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Health and Nutritional Status: Students Residing at Kunduz University Hostels (boys and girls)

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Abstract
The study on "Health and Nutritional Status of Students Residing at Kunduz University hostels,". Conducted during 1th April 2017 up to 30th September 2017 in the campus of Kunduz university included 200 respondents of both sexes, of which 100 subjects from boys and 100 subjects from girls. Among boy's subjects' majority of them were in the age group of 18-20 years old (28 %) with joint family system with low and medium family income, Majority of them followed three meal patterns a day and were 100 % non-vegetarian. About 7 per cent of boys were smoking and 9 per cent were using betel nut (pan/Naswar). In general, 52.5 % of students' parents (fathers) and 79.5 percent (mothers) were illiterate. The mean BMI of girls and boys were 18.73, 21.77 respectively. Risk assessment based on waist to Hip ratio exhibited that 3 boys (>0.815 WHR) and 15 girls (>0.68 WHR) were under risk. Majority that is 35 % boys and 30 % girl's students out of 40 each tested had normal blood sugar level. However, it was surprising to note that none of boys and girls did show above normal (>120mg/dl) range of fasting blood sugar level. 30 per cent of boys and 40 % of girls had low Hb percentage, indicating existence of anemia. Blood pressure of Students revealed that 49.5 % boys & 57 % girls had normal B.P, while 24 boys & 60 girls had exhibited lower Diastolic pressure on the day of clinical examination.

Keywords: health, nutrition, subjects

Introduction
Modernization, change in lifestyle, stress and strain, improper eating habits, faster pace of life, less physical exercise etc., are creating conditions that affect the health of people leading to chronic disorders. In these circumstances, both in the advanced countries and in the metropolitan cities of the world, with the changing life style the normal traditional pattern of food become inappropriate. This is considered to be one of the basic reasons leading to food related health problems (Chandrasekhar and Acharya., 1989).

Several factors affect the nutritional status of adolescents. Among them, socio-economic and demographic factors associated with worldwide pattern of stunting and thinness in adolescent (Frongillo et al 1997) is more prevalent. According to WHO, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The health status is usually measured in terms of life expectancy at birth, infant mortality rate, fertility rate, crude birth rate and crude death rate. These indicators of health are determined by numerous factors such as per capita income, nutrition, housing, sanitation, safe drinking water, social infrastructure, health and medical care services provided by government, geographical climate, employment status, incidence of poverty and the like (Reddy and Selvaraju 1994; Dadibhavi and Bagalkoti 1994). Nutritional status is defined as the condition of health of an individual as influenced by the utilization of the nutrients. It can be assessed by using Anthropometric, clinical or biochemical methods. Biochemical methods have proved to be the most accurate of the three. Yet, anthropometry and clinical survey in combination have proved to be more efficient.

University students in every country constituent a large proportion of the total population. The students are usually within the age group of 17-25 years. Various factors such as social and cultural pressure, peer group influences, religion, finance and adequacy of fund, diverting the food finance to the other frivolities as keeping meal do influence the nutritional states both negatively and positively that is under and over nutrition. This calls for an in-depth research for assessing and identifying draw backs to create corrected set up and awareness to maintain health and academic performance of students at universities. (Achinihu 2009; Anon WHO, 2002).

Often literature refers to non-communicable disease as effect of change in life style. That is stress, both mental and physical activity, food habit, non-food consumption for relaxation etc. This as per WHO (2002) interpretation is resulting in reduced efficiency and work output and especially of the productive age group there by bringing the impact on national economy through increased medical expenses. Based on this, WHO in 2002 recommended a global strategy to assess health and nutritional status, food and non-food habits and life style pattern/ health and nutritional knowledge of the sensitive age group and take necessary measures in both monitoring and education to achieve increased physical output.

Kunduz university students are from all over Afghanistan with different social, Economic, health, nutritional and food habit family background, therefore studding the health and nutritional status of the students (adolescents) and creating

awareness related to their health and nutritional condition can help them and the society to prevent and treat the communicable and non-communicable diseases. Thus, the present study was therefore conducted to assess "health and nutritional status of students residing at Kunduz university campus hostels.

Research Methodology

1. Local of the study: the study was conducted at Kunduz university (boys and girls) hostels during the period of 1th April 2017 up to 30th September 2017.

