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Mons. Abraham Escudero

Autor de correspondencia.

Lina Marcela León Idárraga
marcelaleon770@gmail.com,

Autores

1. Programa de Enfermería, Fundación
Universitaria del Área Andina
Caicedonia, Valle del Cauca
Correo electrónico:
marcelaleon770@gmail.com,
lleon68@estudiantes.areandina.edu.co
Orcid: <https://orcid.org/0009-0006-1963-1496>

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Malnutrition in children under 5 years of age in an ICBF children's home

Malnutrición en niños menores de 5 años en un hogar infantil del ICBF

Lina Marcela León Idárraga¹

Abstract

Taking into account that CONPES 113 of 2008 considers malnutrition as a potential situation where there may be a shortage of food supply, changes in the initial endowment of income and/or physical and human assets, and/or change in their purchasing power, which leads to an imbalance in nutrient intake, both due to deficit (malnutrition) and excess (overweight and obesity), or specific micronutrient deficiencies (WHO – UNICEF), the present research was formulated, which aimed to analyze the risk factors that affect malnutrition in children under five years of age in the ICBF children's home in the municipality of Caicedonia. Valle del Cauca. Materials and Methods: A quantitative cross-sectional correlational approach was used, with anthropometric evaluation of the 145 children enrolled in this home. In addition, surveys were applied to 145 parents and/or primary caregivers. Results: The results show that 23.4% of children are at risk of overweight and 0.7% of children are at risk of acute malnutrition. Conclusions: It is concluded that the risk factors associated with malnutrition are education, economic capacity and inadequate eating practices in early childhood, associated with cultural traditions that affect balanced feeding and exclusive breastfeeding.

Keywords: Nutritional status; anthropometric measurements; malnutrition; early childhood; malnutrition.

Resumen

Teniendo en cuenta que el CONPES 113 de 2008 considera la malnutrición como una situación potencial donde puede existir escasez de oferta de alimentos, cambios en la dotación inicial de ingresos y/o de activos físicos y humanos, y/o cambio en su poder adquisitivo, lo que conduce a un desequilibrio en la ingesta de nutrientes, tanto por déficit (desnutrición) como por exceso (sobrepeso y obesidad), o por deficiencias específicas de micronutrientes (OMS – UNICEF), se formuló la presente investigación, la cual tuvo como propósito analizar los factores de riesgo que inciden en la malnutrición en niños y niñas menores de cinco años en la casa de niños del ICBF del municipio de Caicedonia, Valle del Cauca. Materiales y Métodos: Se utilizó el enfoque cuantitativo de tipo correlacional de corte transversal, con evaluación antropométrica de los 145 niños inscritos en dicho hogar. Además, se aplicaron encuestas a 145 padres de familia y/o cuidadores primarios. Resultados: En los resultados se evidencia que, un 23,4% de los niños existe el riesgo de sobrepeso y un 0,7% de los niños tiene riesgo de desnutrición aguda. Conclusiones: Se concluye que los factores de riesgos asociados con la malnutrición son de educación, capacidad económica y prácticas alimentarias inadecuadas en primera infancia, asociado a tradiciones culturales que afectan la alimentación balanceada y la lactancia materna exclusiva.

Palabras clave: Estado nutricional; medidas antropométricas; malnutrición; primera infancia; malnutrición.

Introduction

Malnutrition in early childhood is a global public health problem that is affecting the physical, cognitive, and emotional development of children. Malnutrition among children under five in Colombia manifests primarily as acute malnutrition, a condition that affects children's growth, cognitive development, and overall health. This issue is officially recognized as a public health concern due to its high prevalence and serious consequences, including the risk of death. To address it, the country has implemented policies such as the 2022–2031 Ten-Year Public Health Plan, Resolution 2350 of 2020, and ICBF strategies such as "1,000 Days to Change the World." These actions aim to prevent, detect, and treat child malnutrition through a comprehensive approach.

This is a global problem that has not been reduced despite the efforts of governments. In Colombia, reports from the National Institute of Health highlight the presence of cases of child malnutrition among children under five years of age—a situation that is not uncommon in Valle del Cauca and, consequently, in the municipality of Caicedonia.

