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ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN AGE 1 to 24 MONTHS*

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ABSTRACT

For detection of mild to moderate degrees of malnutrition, mid-arm-head circumference ratio of 458 of low income children of Isfahan were studied. The percentage of children with a mid-arm-head circumference ratio of above 0.310, between 0.310 and 0.280, between 279, and 0.250, and less than 0.250 were 31.00, 51.75, 15.28 and 1.97 respectively.

A significant correlation was found between the weight of children and their ratio of arm circumference to head circumference.

INTRODUCTION

Protein Calorie malnutrition in preschool children is a nutritional problem commonly seen in developing countries. For detection of malnutrition different criteria have been used (1-4). Mid-arm/head circumference ratio as proposed by Kanawati and Mclaren (5) is one of of them, and its value has been reported by others (6).

In this study the above ratio was used as a parameter to detect the incidence of PCM in a group of 458 low income children of Isfahan, aged 1 to 24 months, who were attending the Pahlavi Public Health Center in Isfahan.

The mid-arm and head circumference was measured in centimeters with a flexible steel tape as suggested by Jelliffe (3). The

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weight of all children was also measured.

RESULTS AND DISCUSSION

From Table 1, it is evident that 31 per cent of children were nutritionally healthy with mid-arm head circumference ratio above 0.310. 51.75 per cent were found to have mild malnutrition, and 15.28 per cent were suffering from moderate degree of malnutrition. Only a negligible per cent (1.97) were severely malnourished.

Table 2 shows that the percentage of well nourished children is more among boys (56.34%) than girls (43.66%). The percentage of malnourished boys and girls with mid-arm/head circumference ratio of 0.310-0.280 and 0.279-0.250 is almost the same, but the percentage of boys with mid-arm/head circumference ratio of $<$ 0.250 is less than girls.

The percentage of children who were assessed by weight for age with Boston standard of less than 90% is 60 per cent (7) and by mid-arm/head circumference ratio below 0.310 is 69 per cent, and is not much different.

Mild PCM, account for large percentage of PCM cases all over the developing countries and its early detection is necessary. In the present study the incidence of PCM can be observed in all age group (1 to 24 months), but the percentage is lower in the first six months, 61.17 per cent, and it increases after this age, 73.79 and 75.20 per cent (Table 3). This indicates that there is a problem of meeting nutritional needs of these children either through insufficient breast feeding or inadequate food supplements in this period of high demands.

The correlation between ratio of arm circumference to head circumference and weight is significant ($r = 0.26$, $P = 0.01$). Thus using the method of mid-arm/head circumference ratio, which is simple, precise and also age independent (4) is useful for the assessment and therefore the prevention of this kind of malnutrition.

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Table 1. Mid-arm/head circumference ratio in children.*

Age group (months)	Total No. of children (%)	>310 No. (%)	310-280 No. (%)	279-250 No. (%)	<250 No. (%)
1-6	188 (41.05)	73 (30.83)	87 46.28)	21 (11.17)	7 (3.72)
7-12	145 (31.66)	38 (26.21)	77 (53.10)	30 (20.69)	0 (0.00)
13-24	125 (27.29)	31 (24.80)	73 (58.40)	19 (15.20)	2 (1.60)
Total	458 (100)	142 (31.00)	237 (51.75)	70 (15.28)	9 (1.97)

* > 0.310 - Nutritionally healthy.
0.310-0.280 - Mild PCM (Protein-calorie Malnutrition).
0.279-0.250 - Moderate PCM.
< 0.250 - Severe PCM

Table II. Nutritional status of children studied, according to their sex.

Mid-arm/head cir. ratio	No. of children (%)	Boys No. (%)	Girls No. (%)
> 310	142 (31.00)	80 (56.34)	62 (43.66)
310-280	237 (51.75)	123 (51.90)	114 (48.10)
279-250	70 (15.28)	36 (51.43)	34 (48.57)
< 250	9 (1.97)	3 (33.33)	6 (66.67)
Total	458	242	216

Table III. Comparison of PCM at different age group.

Age group (months)	Total No. of children	Mid-arm cir/head cir. ratio			Total PCM No. (%)
		310-280	279-250	<250	
		No. (%)	No. (%)	No. (%)	
1-6	188	87 (46.28)	21 (11.17)	7 (3.72)	115 (61.17)
7-12	145	77 (53.10)	30 (20.69)	0 (–)	107 (73.79)
13-24	125	73 (58.4)	19 (15.20)	2 (1.60)	94 (75.20)
Total	458	237 (51.75)	70 (15.28)	9 (1.97)	316 (69.00)