

# Assessment of Nutritional Status of Students of Lady Health Visitor Class

Pages with reference to book, From 272 To 275

Shahadat Khan ( Department of Nutrition and Dietetics, College of Community Medicine, Lahore. )

## Abstract

Anthropometric and biochemical data was collected in 195 unmarried Lady Health Visitor students. The subjects were 16-25 years old. Fifty-six percent were underweight. Triceps skinfold thickness was less than the standard value in 57% cases. Average biochemical values were within the normal range. However, in 6% cases cholesterol values were abnormally high while in 12% low levels were encountered. Haemoglobin values were below 12 g/100 ml in 50% and haematocrit levels were low in 7% of the subjects (JPMA : 34: 272, 1984).

## Introduction

Several studies<sup>1,2</sup> have shown that the nutritional status of Pakistani women of child bearing age is generally sub-standard resulting in anaemia and malnutrition which strongly affect the health of women and their progeny, however, information on the unmarried young women is especially meagre. Moreover, in a recent study<sup>3</sup> 56% of female medical students were found to be underweight, and 19% were overweight. Dietary studies in United States have shown that the adolescent girl is often the least properly fed member of the family<sup>4</sup>. This emphasizes the urgency for taking a close and careful look at the nutritional status of this very important segment of our population. This study was limited largely to biochemical determinations since these have been considered to be the most objective criteria of nutritional status<sup>5</sup>.

## Material and Methods

For the present study a random sample of 200 unmarried Lady Health Visitor (LHV) students of Public Health Nursing School, Lahore, aged 16 to 25 years, was selected. Majority of them belonged to low socioeconomic group and were all residing in the hostel of the school. Descriptive characteristics (age, height, weight, skinfold thickness, family size, family income and marital status) were recorded during an interview.

The eventual number interviewed was 195 (97.5% of those approached) and 186 (93%) consented to give blood for biochemical studies. Physical characteristics were measured in the way previously described<sup>3</sup>.

Haemoglobin and packed cell volume were determined promptly after collection by the cyanmethaemoglobin and microhaematocrit methods. Serum was separated from the clotted samples. Subsequent determinations included measurements of total protein by the Biuret method,<sup>6</sup> albumin and urea by treatment with urease and then nesslerization. Serum alkaline phosphatase<sup>7</sup> and total serum cholesterol<sup>8</sup> were also done. Statistical analysis was done by Student's t-test. In all analyses, results were considered significant if  $p < 0.05$ .

## Results and Discussion

Mean values and SD of descriptive variables for the LHV students are listed in Table I.

**Table I** Anthropometric and Family Size Data of LHV Students.

Age Group	16–19 years	20–25 years	Total
No. examined	103	92	195
Family Size	78. ± 2.5	7.8 ± 2.4	7.8 ± 2.4
Height (cm)	154.1 ± 10.3	154.2 ± 6.6	154.1 ± 8.8
Weight (kg)	45.8 ± 6.2 (63)	94.4 ± 8.6 (49)*	47.5 ± 7.7 (56)
Weight–to–height ratio	0.30	0.32	0.31
Triceps skinfold (mm)	14.6 ± (65)	17.8 ± 4.8 (49)*	16.1 ± 4.8 (57)

\*Means significantly different between groups ( $p < 0.001$ ).

The weight of the subjects significantly increased from 45.8 kg at age 16-19 years to 49.4 at 20-25 (PL 0.01). However, heights were almost identical in these two groups. The majority of the females (92%) measured between 145 and 165 cm and weighed between 36 and 60 kg. Moreover, 56% of the students were below 90% of standard<sup>9</sup> weights. This is quite consistent with earlier findings<sup>3</sup>. Like weight, weight-to-height ratio also increased with age its mean value for female medical students was 0.33<sup>1</sup> as compared with 0.31 in this study. Furthermore, triceps skinfold mean value of the older students increased by 3.2 mm compared with the younger subjects ( $P < 0.001$ ) and the values were below normal in 57% of them, indicating caloric deficit. Mean skinfold values less than 8-10 mm and more than 22 mm for adult women are indicative of undernutrition and overnutrition respectively. Using these criteria, 10% of the studied group were undernourished. and 11% overnourished.