According to Luna et al., malnutrition is a condition of imbalance between the nutrients the body needs and those it receives; it represents a discrepancy between deficiency and the body's requirements. For Chocano et al., obesity is a condition

characterized by excess body fat that affects people's health. This is due not only to dietary issues but also to genetic factors such as hereditary predisposition, or to lifestyle factors related to a lack of physical activity, a sedentary lifestyle, stress, anxiety, or medical conditions such as hypothyroidism or Cushing's syndrome.

Robles, Bustamante et al., and Macias and Ruiz, in their respective studies, identified the following factors associated with malnutrition in children under five: low educational attainment among parents, limited access to health services, socioeconomic conditions related to poverty, family living conditions, lack of medical checkups, mothers' low educational level, food shortages, and food insecurity; given this situation, they propose the need to strengthen public policies on social protection and nutrition education, as well as to improve institutional assistance and presence in the region.

Similarly, Madero et al. evaluated the effectiveness of implementing the Integrated Management of Childhood Illnesses (IMCI) strategy in Cartagena, Colombia, as part of institutional efforts to promote exclusive breastfeeding, complementary feeding, the use of micronutrients, and the prevention of impairments in the mental and social development of children under five years of age. Consequently, the study demonstrated a strong positive correlation between age and the inclusion of complementary foods as part of the IMCI strategy; that is, the higher the proportion of healthy foods in children under 5 years of age, the more optimal their physical development. Likewise, Urrego et al. analyzed the factors contributing to malnutrition and acute malnutrition in the department of Valle del Cauca between 2016 and 2019, highlighting their association with low birth weight, enrollment in the Growth and Development program, mothers or caregivers with a secondary education, reduced duration of breastfeeding, and membership in ethnic communities.

These findings reflect a structural social and public health problem in Colombia, related to the fact that, in many cases, dietary habits in early childhood are inadequate. Socioeconomic and educational status influence the risk of malnutrition, due to limited financial capacity to purchase healthy and nutritious foods for children. On the other hand, a search of various scientific and academic journal databases from universities revealed no recent local or rural-context literature related to the topic of this study, which underscores the practical significance of this research in contributing to the systematization of scientific knowledge.

Regarding the disciplinary framework in nursing, the Nightingale model was adopted, focusing on the interaction between the environment and the patient to foster a

healthy environment in terms of hygiene, well-being, nutrition, and comprehensive care. In turn, this aligns with Henderson's fourteen needs, which address the professional responsibility of nursing and autonomous practice to support individuals in meeting their basic needs, such as nutrition and hydration. These aspects, combined with the ecological model of the social determinants of health, highlight individual, family, community, and structural factors that interact with nutritional status in early childhood.

It is worth noting that child malnutrition is one of the leading causes of morbidity and mortality among children under five worldwide and represents a priority challenge in public health—particularly in light of Resolution 3280 of 2018, which emphasizes the role of educating caregivers to maintain the health of children under five. In Colombia, the National Survey on Nutritional Status revealed that 10.8% of children under 5 suffer from chronic malnutrition, with higher rates in rural and vulnerable areas. This strongly indicates the need for intervention by health professionals, whose role is to provide comprehensive care for individuals, families, and communities.

In Caicedonia, Valle del Cauca, socioeconomic and environmental conditions persist that contribute to this problem, especially among children attending the childcare center run by the Colombian Institute of Family Welfare, which employs health professionals to monitor and manage this population as well as their primary caregivers.

It should be noted that scientific evidence shows that malnutrition is not exclusively related to food shortages.

Rather, it also points to structural factors such as a lack of health education, inadequate feeding practices for children, insufficient medical supervision, and poor hygiene. This allowed the research to identify and analyze risk factors, leading to the proposal of an intervention based on context-specific strategies that promote health at both the institutional and family levels.

The research strengthened the professional competencies and skills of nurses, thereby addressing a gap in local research.

