ASSESSMENT OF NUTRITIONAL STATUS AND DIETARY HABITS OF UNDERGRADUATE STUDENTS FROM WELL TO DO FAMILIES IN HYDERABAD CITY, INDIA

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Abstract:

Objectives: This study is undertaken to assess the nutritional status of young adults in urban area of Hyderabad, India. Nutritional intake and dietary adequacy of essential nutrients among the undergraduate students from well to do families were also assessed.

Methodology: involved anthropometric measurements (Height, weight, BMI and waist to hip ratio) of 61 young women belonging to well to do families were taken. A preset questionnaire was also given to all participants to know about family & educational background, dietary habits and preferences. 24- hour dietary recall taken to get information related to nutrient adequacy in the diet of the participants.

Discussion and results: Result from anthropometric data collected indicated only 55% participants were having normal weight for age, whereas 28.57% and 1.5 % students were identified with I degree and II degree of undernourishment respectively. On the other hand, 14.4 % students were falling under the category of overweight. Dietary intake levels of milk, meat and vegetables were also found to be lower than the RDA. **Conclusion**: Students should be educated to make fine choices when it comes to food selection and incorporation in diet. Idea of inclusion of healthy nutrient dense food should be encouraged right from school age.

Key words: anthropometry, nutritional assessment, RDA, malnutrition, dietary adequacy.

I. INTRODUCTION:

Adolescence is the period between childhood and adulthood [(1)]. Patton et al classified adolescence age group into early adolescence-10-14yrs, late adolescence- 15-19yrs, youth-15-24yrs and young adulthood-20-24yrs of age. [(2)] Adolescents complete the process of somatic growth through the ages of 16-21yrs in both sexes [(3).] Adolescence: An age of opportunity 'and India [(2)] has a population of about 243 million of adolescents which account for about a quarter of country's population [(4),] and from this, the population of the female adolescent in India as per 2011 census is 18.8%(10-19yrs) & 19.5%(15-24yrs) the different age groups are regarded as 'young people' as per the definition given by UNFPA [(5)] .The adolescent and the youth population in a society is the most important part as the future demographic, social, economic and political developments of the entire population depend on them, thus their health is of equal importance (A profile of adolescents and youth in India, census 2011, united nations populations fund-India, page 2). Adolescence is the period of the final growth spurt in terms of physical, hormonal, cognitive and emotional changes and hence the demand for nutrition increases [(2)] Nutriture of the body at this period of high growth & development velocity is markedly important and attention has to be given to prevent malnutrition. Malnutrition is defined as a lack or excess intake of nutrients or malabsorption of nutrients [(5).] In a country where malnutrition due to under nutrition is more, over nutrition is also a problem prevailing in India. Thus timely screening of nutritional status helps in preventing both forms of malnutrition.

Puberty increases the requirement of both micro and macronutrients [2] Growth failure and nutrient inadequacy during adolescent can suppress the full potential of the child. The child experiences a wide range of health and social problems like early marriage, teenage pregnancy, drug abuse, mental illness, eating disorders and malnutrition[6] Besides under nutrition, overweight and obesity are a serious health problem since they are associated with cardiovascular diseases, diabetes, renal diseases and varicose veins. [7]. Dietary Habits and Nutriture is directly related with these diseases. Adolescents are more likely to adopt un healthy eating habits as a result the nutritional status gets affected. [8]

Thus the present paper aims to study the nutritional status of adolescents using Anthropometric measurements like height weight, BMI, Waist to hip ratio and a 24-hour dietary call was conducted using an oral questionnaire method. A Pre typed questionnaire was given to the students to fill with honesty and the questionnaire forms were collected back.

II. MATERIALS AND METHODS:

2.1 Selection of subjects and their background information:

Sixty- one undergraduate students non pregnant and non-lactating (NPNL) from varied backgrounds who attended a medical health camp were selected based on purposive sampling. After brief intro session participants willingly volunteered for the study. A preset questionnaire used to gather information about the economic backgrounds, educational status, dietary habits, food preferences and medical history of all participants.

