

PROTEIN-ENERGY MALNUTRITION IN AN AT-RISK AUSTRALIAN POPULATION

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The prevalence of protein-energy malnutrition in a sample (n=107) of Sydney's homeless population was investigated using dietary, anthropometric, clinical and biochemical methods. A 24 hour recall with prompting was used and the nutrient content calculated (Zed, Hain and Heywood 1977). Weight, height, triceps skinfold and midupper arm circumference were measured using standard survey equipment and standard methods (Jelliffe 1966). The Body Mass Index (BMI) was calculated as kg/m<sup>2</sup>. As part of a general medical examination, nutritional signs were recorded and blood taken. A range of biochemical indices were measured including plasma albumin. Analyses were performed using the Statistical Package for Social Sciences (SPSS) Program.

Protein intakes ranged from 2 g to 234 g with a mean intake of 68 g (RDI=70 g). Mean energy was 10545 kJ (RDI=10400) with a range of 392 kJ to 30299 kJ. Twelve percent of total energy was supplied by protein, 30% by fat, 35% by carbohydrate and 23% alcohol. Defining the cut-off points as 20 and 25 for the Body Mass Index, nineteen percent were underweight and 27% overweight. Using the measurements of MUAC and Triceps skinfolds, midupper arm muscle area (as protein status measure) and midupper arm fat area (as fat status measure) were calculated (Frisancho 1981). The American norms as described by Frisancho (1981) for age (10 year intervals) and sex were used.

Table 1 Midupper arm muscle (AMA) and fat (AFA) areas by percentiles (n=89)

percentiles	5	5-10	20-25	25-50	50-75	75-90	90-95	95
expected %	5	5	15	25	25	15	5	5
AMA %	46	12	13.5	14.5	8	5	1	0
AFA %	10	13.5	23.5	23.5	15.5	8	1	5

The observed distribution was significantly different from the expected percentile distribution ( $\chi^2$  for AMA=337.94, df=7, P<0.001 and for AFA,  $\chi^2$ =30.71, df=7, P<0.001).

Table 2 Presence of signs (as percent) suggestive of malnutrition by normal and abnormal levels of plasma albumin (n=88)

plasma albumin	periph. oedema	white nails	clinical wasting	hepato-megaly	ascites	hair loss	parotid enlargement
40 g/L (n=22)	21	55	82	64	27	45	23
40 g/L (n=66)	16	20**	23***	41	11	30	6*

\* P<0.05, \*\* P<0.01, \*\*\* P<0.001

Mitchell and Lipschitz (1982) emphasize the need to use multiple parameters in assessing nutritional status and found that the best predictor of malnutrition in any age group was serum albumin. Taking subjects individually, 12.5% had four or more indicators of protein-energy malnutrition, although 26% had hypoalbuminaemia.

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