caracterizam os pais e a desnutrição crônica em crianças menores de dois anos, na Paróquia Julio Andrade, Equador, no período de janeiro a maio de 2024. **Método:**foi realizada uma pesquisa quantitativa, descritiva e correlacional. Pesquisas foram administradas aospais (n=43) para coletarinformações sobre renda familiar, acesso a serviços básicos e condiçõesgerais de vida. Tambémfoi realizada umaanálise dos dados antropométricos das crianças, o que permitiuumaquantificação e avaliação precisa do seu estado nutricional. **Resultados:**foi revelada uma alta incidência de baixa renda entre as famílias pesquisadas: 76,7% ganham menos de US$ 200,00 por mês. Constatou-se também que 65,1% tinhamacessorestrito a títulos públicos e deficiências significativas emserviços básicos como águapotável (53,5% comabastecimento de água encanada) e esgoto (55,8% utilizavamfossa séptica). Como consequênciadireta, umaproporção alarmante de criançasapresentoubaixa estatura moderada ou grave. **Conclusão:** a pobreza e a falta de serviços básicos são os principais determinantes da desnutrição infantil crônica no Equador. É necessária a implementação de políticas públicas abrangentes, incluindoassistênciaeconômica, programas de educação nutricional e melhoriassubstanciais na infraestrutura de saúde.

Palavras-chave: desnutrição crônica; fatores socioeconômicos; Equador; crianças

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INTRODUCTION

Child malnutrition is a public health problem that affects millions of children worldwide, especially in developing countries. According to the World Health Organization (WHO), in 2022 approximately 149 million children under 5 years of age were stunted due to chronic malnutrition.[1] In Latin America, Ecuador is the country with the second highest rate of chronic child malnutrition; it affects three out of every ten children between 3 and 5 years of age, which represents between 201 000 and 221 000 children.[2] This problem is aggravated by multiple socioeconomic factors that make access to adequate food and quality health services difficult.[3]

Socioeconomic determinants, such as family income level, parental education level, working conditions and access to health services have a significant impact on the prevalence of child malnutrition.[4] Previous studies have indicated that lack of access to nutritious food and a healthy environment is related to underweight and stunting in children under five years of age.[5] Poverty is a determining factor, as it prevents families from acquiring quality food and hinders access to efficient health systems. An analysis conducted in Ecuador found that 76.7 % of families with malnourished children have incomes of less than US$200 per month, demonstrating a direct relationship between poverty and malnutrition.[6]

Likewise, limited access to government support programs contributes to the perpetuation of this problem. Despite the fact that the Constitution of the Republic of Ecuador establishes the right to food security and the protection of children,[7] many children continue to be vulnerable without receiving adequate benefits. Research has shown that deficiencies in drinking water and sanitation increase the risk of gastrointestinal diseases, which has a negative impact on child nutrition.[8] A study conducted in Mexico reported that localities with less than 100,000 inhabitants have higher malnutrition rates due to the lack of adequate basic services.[6]

Given the impact of childhood malnutrition on children's cognitive and motor development, it is crucial to establish effective nutritional intervention strategies. Health and nutrition education plays an essential role in the prevention of malnutrition, as indicated by Araujo, who highlights the importance of oral health and nutrition education programs in Latin America.[9] In addition, organizations such as Action Against Hunger have emphasized the need to implement child growth monitoring and nutritional supplementation programs to mitigate this crisis.

METHOD

The research used a quantitative approach to identify the relationship between socioeconomic factors of parents and chronic malnutrition in children less than two years of age, attended at the Julio Andrade Parish Health Center from January to May 2024.

Forty-three families from this parish, considered the most populated rural parish in the canton of Tulcán and the third in the province of Carchi, Ecuador, were studied.

This method is characterized by its rigor and systematicity, which allows the analysis and verification of information through empirical data. Descriptive research will be used to detail the relationship between variables, specifically the fundamental characteristics of the phenomena studied.

The correlational research will seek to determine the association between socioeconomic factors and chronic malnutrition, which responds to questions about anthropometric indicators and the influence of socioeconomic factors.

A cross-sectional study will be incorporated to analyze the characteristics of the population at a specific time by describing the variables and their interrelation. Bibliographic research will collect information from various sources, such as scientific journals and Ministry of Public Health guidelines, to establish a solid theoretical framework.

Field research will collect data directly from the natural environment of the study subjects, through surveys directed to parents. This method will allow understanding and observing the socioeconomic and food dynamics in their real context.

Data collection was done through surveys, designed to obtain detailed information on socioeconomic factors and their influence on chronic child malnutrition. This comprehensive approach allowed for an in-depth analysis of the variables under study.

RESULTS

The distribution of economic income in the surveyed population showed a predominance of low income (Table 1). The majority of the participants (44.2 %) earn less than US$100 per month and, when adding those earning up to US$200, 76.7 %, which indicated that more than three quarters of the sample face limited economic conditions.