It is vitally important to analyze the potential situations that lead to child malnutrition. This involves reflecting on conceptual and theoretical aspects of malnutrition, the socioeconomic model, social determinants of health, and anthropometric indicators. Furthermore, it allows for an analysis of the importance of interventions based on

scientific evidence established through nursing models and theories, such as the environment-patient-human needs theory.

The research question was defined as follows: What factors influence malnutrition in children under 5 years of age at the ICBF children's home in Caicedonia, Valle del Cauca?

The general objective was to identify the factors related to malnutrition in children under 5 years of age at the ICBF children's home in Caicedonia, Valle del Cauca. To this end, the following course of action was proposed: a) Analyze sociodemographic and socioeconomic variables of the children and their families, such as income, educational level, and housing conditions; b) Describe eating habits and dietary practices; c) Assess the children's nutritional status using anthropometric indicators (weight, height, body mass index); d) Establish the statistical relationship between the assessed factors and the children's nutritional status, determining their impact.

A quantitative methodological approach was adopted, employing rigorous methodology for the collection and analysis of data gathered using a semistructured survey instrument.

Methodology

The study adopted a quantitative approach, using a cross-sectional correlational design, aimed at identifying the relationship between sociodemographic, socioeconomic, and nutritional variables and the health status of children under five years of age who are cared for at an ICBF childcare center in the municipality of Caicedonia, Valle del Cauca.

The study population consisted of 145 children—57.72% boys and 46.26% girls—along with their parents and caregivers. This was a non-probabilistic convenience sample, intended to include all children who regularly attend the daycare center.

To select participants, all parents or primary caregivers of children under 5 years of age attending the ICBF childcare center in Caicedonia, Valle del Cauca, were invited to participate. Therefore, the inclusion criterion was defined as considering only the children enrolled in the childcare center and their parents or caregivers. The exclusion criteria stipulated that children enrolled in the daycare center who did not provide their consent and willingness to participate in the study would not be included.

Direct observation techniques were employed, and a semistructured questionnaire was administered to the parents or caregivers. Anthropometric data were obtained through standardized weight and height measurements, in accordance with WHO guidelines and Resolution 2465 of 2016.

Anthropometric measurements were taken for all children attending the childcare center to determine their BMI and classify their nutritional status. Additionally, the data were recorded in an Excel spreadsheet.

Anthropometric measurements were taken using the following tools: Weight: Calibrated ATE SECA digital scales with a capacity of 150 kg; Height: Stadiometers with periodically verified accuracy. This is not a digital instrument. A SECA model 2013 stadiometer was used. It is white in color.

The reference values for anthropometric measurements are shown in Table 1.

Table 1. *Reference Variables for Malnutrition in Colombia*

Indicador	Clasificación	Prevalencia Nacional	Prevalencia Valle del Cauca	Umbral OMS
Desnutrición crónica (Talla/Edad < -2 DE)	Moderada/Severa	10,8%	13,2%	< 2.3% (aceptable)
Desnutrición aguda (Peso/Talla < -2 DE)	Emaciación	0,9%	1,1%	< 5% (aceptable)
Sobrepeso/Obesidad (IMC/Edad > +2 DE)	Exceso de peso	6,3%	7.5%	< 5% (aceptable)
Anemia (Hb < 11 g/dL)	Deficiencia de hierro	24,4%	26,8%	< 20% (aceptable)

In this vein, the study was conducted in accordance with the current Helsinki Guidelines, as adopted in Resolution 8430 of October 4, 1993, and in Colombia based on Law 1164 of 2007, Article 34, regarding the principles, values, rights, and duties of health professionals, with a focus on ensuring the confidentiality of participants, while respecting human integrity and dignity. The data provided were used solely for academic purposes to safeguard human rights.

Additionally, risk minimization measures were implemented to ensure safety and protect participants' reputations. In other words, the research is low-risk, as it relies

on the use of a questionnaire to minimize intervention with the children, involving only an external physical anthropometric examination.

All participants signed an informed consent form after receiving an explanation of the study's objectives, benefits, and risks, and were informed that their participation was voluntary. They also confirmed that they understood the results would be stored anonymously and used for research purposes.

Participants were informed of their right to withdraw at any time.

