



## Research Article

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# Comparison of Skinfolts Among Different Age Group Females

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## Abstract

The objective of the study was to compare the females in different age group on their selected skinfolts. The subjects selected for this study were four hundred eighty females. Subjects were selected from the eight blocks of districts of Varanasi in U.P., INDIA. Their age ranged from twenty to fifty years. Subjects were divided in three age groups classified as: (A) 21-30 years, (B) 31-40 years and (C) 41-50 years. Twenty females were selected for each age group from each block. To compare the females in different age groups on their selected skinfolts, analysis of variance was administered at 0.05 level of significance. Mean, S.D and analysis of variance (ANOVA) were calculated by using the statistical package of social science (SPSS). Difference between the skinfold was significant in case of all the selected sites i.e. suprailliac, subscapular, midaxillary, tricep, bicep, thigh and calf in different age groups of females.

**Keyword:** Overweight, obesity, fat content, BMI

## Introduction

The prevalence of overweight and obesity is increasing worldwide at an alarming rate. Although in countries like India, which is multi-ethnic having multi socio-economic levels, is typically known for high prevalence of under nutrition; significant proportions of overweight and obese now coexist with the undernourished. Obesity is more common in middle-aged women, people of higher socio-economic status and those living in urban communities. In more affluent and developed countries, obesity is common not only in the middle-aged, but is also becoming increasingly prevalent among younger adults and children. Obesity is a complex, multi factorial disease that develops from the interaction between genotype and the environment. Previous research on obesity in India has found the prevalence of obesity to be higher

among women and among economically better off persons<sup>1</sup>. National Family Health Surveys<sup>2,3</sup> India, shows that the prevalence of both overweight and obesity increases in each age group from 15 years of age to 49 years. According to National Health Survey<sup>3</sup>, the prevalence of overweight (BMI  $\geq$  25 kg/m<sup>2</sup>) and obesity (BMI  $\geq$  30 kg/m<sup>2</sup>) among Indian females as estimated from 15 years to 49 years of age were 12.6% and 2.8% respectively. In the Indian Women's Health Study<sup>4</sup> the overall prevalence of central obesity among women between 25-64 yrs ages was 55 percent. BMI, sedentary lifestyle, family history of excess fat intake were found to be significant risk factors for central obesity. Skinfold is a simple method of assessing quantitatively the fat content of the human body, which could be used not only in laboratories and in hospital but also in field studies and in general medical practice. It is simple, economical, portable and non-invasive method for the assessment of fat percentage. In

this study author compared skinfold of different age females and found the tendency of fat deposition in different age group.

## Experimental

### Subjects

The subjects selected for this study were four hundred eighty females. Subject were selected from the eight blocks (Aaraji line block, Sevapuri block, Vidyapeeth block, Harouva block, Chiraigaon block, Cholapur block, Badagaon block, Pindra block) of districts of Varanasi in U.P. For the purpose of the study, the subjects were considered as the true representative of the entire population.

### Variables

The anthropometric variables selected for this study are- Seven site skinfold, Bicep, Tricep, Subscapular, Midaxillary, Suprailliac, Thigh, and Calf.

### Age Categories

Their age ranged from twenty to fifty years. Subjects were divided in three age groups classified as: (A) 21-30 years, (B) 31-40 years and (C) 41-50 years. Twenty females were selected for each age group from each block.

### Statistical Analysis

To compare the females in different age groups on their selected skinfold, analysis of variance was administered at 0.05 level of significance. Mean, SD and analysis of variance (ANOVA) were calculated by using the statistical package of social science (SPSS).

## Results

When the data were compared on the basis of mean and standard deviation, Table-1 clearly revealed that the 31-40 yrs age group of female were having little more tendency to fat deposition in the Suprailliac (28.50±7.02), Midaxillary (23.21±5.22), Subscapular (19.55±5.14), Tricep (16.86±4.27), Bicep (14.96±4.62), Thigh (39.10±6.44) and Calf (30.31±5.60) in comparison to 41-50 yrs. age group females i.e. Suprailliac (28.07±6.80), Midaxillary

**Table 1.** Mean and Standard Deviation of Skinfolts in all Age Groups

Skinfolts		21-30 yrs	31-40 yrs.	41-50 yrs.
Suprailliac	M	22.29	28.50	28.07
	SD	9.4	7.02	6.80
Midaxillary	M	18.85	23.21	22.64
	SD	6.02	5.22	5.52
Subscapular	M	15.67	19.55	19.41
	SD	3.85	5.14	4.68
Tricep	M	12.89	16.86	16.32
	SD	3.05	4.27	4.72
Bicep	M	10.13	14.96	14.64
	SD	3.68	4.62	5.07
Thigh	M	30.87	39.10	40.18
	SD	9.11	6.44	8.60
Calf	M	25.06	30.31	31.29
	SD	7.40	5.60	6.72