2.2 Criteria for exclusion

All participants having medical history of recent illnesses, were taking medicine and undergoing some weight loss diet / treatment were excluded from the sample.

2.3 Anthropometric Assessment:

Anthropometrics were used as indicators of health, growth and development in individual of different age groups in many contexts related to nutritional status [10] Anthropometry is accepted as an important tool for the assessment of nutritional status and is extensively used. [9] In the study nutritional assessment is done using Anthropometric measurements among these adolescent's girls aged between 17-21yrs in an urban area. A total of 61 students were assessed for height, weight, waist to hip ratio.

2.3.1. Standing Height:

Height was measured to check stunting (height for age) using a Stadiometer following the National Health and Nutrition Examination Survey (NHANES) guidelines manual, 2009 for measurement of height. Hair ornaments were removed, pouffe was flattened, and contact points to stadiometer (both heels, buttocks back of the head and shoulder blades) were checked and the head is aligned in parallel to Frank fort plane. All participant's height was measured to the nearest reading of 0.5cms. The values obtained are compared with reference values given in NNMB report, 2002(data pooled from 16 strata).

2.3.2. Weight:

Nutritional status of adolescents is also known by assessing them through weight for age (underweight). Thus weight was measured using a digital portable weighing balance which is calibrate for accurate readings. The subject was standing & the weight was distributed equally on both the legs. The readings of the participants were noted to the nearest 0.5kgs. This was also done using the National Health and Nutrition survey guidelines. The values obtained are compared with reference values given in NNMB report, 2002(data pooled from 16 strata) and compared using Gomez classification

Nutritional status	Wt. for age (%)
Normal	> 90 of IBW
I Degree malnutrition	75-90
II Degree malnutrition	60-75
III Degree malnutrition	<60

2.3.3. BMI-Body Mass Index/ Quetelet index:

Quetelet or body mass index for age is calculated using the formula BMI = weight (kg)/height (m^2) to determine thinning or Adiposity in the adolescent girls. The WHO standard reference ranges for Asians were taken for comparison of the data.

WHO classification of weight status

Weight Status	BMI (KG/M^2)
Underweight	<18.2
Normal Range	18.5 -24.9
Over weight	25-29.9
obese	≥ 30

2.3.4. Waist To Hip Ratio:

The waist to hip ratio is measured using metre tape as per the WHO STEP's protocol. It is measured at the top of the iliac crest for waist measurement. The hip circumference was measured around the widest part of buttocks. The formula used is waist (cm)/hip (cm) and the reading of > 0.8 is considered as abdominal obesity.

2.4 Dietary Intake Assessment:

Diet survey was also conducted among the subjects by using a Pre typed questionnaire and oral Interview to evaluate the intake of nutrients consumed and compared with the standard portion table given by Dietary Guidelines for Indians, NIN, 2010. The 24hr dietary recall also helped to assess the deviation seen among the subject from their recommended dietary allowances which was done by checking the dietary pattern. The nutrients obtained from the food sources were calculated using the Indian food composition tables by ICMR and NIN. A diet survey helps in knowing the nutrient gap among the subjects.

III. STATICSTICAL ANALYSIS:

The anthropometric data for Height was analysed using Mean & standard deviation and the subjects weight were compared with Gomez classification for weight for age(underweight). The data obtained from dietary assessment is checked for deviation from the recommendations given by NIN & ICMR,2010 dietary guidelines. One sample T-test was applied and checked for the P value at 5% significance in MS. Excel 2010.

IV. DISCUSSION:

In present study nutritional status of young adults were assessed using anthropometric measurements, table 1indicates that all participants were having desirable height for age and indicating absence of long term nutritional deficiency in them during growth years, table 2 represents mean height of the individuals, 55% participants were having normal weight for height, 28.57 and 1.5% individuals fall under category of I degree and II degree of malnourishment and

14.4 % individuals were identified as overweight. BMI calculation reveals that 68.9% individuals were having normal BMI, whereas 19.04 and 11.11% individuals were identified as underweight and overweight respectively.