Additionally, the participants' identities were protected through the assignment of codes, ensuring that data were stored securely and that only the researchers would have access to the information. Statistical analysis was performed using specialized SPSS software, employing descriptive statistics, frequency analysis, and correlation to determine the relationship between identified factors and nutritional status. The study was conducted in compliance with the ethical principles of confidentiality, respect, and informed consent.

Results

To describe sociodemographic and socioeconomic aspects, a semi-structured online survey was administered. The data, collected via Google Forms, were downloaded into an Excel file for subsequent coding, which allowed the data to be imported into the SPSS statistical software. In the first section of this survey, 145 parents or caregivers of children at the ICBF Children's Home in the municipality of Caicedonia participated.

The sociodemographic characteristics of the participants are presented in Table 2. The study included 145 caregivers, of whom 5.5% were men and 94.5% were women. Regarding the children in their care, there were 70 girls and 75 boys.

Table 2. *Child's Age*

Edad		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	1	3	2,1	2,1	2,1
	2	31	21,4	21,4	23,4
	3	37	25,5	25,5	49,0
	4	58	40,0	40,0	89,0
	5	16	11,0	11,0	100,0
	Total	145	100,0	100,0	

The average age of the children was 4 years, with a frequency of 40%. Regarding the educational level of the primary caregiver for the children, 1.4% reported not having completed elementary school, 8.3% reported having completed elementary school as their highest level of education, and 42.8% reported having completed high school. Some 30.3% have technical or technological training, and 17.2% have vocational or university training.

Sociodemographic and Socioeconomic Conditions

Regarding sociodemographic and socioeconomic conditions, the following stands out:

Table 3. *Gender of the Child*

Género		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Masculino	75	51,7	51,7	51,7
	Femenino	70	48,3	48,3	100,0
	Total	145	100,0	100,0	

17.2% of the children were diagnosed with conditions affecting cognitive and nutritional development

In terms of socioeconomic status, 2.1% of caregivers reported constant financial constraints, and 24.8% stated that they sometimes face difficulties in accessing sufficient and nutritious food. Some children have been diagnosed with a disability or diverse abilities, such as Down syndrome, which is associated with slow physical and cognitive development in children.

Table 4. *Children with some form of disability*

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Sí	2	1,4	1,4	1,4
	No	143	98,6	98,6	100,0
	Total	145	100,0	100,0	

Participants reported having access to basic services such as drinking water, sewerage, and electricity, natural gas, or propane. 100% responded that they have access to drinking water, natural gas, or, in some cases, purchase liquefied petroleum gas (LPG) in tanks.

Table 5. *Premature birth*

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Sí	4	2,8	2,8	2,8
	No	141	97,2	97,2	100,0
	Total	145	100,0	100,0	

Parents and caregivers report living in decent conditions, with some unmet needs, although they are able to ensure the necessary home health conditions for their child.

Table 6. *Monthly Household Income*

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Menos de 1 SMLV	69	47,6	47,6	47,6
	1 a 2 SMLV	64	44,1	44,1	91,7
	Más de 2 SMLV	12	8,3	8,3	100,0
	Total	145	100,0	100,0	

Some participants reported earning less than \$900,000 per month, which poses a risk to family sustainability and limits their purchasing power—for example, when buying vegetables, fruits, red meat, chicken, or fish to ensure a balanced diet. Considering

that some households consist of more than three people, they must pay rent and face increased risks associated with informal employment.

Description of Eating Habits and Practices

Regarding the age at which participants were exclusively breastfed, some data are highlighted in Table 7.