Only 14% reported incomes between $250 and $350, while only 4.7% receive the basic salary of $460. On the other hand, 4.7% managed to exceed this figure, which showed that less than 10% of the respondents have a stable salary or higher.

This distribution reflects a marked economic inequality, where the majority found themselves in a vulnerable situation, with few opportunities to achieve higher incomes (Table 1).

Table 1: Income of parents

What is your income?	Frequency	% of Total	% Accumulated
Less than 100 dollars	19	44, 2	44,2
100 to 200 dollars per month	14	32,6	76,7
250 to 350 dollars per month	6	14,0	90,7
Base salary (460 dollars)	2	4,7	95,3
More than base salary	2	100,0	4,7

Only 34.9% of the participants receive some type of bonus, while the majority (65.1%) does not have this economic support. This shows that more than half of the sample does not have access to additional benefits that could improve their financial situation and may aggravate the economic vulnerability observed in income.

Table 2: Access to some type of voucher

Do you receive any type of bonus?	Frequency	% of Total	% Accumulated
Yes	15	34,9	34,9
No	28	65,1	100,0

The majority of the families surveyed have between two and three children (58.1% of the sample). Some 37.2% of the families have only one child, while only 4.7% have between three and four children. These data suggested that the predominant family structure in the surveyed population is of nuclei with two to three children, which may influence the distribution of economic resources and social support needs (Table 3).

Table 3: Number of children in the family

Number of children in the family	Frequency	% of Total	% Accumulated
One child	16	37,2	37,2
Two to three children	25	58,1	95,3
Three to four children	2	4,7	100,0

Regarding basic services in the surveyed households, 100 % have access to electricity (Table 4). However, in terms of water supply, 46.6 % have potable water, while 53.5 % have piped water. In terms of sanitation, 46.5 % of households are connected to the sewerage system, while 55.8 % use a septic tank. On the other hand, only 34.9 % of households have internet or telephone access, which could limit connectivity and access to information. These data reflect that, although access to electricity is universal, there are still challenges in the provision of drinking water, sanitation and internet.

Table 4: Basic services available to the household

Basic services available to the household	Frequency	% of Total
Drinking water	20	46,6
Piped water	23	53,5
Electricity	43	100,0
Sewage	20	46,5
Septic tank	23	55,8
Internet/phone	15	34,9

The majority of children (58.1 %) consume five daily rations, including breakfast, snack, lunch, lunch and dinner, which indicated a more complete and balanced diet. A 16.3 % of the children have a diet of four servings a day, while 4.7 % have only three servings a day. On the other hand, 14% of the children are exclusively breastfed on demand, and 4.7% combine breastfeeding with formula.

It should be noted that 2.3 % of the children only consume two meals a day, which could represent a risk to their nutrition and development. These data suggest the importance of strengthening strategies to ensure adequate nutrition in childhood. All of the above can be seen in Table 5 below.

Table 5: Number of servings consumed by the child

Number of servings consumed daily by the child	Frequency	% of Total	% Accumulated
Breakfast - lunch	1	2,3	2,3
Breakfast - lunch - snack	2	4,7	7,0
Breakfast - snack - lunch - dinner	7	16,3	23,3
Breakfast - snack - lunch - snack - dinner	25	58,1	81,4
Breastfeeding on demand	6	14,0	95,3
Breastfeeding and/or formula feeding on demand	2	4,7	100,0

The data analyzed showed a high percentage of children less than two years of age with chronic malnutrition, presenting moderate and severe short stature in comparison with normal growth values (Size 6). It was observed that both boys and girls were affected, although cases of severe short stature appeared more frequently in the male group. Negative standard deviations, mostly below -2, confirm a significant growth deficit, with some alarming cases, such as a 14-month-old boy with a deviation of -4.41 and a 10-month-old girl with a deviation of -3.29.