2. Selection of the subjects: 200 subjects (100 boys and 100 girls) were selected from the university hostels based on their willingness to participate as subject throughout the period of the study**.**

3. Schedule and data collection: a detailed schedule was formulated to elicit information on various aspects according to the objectives of the study.

3.1 socio-economic profiles: This comprised the type of family, age, education, occupation and family income of subjects.

3.2 Dietary statuses: Dietary intake of the respondents was recorded by 24 hours' recall method using standard cups and measure which were standardized. The diet survey was conducted on a sample of 40 subjects (20 boys and 20 girls). (Thimmayamma, 1987).

3.3 Nutritional anthropometry:

Anthropometric measurement is the measurement of variations of the physical dimensions of the gross composition of the human body at different age levels and degrees of nutrition and was carried out as follows (Jellife, 1966) [9].

Height (cm): Height was measured accurately to the nearest 0.1 cm on standard vertical height rod. The subjects were made to remove the shoes and stand on the height plat form by the scale with foot parallel with heals, shoulder and back of head in up right posture (Jellife, 1996).

Weight (kg): Body weights of subjects were taken to the nearest 0.1 on a portable weighing scale; calibration was checked regularly before taking each measurements. Subjects were made to stand on the center of the balance plat form without shoes and with regular clothing (Jellife, 1966) [9].

Waist / hip ratio: Defines the distribution of adipose tissue in the body. The waist is measured with the subject standing erect; the circumference is measured either at an anatomical reference point such as 12 cm below the xipthisternum, the hip circumference is also measured with the subject standing erect, taking in the maximal gluteal circumference (Rao, 1995).

Mid arm circumference (cm): The subjects were asked to flex their left arm at the elbow such that, the lower arm should be at a right angle to the elbow. The site of measurements was taken exactly mid-way down the upper arm. Each of the subjects was asked to hang the arm relaxed by the side and the tape passed gently. But firmly around the arm at the selected midpoint, the arm circumference was measured twice to the nearest 0.1 cm (Jellife, 1966) [9].

BMI: Height and weight of the subjects were used to calculate the body mass index the subjects were classified based on the standard BMI (Devenberg *et al*., 1991).

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height 2(cm)}}$$

Standard classification

Under nourished < 18.5
Normal 18.5-25
Overweight 25 - 30
Obese >30

4. Clinical status

Clinical status was assessed by the investigator by visual method with the help of doctors from internal department of stomatology faculty of Kunduz University, (presence of any deficiency symptoms at the time of survey). Pulse rate & Blood Pressure of the students were also recorded by using the B.P apparatus.

5. Bio chemical status

Assessment of Bio-chemical status involved estimating the glucose level by fasting blood sugar method and Hemoglobin level this was carried out on a sample of 40 subjects (20 boys 20 girls). Blood glucose was estimated with the help of glucometer. Hemoglobin was estimated by using cyanmethamoglobin method, lipid profile of the participant was estimated also during the entire course of the research.

Results and Discussion

The findings of the study on "Health and Nutritional Status of Students Residing at Kunduz University, Hostels are presented under selected suitable headings as follows.

1. **Socio economic profile**
2. **Nutritional anthropometry of the study subjects.**
3. **Selected clinical assessments**
4. **Blood sugar profile of subjects**
5. **Dietary pattern (Nutritional intake) of students**
6. **Food beliefs and taboos**
7. **Consumption practices of non-food items**

Table 1: Socio-economic Profile of Students

Variable	Classification	Boys		Girls		Total	
		N	%	N	%	N	%
Age	18-20	56	28	30	15	86	43
	21-23	29	14.5	45	22.5	74	37
	24-26	14	7	25	12.5	39	19.5
	>27	1	0.5	0	0	1	0.5

	Total	100	50	100	50	200	100
Type of family	Nuclear	72	36	55	27.5	127	63.5
	Joint	28	14	45	22.5	73	36.5
	Total	100	50	100	50	200	100
Parents Education Level							
Father	Uneducated	65	32.5	40	20	105	52.5
	School	34	17	30	15	64	32
	UG	1	0.5	30	15	31	15.5
	PG	0	0	0	0	0	0
	Total	100	50	100	50	200	100
Mother	Uneducated	89	44.5	70	35	159	79.5
	School	10	5	15	7.5	25	12.5
	UG	1	0.5	15	7.5	16	8
	PG	0	0	0	0	0	0
	Total	100	50	100	50	200	100
Family background	Farm	58	29	9	4.5	67	33.5
	Non-farm	42	21	91	45.5	133	66.5
Family income level	Total	100	50	100	50	200	100
	Low (<6317)	28	14	34	17	62	31
	Medium (6317-11088)	25	12.5	31	15.5	56	28
	High (>1108)	47	23.5	35	17.5	82	41
	Total	100	50	100	50	200	100