Table 7. *Age at the Start of Exclusive Breastfeeding*

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
	0	20	13,8	13,8	13,8
	1	3	2,1	2,1	15,9
	2	8	5,5	5,5	21,4
	3	6	4,1	4,1	25,5
	4	11	7,6	7,6	33,1
	5	10	6,9	6,9	40,0
	6	25	17,2	17,2	57,2
	7	2	1,4	1,4	58,6
	8	6	4,1	4,1	62,8
	9	4	2,8	2,8	65,5
	10	1	,7	,7	66,2
Válido	11	1	,7	,7	66,9
	12	18	12,4	12,4	79,3
	13	1	,7	,7	80,0
	15	1	,7	,7	80,7
	16	1	,7	,7	81,4
	18	14	9,7	9,7	91,0
	20	2	1,4	1,4	92,4
	24	7	4,8	4,8	97,2
	34	1	,7	,7	97,9
	36	2	1,4	1,4	99,3
	48	1	,7	,7	100,0
	Total	145	100,0	100,0	

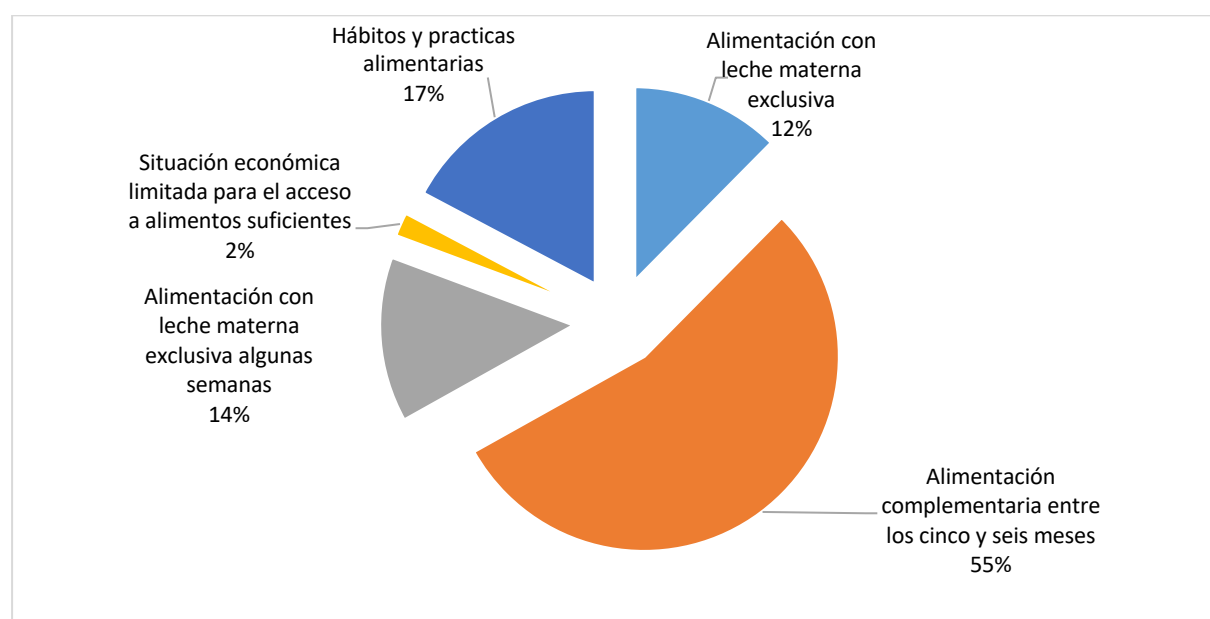
4.8% of children were fed complementary foods between birth and one month of age. Consequently, the consequences of not exclusively breastfeeding a baby are associated with an increase in infectious diseases, the risk of acute or chronic malnutrition, long-term health problems, a significant negative impact on social and mental health, as well as medical risks.

Table 8. *Results on Feeding Habits and Practices*

Variables	Frecuencia	Porcentaje
Alimentación con leche materna exclusiva	18	12,41%
Alimentación complementaria entre los cinco y seis meses	79	54,48%
Alimentación con leche materna exclusiva algunas semanas	20	13,79%
Situación económica limitada para el acceso a alimentos suficientes	3	2,07%
Hábitos y practicas alimentarias	25	17,25%

The results showed that 2.76% of the children had a history of preterm birth, 2.1% were exclusively breastfed for only one month, while 12.41% were not exclusively breastfed.

Figure 1. *Results on Feeding Habits and Practices*



Regarding the number of meals children consume daily, 57.24% are given more than three meals a day, 42.07% are given three meals a day, and 0.69% are given two meals a day. It is noteworthy that survey participants reported giving their children snacks between meals, both in the morning and in the afternoon.

