

## CARTAS AL EDITOR

Dear Editor:

A recently published study (1) reported on the nutritional status and dietary habits of rural Guatemalan preschoolers. Forty months after the previous study, the first author revisited the village of Sapuyuca and remeasured the original subjects.

It was possible to remeasure 730/o of the children, 19 girls and 26 boys. Their age ranged from 4 years 5 months to 8 years 10 months. The families of 10 of the children had moved to other locations. The remaining seven children still lived in the village, but were unavailable for measurement on at least three attempts. It was notable that all the children originally studied were reported to be alive.

Standing height, weight, mid-upper arm circumference, triceps fatfold, and mid-upper arm muscle circumference means of the children are reported in Table 1. Height means for all age groups were greater than those in a previous Guatemalan study (2), but less than those reported by Yarbrough *et al.* for the 53 to 84-month groups (3). This discrepancy can be at least partially explained because the Yarbrough study measured recumbent length, which is usually greater than standing height. Weight means of Sapuyuca children were generally greater than those reported in two previous studies (2, 3).

Over the entire age range, mean triceps fatfolds were generally less than those in one Guatemalan study (2). Means for Sapuyuca children, however, were greater than those reported in two more recent studies (4, 5). Mean mid-upper arm circumferences also were greater than those reported in a recent publication (5).

Height, weight, and age were used to plot the position of the children studied on the U. S. National Center for Health Statistics (NCHS) growth curves (6). In order to pool male and female data

TABLE 1  
 ANTHROPOMETRIC MEASUREMENTS OF 45 GUATEMALAN CHILDREN AGED FOUR TO NINE YEARS OLD

Age	N	Mean height	Range	Mean weight	Range	Mean mid-upper arm circumference	Range	Mean triceps fatfold	Range	Mean mid-upper arm muscle circumference	Range
Months		cm	cm	kg	kg	cm	cm	mm	mm	cm	cm
48- 59	4	99.0	94.2-103.2	15.3	14.1-17.3	16.1	14.3-17.7	6.9	5.0-8.0	13.9	12.7-15.7
60- 71	17	103.5	96.1-112.1	16.4	13.6-19.3	16.0	13.7-18.1	7.7	5.5-12.0	13.6	11.3-15.5
72- 83	4	113.4	95.4-127.0	20.6	13.9-24.5	17.5	14.6-17.5	7.4	6.0-8.5	15.2	14.2-16.1
84- 95	13	113.9	105.1-125.5	19.5	16.1-25.5	16.3	14.5-17.7	6.5	4.5-9.5	14.3	12.5-15.4
96-107	7	120.1	112.6	22.2	19.5-25.9	17.1	15.6-18.2	7.3	4.5-9.0	14.8	13.8-16.0

for a larger sample and compare children to an average at any selected age, each child's measurement was divided by the fiftieth percentile of the NCHS standard for that age. These values were then plotted. Table 2 shows that, as in the previous study, weight-for-age and height-for-age percentages for these children are below average and weight-for-height percentages approach average.

Triceps fatfolds were compared also to U.S. data (7). Twenty-two percent of the Guatemalan children were below the fifth percentile. The majority, 62, were between the fifth and fiftieth percentiles. Only 16% of the children ranked above the fiftieth percentile, with no one exceeding the eighty-fifth percentile.

TABLE 2

CLASSIFICATION OF 45 CHILDREN ON NCHS 1976<sup>1,2</sup> STANDARD  
GROWTH CHARTS CORRECTED TO DESCRIBE AVERAGE  
GROWTH AT A SINGLE POINT IN TIME

Age (months)	Mean weight/age (o/o)	Mean height/age (o/o)	Mean weight/height (o/o)
48-59	88.8	94.5	99.5
60-71	85.3	92.6	99.5
72-83	99.0	96.8	101.8
84-95	82.2	92.0	98.1
96-107	83.9	93.0	100.0

<sup>1</sup> Hamill *et al.*, 1976 (6).

<sup>2</sup> Pigott and Kolasa, 1979 (1).

Gómez's weight-for-age-standards (8) were used to compare nutritional status of the children in 1976 and 1979 (Table 3). An over-all decline from 79-73.3% malnutrition was calculated. This could be due to an inability to remeasure all the subjects, or regression toward the mean, or it could reflect actual improvement in nutritional status. Examination of the individual cases revealed that, in fact, 10 children had improved. Included in this category were the two children previously classified as severely malnour-

ished. The nutritional status of two children worsened; 33 children remained the same. Seoane and Latham's method for classification of malnutrition on the basis of three parameters was utilized again (9). Current acute short duration malnutrition was indicated by normal height-for-age but low weight-for-age and weight-for-height. Past chronic malnutrition was shown by low weight-for-age and height-for-age but normal weight-for-height. Low weight-for-age, height-for-age and weight-for-height defined current long duration malnutrition. Using these criteria, eight cases (18%) were average, 22 cases (49%) were past chronic malnutrition, and 15 cases (33%) were current long duration malnutrition. Compared with the earlier study, 11 children had improved and 34 remained the same. These classifications are consistent with those obtained using the Gómez classification scheme.

TABLE 3

PERCENTAGE OF MILD, MODERATE, AND SEVERE PROTEIN-ENERGY MALNUTRITION (PEM) OF 45 CHILDREN IN A RURAL COMMUNITY IN GUATEMALA IN 1976 AND 1979

Age of children	Date	o/o PEM			Total
		Mild	Moderate	Severe	
1-5 years	1976	50.0	25.8	3.2	79.0
4-9 years	1979	51.1	22.2	0.0	73.3

Based on anthropometric data, it appears that the nutritional status of most children in this study did not improve or worsen over a period of 40 months. It would be valuable, however, to examine the diet, health, and environmental variables of the children who did improve. Such an examination might reveal beneficial practices that could be used to improve the health and nutritional status of more children.

*Jeri Pigott*  
*Research Assistant*  
*Department of Food Science*  
*and Human Nutrition*  
*Michigan State University*  
*East Lansing, MI 48824, USA*

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