Anthropologist, 2(2): 141-142 (2000)
PRINT: ISSN 0972-0073 ONLINE: ISSN 2456-6802
DOI: 10.31901/24566802.2000/02.02.15

An Estimation of Per Cent Body Fat from Triceps Skin Fold Thickness in the Malas of Andhra Pradesh

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KEY WORDS Malas. Triceps skin fold thickness. Specific gravity. Percent body fat.

ABSTRACT The data on Triceps skin fold thickness were collected from the Malas of Chittoor and Madanapalle taluks of southern Andhra Pradesh. From these data, specific gravity and per cent body fat were calculated. In all these variables females showed slightly higher values than males. Both sexes of the Malas of Chittoor taluk showed higher values than of Madanapalle taluk. The mean values of triceps skinfold thickness and per cent body fat showed higher values in females than in males. But the specific gravity of males is slightly higher than of females.

INTRODUCTION

The measurement of subcutaneous tissue such as biceps, triceps, subscapular, suprailiac, etc., is of much use in estimating the body fat of human beings, since the subcutaneous tissue constitutes about 50 per cent of the adipose tissue stores. The measurements on the body, especially skinfold thickness indicate the storage of fat and thus of relative body composition. In the present study an attempt has been made to estimate per cent body fat due to triceps skinfold thickness in the Malas, a scheduled caste population of Chittoor district, Andhra Pradesh.

MATERIAL AND METHODS

The triceps skin fold thickness was measured using Una skinfold caliper on 304 males and 289 females from six endogamous subcastes of the Malas. The data were analysed according to area-wise and subcaste-wise to understand the pattern of variation. The Chittoor and Madanapalle taluks showed variation in respect to rain fall, temperature, cultivation of crops etc., (Chengal Reddy, 1979). The Malas of Chittoor taluk are involved in agricultural work throughout the year whereas the Malas of Madanapalle taluk have less agricultural work and they involve in agriculture only during the rainy season. So the Malas of Chittoor taluk get a better food.

Specific gravity and per cent body fat were estimated using the following equations:

Specific gravity = 1.1034 - (0.002313 × triceps in mm.) (Brozek and Keys, 1951)

$$\% \text{ Body fat} = \left(\frac{5.548}{\text{Sp. gravity}} - 5.044 \right) 100$$

(Pace and Rathbun, 1945)

RESULTS AND DISCUSSION

The descriptive statistics for triceps skin fold thickness, specific gravity and per cent body fat are presented in table 1. The triceps skinfold thickness values are slightly higher in females than in males and thus corroborate with the earlier studies (Mohan Reddy et al., 1997). But the sex difference is not much to attain significance in contrast of the earlier studies. The per cent body fat is also slightly higher in females. This low difference may be due to the fact that females also take part in the agricultural labour on par with males. When the data is analysed to understand the geographical and environmental variation, it is clear that both sexes of the Malas showed higher values for the Chittoor taluk than for the Madanapalle taluk. The males significantly differ in all these characters. The endogamous subcastes of the Malas also showed variation with regard to skinfold thickness, specific gravity and per cent body fat. The Rampala males showed significant variation with the other two subcastes. The results of the present study when compared to the data published earlier (Venkatramana et al., 1995) clearly indicate the lower nutritional status of the Malas, as the mean skinfold thickness and per cent body fat are lower in the present study population.

Table 1: Mean and standard deviation values of triceps, specific gravity and body fat in the Malas

	Sex	*Chittoor taluk*	*Madanapalle Taluk*	*'t' taluk*	*Total*
N	M	232	72		304
	F	209	80		289
Triceps	M	4.147 ± 1.246	3.692 ± 1.147	2.54*	4.069 ± 1.240
	F	4.248 ± 1.155	4.094 ± 1.024	0.95	4.219 ± 1.131
't' (sex)		0.89	1.89		1.51
Specific	M	1.094 ± 0.003	1.095 ± 0.003	3.05*	1.094 ± 0.003
gravity	F	1.094 ± 0.003	1.094 ± 0.002	0.83	1.094 ± 0.003
't' (sex)		0.71	2.36*		1.41
% Body fat	M	2.822 ± 1.338	2.335 ± 1.228	2.59*	2.739 ± 1.331
	F	2.930 ± 1.240	2.765 ± 1.098	0.97	2.899 ± 1.214
't' (sex)		0.95	1.90		1.50

Variation among the subcastes of Malas

	Sex	*Tangala (TG)*		*Rampala (RP)*		*Maladasari (MD)*	
			't' (TG ´ RP)		't' (RP ´ MD)		't' (TG ´ MD)
N	M	203		29		41	
	F	190		19		44	
Triceps	M	4.093 ± 1.222	2.66*	3.581 ±1.118	2.24*	4.241 ± 1.272	0.58
	F	4.266 ± 1.158	1.39	4.022 ± 1.033	0.43	4.158 ± 1.214	0.37
't'(sex)		1.36		1.94		0.23	
Specific	M	1.094 ± 0.003	2.68*	1.095 ± 0.003	2.34*	1.094 ± 0.003	0.56
gravity	F	1.094 ± 0.003	1.12	1.094 ± 0.002	0.42	1.094 ± 0.003	0.32
't' (sex)		1.06		1.77		0.26	
% Body fat	M	2.764 ± 1.312	2.73*	2.216 ± 1.196	2.30*	2.924 ± 1.367	0.60
	F	2.937 ± 1.228	1.36	2.687 ± 1.108	0.43	2.834 ± 1.303	0.33
't' (sex)		1.36		1.96		0.23	

* significant at 5% level

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