1. Socio economic Profile of Subjects

The socio economic profile of subjects covers the age distribution among subjects, type of family, parent's education status (father and mother independently observed).Regional difference in previous education background of students, family background and family income status.

1.1 Age

More number of boys residing in the hostel (28 %) were in the 18-20 years of age group, followed by (14.5 %) between 21-23 years,(7 %) 24-26 years of age group and only 0.5 per cent was above 27 years of age. Whereas more number of the girls that is 45 (22.5%) residing in the university hostel were between 21-23 years of age, followed about 15.0% (30) were in the 18-20 years of age group and (12.5%) that is 25 were between 24-26 years (Table 1).

1.2 Types of family

It was observed that overall 63.5 per cent of students were from nuclear family and 36 per cent of them were mainly boys that is lesser percentage (14%) of boys studying in different faculty of kunduz university and residing in the hostel were from joint family background when compared to only 22.5 % of the girls being from joint family setup (Table 1).

1.3 Parents education level

Study shows that in case of father education level in both boys and girls 52.5 % (105 father) of parents were uneducated followed by school level 32 % (64 father) and the rest were educated in the bachelor level 15.5 % (31). Whereas 79.5 % (159 mothers) of both boys and girls mothers were uneducated major representatives were mothers of boys followed by school level 12.5% (25 mothers) and the rest were graduated 8 % (16). Greater percentage of parents in general had dropped out after school level education (Table 1).

1.4 Family income level

Income ranged from Rs 6317.00 to Rs 11088. On grouping them into low, medium and high income group (Table 1), majority (23.5 %) of them were from high income, 14 % from low income group and 12.5 % from medium income group, whereas in case of girls majority (25.5 %) of them were from high income Further only 17 % of girls represented medium income group while 15 % of girls from low income group. (Table 1) Income classification is based on ± Sd of actual income. At this junction it is appropriate to mention that family income had extended better nutrition support to girls who were lesser in the categories underweight and majority weighed normal for ages. Similar finding have been reported by several workers within India and also by researchers in other country who attempted on studying on Indians living in the country and outside. (Ghalib and Rizcone-2008) [5].

2. Nutritional anthropometry

Respondent's heights, weight, mid upper arm circumference, waist circumference, waist hip ratio were recorded and on the further BMI, and lean body mass index were calculated. The mean values are presented in table 3. The mean height, weight, waist circumference, waist hip ratio, mid upper arm circumference, body mass index was 170.33 cm, 61.26 kg, 76.3cms, 0.815, 24.95cm, 21.77 respectively for boys covered under the study. Similarly it was 160.52cms, 55.26kg, 64.5cms, 0.68, 12.15cms, 18.73 respectively among girls. It was interesting to note that girl's weight recorded lesser than boys in the same age group when compared to boys. (Table 3) Distribution (Table 4, fig 2 a, b) of students based on body mass index showed that, majority of boys (22.5 %) were in the normal categories (18.5-25 BMI) followed by (18 %) exhibited undernourishment (<18.5 BMI) and only 9.5 % of the boys student had overweight BMI. Study revealed that greater numbers of girls were in the undernourishment (<18.5 BMI) categories based on BMI as compared to Boys, 17.5 % of the girls were in the normal categories and only 7.5 % of the girls respondents were in the overweight categories. Similar higher prevalence of overweight (Body mass index (BMI) 25 kg/m2) has been observed nationally in females of reproductive ages in urban areas (24%) (Anon, 2001) [2] The statistical analysis indicated significant differences in all anthropometric parameters between boys and girls at 0.01

percent level. Studies show greater impact of waist circumference, hip circumference on body weight and body mass index. It was interesting to observe height and weight of the body reflected with a significant relation between mid-upper arm circumference and lean body mass at 0.01 level. Similarly observations were noted between body mass index and food habit. There was a negative correlation between blood sugar and mid upper arm circumference and body mass index among boys. Food pattern had a negative correlation with all anthropometric measures observed among the boys. Poorer the food pattern poorer was the anthropometric measures which indirectly reflected on the health of respondents.

