

Double burden of malnutrition in Cuban preschool children. Obesity, anemia and iron deficiency

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Introduction: Obesity is a cause invoked in iron deficiency and anemia in population; inflammation is one of the aspects related with both malnutrition forms. Non study were carried-out in Cuba exploring that aspects and preschool children is a mean risk groups of iron deficiency and anemia.

Objective: To assess nutritional status, anemia, iron deficiency and inflammation in Cuban preschool children

Materials and Methods: 1226 children 6 to 59 months old of 3 Cuban Regions (Western, Central and Easter) 2015-2017. Weight, Height and Skinfolts were measure to calculate Z Score (W/H) and adiposity and WHO standard were used for evaluation. Anemia prevalence was evaluated by Hemoglobin quantification (ABX Micros 60), Iron store depletion by ferritin, inflammation by C-reactive protein (CRP) and alfa-1 acid glycoprotein (AGP) (Immunoturbidimetric method CPM INLAB 240), Soluble transferrin receptor (sTfR as iron tissue depletion) by ELISA.

Results:

Nutritional Status in Cuban children 6-59 month old, 2015-2017

Nutrition Status	Prevalence (%)
Undernutrition	1.1
Normal	91.1
Overweight	5.8
Obese	2.2

Adiposity in Cuban children 6-59 month old, 2015-2017

Skinfold	Prevalence +2DS (%)	Prevalence +3DS (%)
Tricipital	5.5	1.4
Subscapular	7.3	1.6

Anemia, Iron Status and Inflammation in Cuban children 6-59month old, 2015-2017

Biochemical Indicator	Prevalence (%)	CI 95%
Anemia	22.3	17.6-27.1
Iron store depletion (Ferritin)	34.4	25.1-41.7
Iron tissue depletion (sTfR)	13.2	5.0-21.5
CRP (>5mg/L)	12.3	9.8-14.8
AGP (>1g/L)	34.3	27.9-40.6

No several cases of Anemia were found.

Iron store depletion was adjusted by Thurnham factor.

Conclusions: Undernutrition is not a public health problem. Overweight and obesity are not associated with anemia. Anemia was associated with iron deficiency and inflammation.

Asociation of Overweight/Obesity with biochemical indicators in Cuban children 6-59 month old, 2015-2017

Indicator	OR (CI 95%)
Anemia	0.44 (0.17-1.13)
Iron store depletion	0.51 (0.23-1.15)
Inflammation	0.91 (0.49-1.70)

Asociation of Anemia with biochemical indicators in Cuban children 6-59month old, 2015-2017(stratified by group of up to 2 year and 2-4 years old)

Indicator	ORMH (CI 95%)
Iron store depletion	2.09 (1.49-2.93)
Iron tissue depletion	2.78 (1.81-4.28)
Inflammation	1.61 (1.16-2.24)

Figure. Prevalence of anemia, iron deficiency and inflammation according to nutrition status in Cuban children 6 to 59 months, 2015-2017.