Waist and hip ratio also indicates that 95.23% people were classified under low risk of abdominal obesity and only 4.76% were classified under moderate risk category. From the 24- hour Dietary recall data the mean nutrient intake of all participants for a whole day were analyzed (table 4). It was found the Cereals and Pulses intake is found to be comparable with RDA, whereas milk intake was found to be far below than the recommendations made by ICMR, 2010. It is also concluded from the table that the intake of green leafy vegetables and fruits is lower than the recommendations making individual's diets deficient in fiber, B complex vitamin and minerals. A marked significant difference was found in the intake of participants at 5% level of significance in all food category excepting cereals and pulses. Diet of all participants were found to be deficient in protein, fiber and other essential nutrients, in contrast to calories and fats.

Overall this study reveals that young adult women from well to do family indicate better nutritional scores and show lesser risk of development of nutrition deficiency diseases. They have better buying capacity and accessibility towards foods. But food choice is major constrain. Table 3 indicates that many of them were consuming sufficient calories but their diet was deficient in protein, calcium, B and C vitamins and fiber.

Table 1: Mean and standard deviation of height

Age	Mean Height	SD	Standard height(cm) ICMR	P value
17 (7)	152.43	3.82	150.9±6.2	2.51*
18 (11)	154.55	4.56	151.1±5.7	0.72*
19 (28)	154.90	4.05	150.9±6.2	5.09**
20 (15)	153.93	10.2	151.1±5.7	3.18**

*No significant difference at 5% levels of significance, ** significant difference at 5% level of significance.

Table 2: Mean and standard deviation of weight

age	Mean Weight	SD	Standard Weight(kg) ICMR	P Value
17 (7)	51.07	7.22	43.2±6.3	2.85*
18 (11)	51.75	8.31	43.8±6.5	0.5*
19 (28)	50.02	8.2	43.8±6.5	3.22**
20 (15)	51.8	10.2	43.8±6.5	3.18**

*No significant difference at 5% levels of significance, ** significant difference at 5% level of significance.

Table 3: Mean and standard Deviation of BMI and Waist to Hip ratio

Age	Mean BMI	SD	Mean W/H ratio	SD
17 (7)	20.34	3.26	0.77	0.09
18 (11)	21.67	3.71	0.69	0.73
19 (28)	20.83	3.29	0.79	0.03
20 (15)	21.55	3.77	0.78	0.14

Table 4: Average consumption of food (g/d) among participants

Food Group	Mean Intake (g)	SD	Recommended No. of Portion	Total Recommended portions (g/d)	P value
Cereals and millets	306	169.68	9x30g	270	NS1.68
Pulses and legumes	54	28.2	2x30g	60	NS1.69
Milk and milk products	120	21.88	3x100g	300	**65.30
GL vegetables	40	9.38	1x100g	100	**50.77
Roots and tubers	150	12.2	2x100g	200	**32.53
Other Vegetables	78	32	2x100g	200	**30.26
Fruits	34	6.56	1x100g	100	**79.86
Sugars	24	17	4x5g	20	**1.87
Fats and oil	35	14	4x5g	20	**8.50

*RDA for healthy adult sedentary worker women

Source: Dietary guidelines for Indian- A Manual, NIN ICMR, Hyderabad,2010.

NS -no significant difference at 5% level of significance, ** significant difference at 5% level of significance.