Table 2: The Anthropometric Measurements of the Students

Variables	Girls	Boys
	N= 100	N= 100
	Mean± SD	Mean± SD
Height (cm)	160.52	170.33
Weight (kg)	55.26	61.26
Waist	64.5	76.3
Waist / hip ratio	0.68	0.815
MUAC (cm)	12.15	24.95
BMI	18.73	21.77

Table 3: Distribution of Students according to BMI

BMI classification	Girls		Boys	
	N	%	N	%
Under nourished (<18.5)	50	25	36	18
Normal (18.5-25)	35	17.5	45	22.5
Over weight (25-30)	15	7.5	19	9.5
Total	100	50	100	50

Blood sugar profile of students

Students were grouped into three categories namely normal (80- 120 mg/dl), low (<80mg/dl) and above normal)>120mg/dl) based on their random blood sugar level test report. Majority that is 14 boys and 12 girl's students out of 20 each tested had normal blood sugar level, 6 boys and 8 girls showed low blood sugar (<70 mg/dl fasting blood sugar), However, no one showed above normal blood sugar level.

Hemoglobin profile of students

Almost 60 percent of boys and 80 percent of girls showed lower level of Hb, which is indicating existence of anemia, whereas 40 percent of boy and 20 percent of girls were in the range of healthy Hb percentage. (Table 5).

Table 4: Percentage Distribution of Students according to Fasting Blood Sugar

Random blood sugar (mg/dl)	Boys		Girls	
	N	%	N	%
<70 (low)	6	15	8	20
70-110 (normal)	14	35	12	30
>110 (above normal)	0	0	0	0
Total	20	50	20	50

Table 5: Percentage Distribution of Students according to Hb randomly

Random Hb (gms %)	Boys		Random Hb (gms %)	Girls	
	N	%		N	%
<14 (low)	12	30	<12 (low)	16	40
14-18 (normal)	8	20	12-16 (normal)	4	10
>18 (above normal)	0	0	>16 (above normal)	0	0
Total	20	50	Total	20	50

Lipid profile of the student

In case of lipid profile almost 80 percent of boys and 75 percent of girls showed the normal range of triglyceride level and only 20 percent of boys and 25 percent of girls had low level of triglyceride than normal range. 90 percent of boys and 95 percent of girls showed the healthy level of cholesterol level, whereas only 10 percent of boys and 5 percent of girls showed low level of cholesterol level than normal range. Table 6.

Table 6: Distribution of Students According to Lipid Profile (Triglyceride)

Lipid profile level	Triglyceride				
	Boys		Girls		Total
	N	%	N	%	%
< 100 mg/dl	4	10	5	12.5	22.5
100-200 mg/dl	16	40	15	37.5	77.5
> 200 mg/dl	0	0	0	0	0
Total	20	50	20	50	100

Table 7: Distribution of Students According to Lipid Profile (Cholesterol)

Lipid profile level	Cholesterol				
	Boys		Girls		Total
	N	%	N	%	%
< 100 mg/dl	2	5	1	2.5	7.5
100-200 mg/dl	18	45	19	47.5	92.5
> 200 mg/dl	0	0	0	0	0
Total	20	50	20	50	100

Blood pressure of Students revealed that there was a big variation in the blood pressure while checking the blood pressure of the respondents, 63 boys & 27 girls had normal B.P, while 24 boys & 60 girls had exhibited lower Diastolic pressure on the day of clinical examination. This being related to BMR, that is basal physiological function shows they are under stress.