Health Status Assessment: Anthropometric Indicators

30.34% weigh between 14 and 15 kg, 15.17% weigh 13 kg, and 13.10% weigh 16 kg. The lowest recorded weight is 10 kg, and the highest is 26 kg. This suggests that the children's weights are within a normal range for their age. This is because growth and development in early childhood are rapid and depend on the child's nutrition and care. As shown in Table 9.

Table 9. Average BMI Status of Children at the ICBF Children's Home in the Municipality of Caicedonia

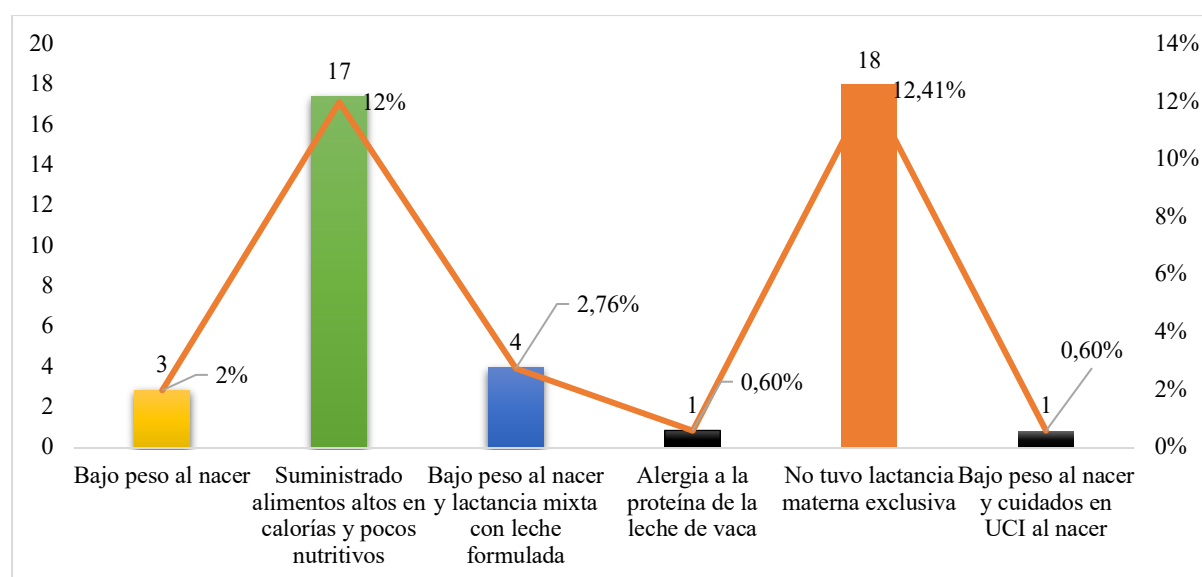
Diagnóstico nutricional (según referencia OMS):				
	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Riesgo de sobrepeso	34	23,4	23,4
	Sobrepeso	5	3,4	26,9
	Obesidad	3	2,1	29,0
	Riesgo desnutrición aguda o severa	1	0,7	29,7
	Desnutrición	3	2,1	31,7
	Peso adecuado para edad	86	59,3	91,0
	Talla adecuada para edad	13	9,0	100,0
	Total	145	100,0	100,0

These data show that, based on the average BMI Z-scores for children, 6% are obese, 1% are overweight, and 1% are malnourished. Additionally, 92% of children have a normal weight for their age. Thus, approximately 8% of the children are malnourished, and it is necessary to plan follow-up measures for physical health, such as nutritional monitoring

Determinants of Malnutrition in Children Under 5 Years of Age

Taking into account the data on the sociodemographic conditions of the children's households and the survey conducted with some parents, several risk factors were identified, such as the following:

Figure 2 Determinants of malnutrition among children in the ICBF facility in Caicedonia



2.76% were born prematurely; 2.1% of the children were exclusively breastfed for only one month; 12.41% of the children were not exclusively breastfed; 33.1% of the children were exclusively breastfed between birth and four months of age; 17.2% of the children have been diagnosed with a condition affecting their development, particularly in cognitive and nutritional areas;

93% of mothers state that they have not received guidance on infant feeding. In cases where a diagnosis of a condition was reported, participants indicated that it was related to obesity (1) and low weight or malnutrition (2). Additionally, 47.6% of mothers report that their household income is below the current legal minimum wage.