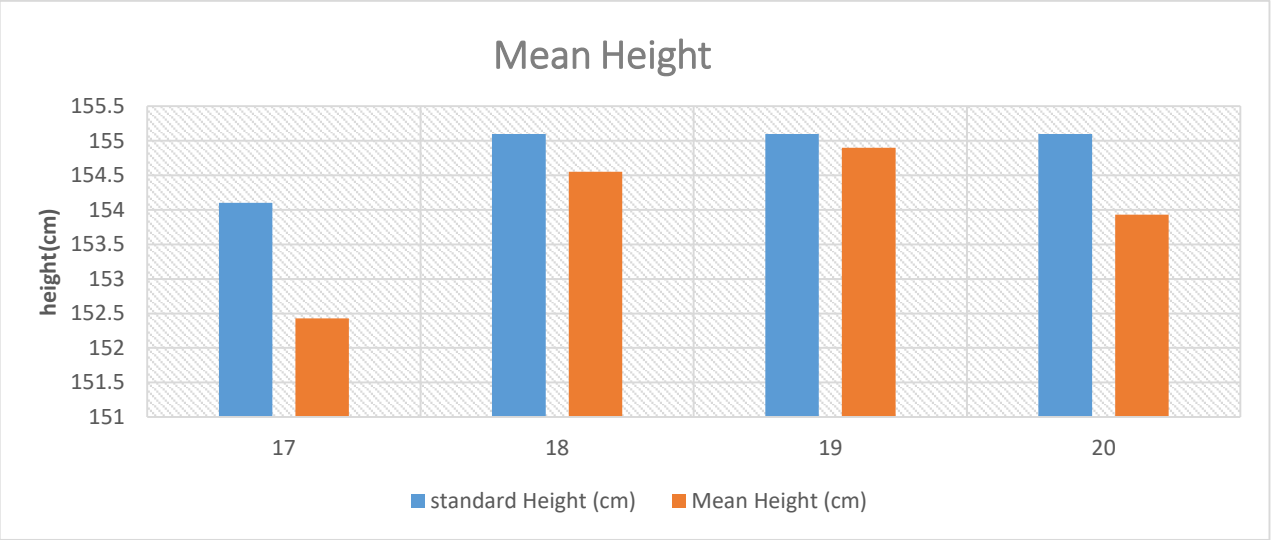

Figure 1: Mean Height Vs Standard Height

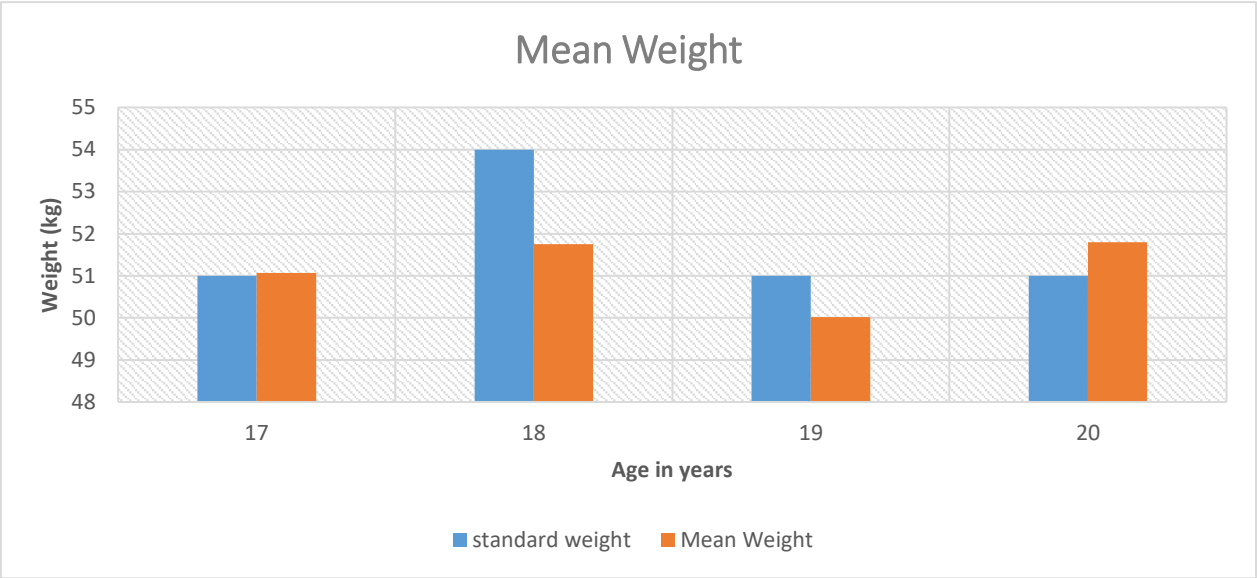

Figure 2: Mean Weight Vs with standards

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