Table 8: Classification of respondents according to blood pressure and pulse rate

Variables	Boys		Variables	Girls	
Diastolic blood pressure	**N**	**%**	**Diastolic blood pressure**	**N**	**%**
(100-119)mm	24	12	(100-119)mm	60	30
120-150 mm	76	38	120-150 mm	40	20
Total	100	50	Total	100	50
systolic blood pressure			systolic blood pressure		
60-79 mm	75	37.5	60-79 mm	55	27.5
80-100 mm	25	12.5	80-100 mm	45	22.5
Total	100	50	Total	100	50
Pulse rate			Pulse rate		
60-79 mm	51	25.5	60-79 mm	40	20
80-100 mm	49	24.5	80-100 mm	60	30
Total	100	50	Total	100	50

Table 9: Consumption of non-food items

	Boys		Girls	
Smoking	**N**	**%**	**N**	**%**
Daily	5	2.5	0	0
Occasionally	9	4.5	0	0
Never	87	43.5	100	100
Total	100	50	100	100
Alcohol				
Daily	0	0	0	0
Weekly	0	0	0	0
Occasionally	0	0	0	0
Never	100	50	100	100
Total	100	50	100	100
Betel nut or pan				
Daily	7	3.5	0	0
Weekly	0	0	0	0
Occasionally	11	5.5	0	0
Never	83	41.5	100	100
Total	100	50	100	100

Table 10: Food Beliefs in Different Health Situation as Expressed by Respondents

	Respondents		
	Food has to be given	**Reason**	**Respondents %**
Diabetes	Juice, fruits, less carbohydrates food, foods with less oil.	Content less sugar, reduce the weight, and control sugar level.	88
Over weight	Fatty foods, high sugar content foods, meat, rice, egg, fried foods.	Increase deposition of fat on blood vessels, increase blood pressure and increase weight.	69
Heart problem	Oily items, junk foods, alcohol, egg yolk, ice cream	High fat content, heart attack, increase blood pressure**.**	77
Blood pressure	Oily foods, salty foods, high sugar content foods.	Increase blood pressure, increase blood sugar.	89

Consumption practices of nonfood items

Study covered consumption of non-food items like smoking, alcohol, betel nut, among the students residing in the hostel. Boys (2.5 %) daily and occasionally (4.5 %) have expressed they had the habit of smoking, alcohol consumption (0 %) and betel nut or pan using (3.5 %) daily and (5.5 %) occasionally. Whereas in case of girls there was no case of smoking, drinking and use of betel nut or using of pan. (Table 9).

Food beliefs and taboos

There were several foods, which were considered not to be given at different diseases. The beliefs and taboos were strongly embedded in the subjects (Table 10). 100 % of the respondents avoided sweet, oil rich foods, rice, fruits, high calorie foods, sugar for diabetes. Fatty foods, junk foods, high sugar content foods, high calories foods, meat, rice, egg, fried foods for overweight; Oily items, junk foods, alcohol, non-veg, egg yolk, ice cream for heart problem; oily foods, salty foods, spicy items, high sugar content foods as it was thought to increase the weight, increase deposition of fat on blood vessels, cause heart attack, and increase blood pressure respectively. Similarly, subjects expressed that several foods to be given during different disease are namely lime juice, fiber food, less CHO food, sugar less and oil less food, oats, rice for diabetes fruits, cereals, less fatty food, sugarless food for overweight, fruits, fat free food, less calorie food for heart problem and Fruits, less salty food item, low cholesterol food, less oily food for blood pressure (Table 10).

Clinical symptoms observed among respondents.

Students under study were examined with the help of doctors from internal department of Stomatology faculty of Kunduz University for selected clinical symptoms. It was observed that 30 per cent of boys and 27 % of girls had exhibited symptoms of ill health. Majority of boys (19 %) had spongy dental caries while gums spongy bleeding (4 %) and anemia (8 %) symptoms were predominant among girls (Table 11). Blood pressure of Students revealed that 63 boys & 27 girls had normal B.P, while 37 boys & 73 girls had exhibited lower Diastolic pressure on the day of clinical examination. This being related to BMR, that is basal physiological function shows they are under stress. This was also reflected in average BMR of both boys (BMR 1515) & girls (BMR 1171) being lower than actual computed as per ICMR (2004) standard for Indian 18- 30 years (Table 11).

Table 11: Clinical symptoms observed among respondents

	Boys		Girls	
Deficiency symptoms	**N**	**%**	**N**	**%**
Odema	0	0	0	0
Anemia	2	2	8	8
Angular stomatities	1	1	3	3
Dental caries	19	19	9	9
Gums spongy bleeding	4	4	3	3
Odema and anemia	2	2	0	0
Dental caries and gums spongy bleeding	1	1	1	1
Anemia and gums spongy bleeding	1	1	2	2
Anemia and angular stomatities	0	0	0	0
Normal	70	70	74	74
Total	100	100	100	100

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