In fact, 2.1% of caregivers state that financial constraints are common, and 24.8% report that they sometimes struggle to purchase sufficient and nutritious food for their child or children.

These situations can increase the risk of malnutrition in children due to economic factors, low purchasing power, and limitations in buying healthy foods such as fruits, vegetables, legumes, fish, and chicken. However, this situation is linked to the rising cost of the basic food basket. Regarding cultural factors and eating habits, the risk is low, as mothers strive to ensure basic nutritional intake; nevertheless, high consumption of sweets, ultra-processed foods, and foods high in salt affects children's development, leading to obesity, diabetes, and musculoskeletal and cardiovascular diseases.

Breastfeeding is the cornerstone of children's development during their earliest stages of growth, offering biological, physical, and psychological benefits linked to the rights to life and health as the foundation for healthy development in early childhood.

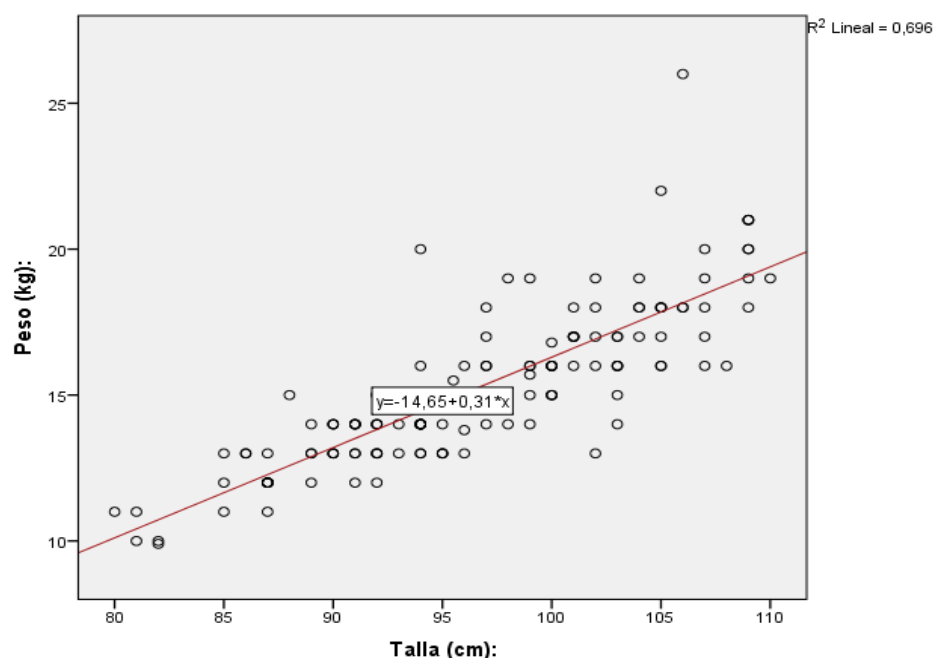
Thus, social inequalities influence nutrition, and breast milk is vital for newborns. The practice of exclusive breastfeeding during the first months of life faces cultural barriers and misinformation; therefore, it is necessary to promote breastfeeding as a collective responsibility.

Malnutrition at the ICBF children's home in Caicedonia stems from socioeconomic factors and feeding practices. This is due to a diet consisting of ultra-processed foods high in sugars and fats. This is compounded by a sedentary lifestyle resulting from low physical activity and excessive screen time.

Correlation Between Variables

Tests such as the chi-square test, t-test, and ANOVA were used to identify associations between independent variables. In this case, the correlation coefficient between the weight and height variables was analyzed.