M=Mean, SD=Standard Deviation

(22.64±5.52), Subscapular (19.41±4.68), Tricep (16.32±4.72), Bicep (14.64±5.07), Thigh (40.18±8.60) and Calf (31.29±6.72). The last youngest group i.e. 21-30 yrs. age group were below in average to other groups i.e. Suprailliac (22.29±9.40), Midaxillary (18.85±6.02), Subscapular (15.67±3.85), Tricep (12.89±3.05), Bicep (10.13±3.68), Thigh (30.87±9.11) and Calf (25.06±7.40).

Table-2 showed the analysis of variance skinfolts of different age group females. Difference between the skinfold was significant for all the skin folds.

Similarly, the critical difference values for all the selected skinfolts were found significant for mean differences between group 1 & 2 and group 1 & 3 (Table 3-9).

## Discussion

The results of the study clearly shows that no significance differences were found in skinfolts in different age group females. In first age group 21-30 yrs. mostly the female had moderate physical activities and they rarely participated in any type of physical fitness programme, so due to physiological changes, fat accumulation starts from lower abdomen and hip regions. Skinfold thickness and circumference based equation was used and compared them Dual Energy X-ray Absorptiometry<sup>5</sup>. In second age group 31-40 yrs. mostly females of this age group were housewives,

**Table 2.** Analysis of Variance of the Mean of the Different Age Group Females in Skinfold

		Sum of Squares	df	Mean Square	F
Suprailliac	Between Groups	3844.485	2	1922.243	31.096*
	Within Groups	29486.399	477	61.816	
	Total	33330.884	479		
Midaxillary	Between Groups	1800.950	2	900.475	28.678*
	Within Groups	14977.714	477	31.400	
	Total	16778.664	479		
Subscapular	Between Groups	1553.510	2	776.755	36.799*
	Within Groups	10068.496	477	21.108	
	Total	11622.006	479		
Tricep	Between Groups	1486.907	2	743.454	44.756*
	Within Groups	7923.557	477	16.611	
	Total	9410.464	479		
Bicep	Between Groups	2330.613	2	1165.306	57.535*
	Within Groups	9661.167	477	20.254	
	Total	11991.780	479		
Thigh	Between Groups	8303.033	2	4151.516	62.696*
	Within Groups	31585.430	477	66.217	
	Total	39888.462	479		
Calf	Between Groups	3589.712	2	1794.856	40.956*
	Within Groups	20904.134	477	43.824	
	Total	24493.846	479		

\*Significant at .05 level  $F_{0.05}(3, 477) = 3.01$

**Table 3.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in suprailliac skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
22.29	28.50	-	6.20*	1.72
22.29	-	28.07	5.78*	
-	28.50	28.070	0.43	

\*Significant at 0.05 level

**Table 4.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Midaxillary skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
18.85	23.21	-	4.36*	1.23
18.85	-	22.64	3.79*	
-	23.21	22.64	0.57	

\*Significant at 0.05 level

**Table 5.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Subscapular skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
15.67	19.55	-	3.88*	1.01
15.67	-	19.41	3.74*	
-	19.55	19.41	0.14	

\*Significant at 0.05 level

**Table 6.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Tricep skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
12.89	16.86	-	3.97*	0.89
12.89	-	16.32	3.43*	
-	16.86	16.32	0.54	

\*Significant at 0.05 level

**Table 7.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Bicep skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
10.13	14.96	-	4.80*	1.04
10.13	-	14.64	4.50*	
-	14.96	14.64	0.31	

\*Significant at 0.05 level

**Table 8.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Thigh skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
30.87	39.10	-	8.23*	1.78
30.87	-	40.18	9.31*	
-	39.10	40.18	1.08	

\*Significant at 0.05 level

**Table 9.** Paired Adjusted Final Means and Difference between Means for the Three Age Groups in Calf skinfold

Group 1	Means		Mean Difference	Critical Difference
	Group 2	Group 3		
25.06	30.31	-	5.29*	1.48
25.06	-	31.29	6.20*	
-	30.31	31.29	0.99	

\*Significant at 0.05 level

they lived sedentary lives, performed domestic activities thus, obviously they had thicker skinfold in comparison to first age group. The fat percentage were assessed from skinfold<sup>6</sup>. In third age group 41-50yrs. it is quite natural to have more thicker skinfold than the other groups because mostly females at this age group are in menopausal stage so hormonal changes also influence fat percentage.

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