The statistics of total serum protein, serum albumin albumin-globulin ratio, serum urea, serum alkaline phosphatase, packed cell volume, haemoglobin and total serum cholesterol determinations in LHV of two age groups 16-19 years and 20-25 years are shown in Table II.

Table II

## Haematological and Biochemical Parameters.

Age Group	16–19 years (n = 101)	2--25 Years (n = 85)	Total (n = 186)
Total protein, g/100 ml	7.1 ± 0.05	7.1 ± 0.07	7.1 ± 0.04
Albumin, g/100 ml	4.4 ± 0.02	4.4 ± 0.03	4.4 ± 0.02
Albumin globulin ratio	1.7 ± 0.04	1.7 ± 0.05	1.7 ± 0.03
Urea mg/100 ml	17.6 ± 0.27	17.6 ± 0.32	17.6 ± 0.21
Alk. phosphatase, K.A. units/100 ml	5.8 ± 0.23	4.5 ± 0.22	5.6 ± 0.18
Packed cell volume, %	39.5 ± 0.19	39.6 ± 0.28	39.5 ± 0.17
Haemoglobin, g/100 ml	11.6 ± 0.14	12.5 ± 0.21*	12.0 ± 0.13
Cholesterol, mg/100 ml	178. ± 3.26	196.5 ± 3.37	187.4 ± 2.42

\*Means significantly different between groups ( $P < 0.001$ ).

None of the parameters were significantly different between the two groups except higher mean levels of haemoglobin and cholesterol in the latter group of females ( $P < 0.001$ ) this may probably be attributed to the difference in weight or age of the groups. Haemoglobin values rise with increasing age in women aged 15-54 years.<sup>10</sup> The changes in body weight are significantly related to the changes in serum cholesterol<sup>11</sup> its level also increases with<sup>12</sup> age

Considering all age groups together, the biochemical determinations disclosed average values which, on the whole, fell within the normal range. (Table II). Further analysis of the data, however, shows that although total serum protein values were within normal limits, albumin globulin ratio was low in some 3 % LHV. The altered albumin-globulin ratio with normal total serum protein value indicates chronic hepatic dysfunction or malnutrition<sup>13</sup>. In addition, low value for serum urea was encountered in 12 % females, alkaline phosphatase was raised in only one subject. A substantial number, forty-six students (24.7%) had cholesterol values above 200mg/100 ml which was mainly in the 20-25 years age group, and in a surprising number of the subjects (6%) cholesterol values exceeded 250 mg/100 ml serum. There is considerable evidence to show that the risk of ischaemic heart disease increases as plasma cholesterol increases above 200-250 mg/100 ml<sup>14</sup>

Iron deficiency manifested by anaemia continues to be significant problem in women. If the cut-off level of haemoglobin is taken at 12 g/100 ml about 11 to 20 % British women may be anaemic if 10 g/100 ml is the cut-off, the prevalence in women has been found to be about 5%<sup>15</sup> Nearly 7% of the present group had haematocrit values below normal range (<36%) while 11% had haemoglobin level upto 10 g/100 ml and 50 % had haemoglobin values below 12 g/100 ml blood and were therefore anaemic according to World Health Organization definition. Recently anaemia in 32 % of Punjabi females in Southall<sup>16</sup> was considered to be due to the iron deficiency of nutritional origin and could be resolved by dietary adjustment.

### Acknowledgement

The author wishes to acknowledge the cooperation of Principal, staff and students of the school

involved and the technical assistance of Zaheer-ud-Din Babar and Tariq Javid 'of the Nutrition Laboratory of College of Community Medicine, Lahore.

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