Figure 3. Correlation between the variables weight and height



Regarding the correlation between variables, weight and height showed a correlation coefficient of 8.8, which is considered a strong correlation. These results suggest the presence of risk factors associated with malnutrition, particularly those related to caregivers' education, income level, and the lack of adequate feeding practices during the first months of life. However, this finding indicates that if there is a combination of short stature and low weight, an alarming situation exists that must be addressed—possibly related to an inadequate, nutrient-poor diet; recurrent illnesses; or socioeconomic conditions such as poverty and limited access to nutritious foods.

It can be observed that 68.3% have a BMI appropriate for their age, indicating healthy children and a good nutritional foundation. Some 23.4% are at risk of being overweight, which could progress to obesity if effective intervention measures are not taken.

These data demonstrate the existence of risk factors related to malnutrition in early childhood, which have a negative future impact on children's physical, social, and psychological health. However, the prevalence and incidence of malnutrition and obesity are very low. The findings of this study—namely, that 12.41% of children were not exclusively breastfed and 1.38% were fed dietary supplements from birth—are

consistent with previous research highlighting the influence of social determinants on malnutrition.

It was found that 68.3% of the children have a weight and height appropriate for their age; 23.4% are at risk of being overweight; 0.7% are at risk of acute malnutrition; and 3.4% of the children are overweight, meaning that 31.7% of children are malnourished—a figure that warrants decision-making and the implementation of intervention measures. Consequently, Colombian households with low educational levels and limited access to healthy foods are associated with the prevalence of malnutrition in early childhood. This finding, linked to the limited practice of exclusive breastfeeding observed in this study, is also consistent with the results of Robles, who demonstrated that inadequate nutrition in children affects their well-being and development. This aligns with the Nightingale model's perspective on the quality of the environment, hygiene, and food availability—as well as access to basic services—which are determining factors in early childhood health. In other words, this research study contributes to the systematization of scientific knowledge and strengthens professional nursing practice. Furthermore, it promotes the implementation of educational strategies for health promotion and the prevention of child malnutrition, which aligns with the institutional social responsibility of the ICBF and the Areandina University Foundation. As professionals in the health sector and active stakeholders, it is necessary to strengthen institutional capacity. Consequently, this academic study has practical implications for replication and the strengthening of institutional accountability. This is in addition to the ICBF's institutional commitment to ensuring social well-being and early childhood care.

Conclusions

The main factors associated with child malnutrition at the ICBF children's home in Caicedonia were identified as socioeconomic factors and feeding practices. In accordance with the second specific objective, the lack of exclusive breastfeeding and limited access to nutritious foods are significant determinants. Regarding the third specific objective, most children are classified as having optimal nutritional status based on the anthropometric measurements taken.

However, based on the fourth specific objective, the variables of weight and height show a correlation of 0.8, which is considered strong. In other words, malnutrition in early childhood results from a complex set of causes involving biological, social, and cultural factors; furthermore, weight and height measurements change in proportion to each other, and if there is a disproportionate imbalance, it is considered a state of

malnutrition. The research aligns with SDGs 2 and 17, which focus on strategic partnerships to eradicate malnutrition worldwide; furthermore, it promotes inter-institutional cooperation among the ICBF, the health sector, and academia. From a social impact perspective, this project contributes to strengthening the technical and scientific knowledge of nursing staff, thereby enhancing the role of public management and the development of social welfare initiatives aimed at early childhood. This aligns with the university's social responsibility to foster coordination between academic training and technical-scientific responses to contextual community issues.

The academic impact lies in the generation and systematization of scientific knowledge on child malnutrition within the institutional context. The social impact is reflected in raising awareness among caregivers and professionals about the importance of adequate nutrition in the early years of life, which has long-term repercussions in the form of healthy youth and adults who contribute to the health system, leading to a reduction in cases of chronic noncommunicable diseases.

At the environmental level, the project promotes better management of food resources and healthy practices within the childcare center and among participating families, which contributes to the overall well-being of children.

It is recommended that complementary research be conducted to further explore the long-term effects of childhood malnutrition and overweight on physical and psychological development. Similarly, strategies for nutrition education and family support led by nursing professionals should be strengthened.

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