Table 6: Children under two years of age with chronic malnutrition

Sex	Age (month)	Diagnosis	Standard Deviation	Length (cm)	Normal (cm)
Female	6	Moderate low height	-2,91	62,0 cm	66 cm
Male	6	Moderate low height	-2,09	64,5 cm	68 cm
Female	5	Moderate low height	-2,34	60,0 cm	62,66 cm
Female	5	Moderate low height	-2,49	60,5 cm	62,66 cm
Male	15	Moderate low height	2,77	65,8 cm	77-78 cm
Female	10	Severe low height	-3,29	64,8 cm	73 cm
Female	20	Moderate low height	-2,44	78,0 cm	81 cm
Female	12	Moderate low height	-2,48	69,5 cm	74 cm
Female	12	Moderate low height	-2,22	66,5 cm	74 cm
Male	11	Severe low height	-3,02	67,5 cm	73 cm
Male	22	Moderate low height	-2,03	76,0 cm	82-88 cm
Male	15	Moderate low height	-2,15	70,0 cm	77-78 cm
Female	20	Moderate low height	-2,77	78,2 cm	81 cm
Male	14	Severe low height	-4,41	67,0 cm	76-78 cm
Male	13	Moderate low height	-2,05	72,0 cm	76-78 cm
Male	21	Moderate low height	-2,72	75 cm	80-85 cm
Male	20	Moderate low height	-2,16	78,5 cm	82 cm
Female	20	Moderate low height	-2,93	72,5 cm	82 cm
Male	19	Moderate low height	-2,19	73,0 cm	78-82 cm
Male	19	Moderate low height	-2,24	74,5 cm	78-82 cm
Male	5	Moderate low height	-2,35	63,8 cm	68 cm
Female	5	Severe low height	-3,23	59,0 cm	66 cm
Male	16	Moderate low height	-2,45	71,0 cm	77-78 cm
Male	12	Moderate low height	-2,07	64,5 cm	76 cm

DISCUSSION

The analysis of the socioeconomic factors that influence chronic child malnutrition confirms the hypothesis that poverty is a key determinant of this problem. Studies such as that of Cevallos have shown that the lack of economic resources limits access to nutritious food and quality health services, perpetuating the cycle of malnutrition in the most vulnerable populations.[3] In addition, the low coverage of state assistance aggravates the situation, since only 34.9% of the families surveyed receive some type of economic support, which highlights the lack of effective policies in the fight against child malnutrition.[5]

One of the most alarming findings of this research is the relationship between malnutrition and deficiencies in basic services. The lack of access to potable water and adequate sanitation in 46.6% of the households studied represents a significant risk factor, as it increases the prevalence of infectious diseases that affect the nutritional development of children.[9] These conditions have been previously documented in studies by UNICEF Ecuador, which indicate that child malnutrition is not only a food problem, but also a problem of access to infrastructure and essential services for public health.[10]

The problem of the high percentage of children under two years of age with chronic malnutrition seems to occur from early ages, with children under 6 months of age already showing signs of growth retardation, which could be related to deficiencies in feeding or breastfeeding.[11] As the months progressed, the trend was maintained, suggesting that nutritional impairment was not being corrected with complementary feeding. In the group of children aged 1 year and older, most of them are still smaller than expected, which implies that the problem persists and could have long-term repercussions on their physical and cognitive development.

When comparing the recorded heights with the normal values expected for age, worrisome differences of up to 12 cm below the standard were noted. A 14-month-old boy with a height of 65.8 cm should measure between 77 and 78 cm, while a 12-month-old girl with a height of 66.5 cm should reach 74 cm.[12] These differences demonstrate a significant restriction in growth, which may affect not only physical development, but also learning ability and general health in the future.

The presence of severe standard deviations and the lack of growth recovery over time indicated the urgent need to implement nutritional intervention strategies. It is essential to strengthen supplementation programs, guarantee access to a balanced diet and promote adequate breastfeeding to prevent and reduce the impact of chronic malnutrition in this child population.

The evidence gathered highlighted the urgency of implementing multisectoral strategies that address malnutrition from a comprehensive approach. According to the Ministry of Public Health of Ecuador, the promotion of healthy eating, together with nutritional monitoring and supplementation programs, is essential to reduce the incidence of chronic undernutrition in children under five years of age.[13] Likewise, parental education on the importance of a balanced diet and access to health services has proven to be a key tool in the prevention of this problem.[14]

Chronic child malnutrition in Ecuador remains a public health challenge with multiple underlying factors. It is imperative that the government and international organizations strengthen social assistance and nutrition education policies to combat this problem. Recent studies have shown that the combination of economic assistance, health education programs, and access to adequate basic services is the most effective strategy to reduce the prevalence of undernutrition in vulnerable populations.[15]

CONCLUSIONS

Child malnutrition in Ecuador continues to be a serious challenge that affects the physical and cognitive development of children, especially in rural and low-income areas. Socioeconomic factors such as poverty, lack of access to nutritious food and poor health service coverage contribute significantly to the prevalence of this condition.

Deficiencies in basic services, such as drinking water and sanitation, further aggravate the situation. It is crucial to implement more effective public policies that address malnutrition from a comprehensive perspective, including nutrition education, economic assistance and improved health infrastructure. Inter-institutional cooperation and social awareness are essential to reduce malnutrition and ensure the well-being of future generations.

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conflicts of interest:
The authors declare that there are no conflicts of interest.

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Laura Dayanara Lobato Villarreal:conceptualization, formal analysis, fund acquisition, data curation, research, methodology, project management, visualization, resources, drafting-revising and editing.
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Graciela del Socorro AlpalaCanacuan:research, methodology, validation, visualization, original drafting, writing-revising and editing.
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