

## Studies on Energy and Nutrients in Students Diet of Shahid Chamran University of Ahvaz, Iran

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**Abstract:** This research were performed for quality control of consumed food of students of Shahid Chamran University of Ahvaz, Iran. In this study, amounts of proteins, fats, carbohydrates, vitamins, minerals and energy were evaluated in three times consumed foods (breakfast, lunch, dinner). Food samples were transferred to the nutrition laboratory. The tables of processed, cooked and crude foods and calculation of Index Nutrition Quality). for measuring of nutritional values have been used. The mean of nutrients values in student's diet and energy were compared with needful values and individuals energy in the same age with world standards levels such as world health Organization, Canada and America diets. Results showed that proteins amounts and consumed energy in students diet were more than recommend levels ( $P < 0.05$ ). But the amounts of phosphor and calcium were lower than the standards values. The consumed Vitamins of A, B<sub>1</sub>, B<sub>2</sub>, C were equal to standards values. The consumed vitamin pp was lower than standards values. The amounts of B<sub>6</sub>, B<sub>12</sub>, folic acid vitamins were lower than standards values. It is proposed that the students have to eat fruits, vegetables and dairy products in own diet.

**Key words:** Evaluation • World standards diets • Energy • Students • Nutrients

### INTRODUCTION

Human nutrition has very importance in international level. Responsibility of nutrition improvement ways were put with under taking of Food and Agricultural Organization or (F.A.O.) in world in 1994 [1]. and to nutritional problems has been put under observation until now in world. World Health Organization try in showing of guide nutrition problems. In spite of this all trying, malnutrition and food poor along with increasing of past population and lack of hygienic and medical attentions from most important of hygienic problems in today world. The food which will choice wisely should contain all essential nutrients for body natural functions, otherwise led to lake of one or more nutrients and disease in body [1].

Insel, *et al.* refer to who proposed that the diet on complex-carbohydrate-containing foods. To acquire more fiber and sustained energy without over consumption and congestion. Complex carbohydrates such as whole grains

(specifically, brown rice, millet, oats, barley, buckwheat and whole wheat), legumes, potatoes and other starch vegetables and squashes are the key to any diet for longevity [2].

Protein intake should be moderate. Also no more than 50-70 gram daily with an increase in vegetable proteins such as nuts, seeds and whole grain /legume combinations to about 75 percent of the dietary Protein intake. Lutz, Austrian researcher explained in itself book called "Living of without bread" that many diseases appear in result of consumption foods rich in carbohydrates and therefore little carbohydrate diet and contain values of enough protein and fat is important for the recovery of the many patients [4, 5].

Value carbohydrate of recommended daily is 60-70 gram and values of fat and protein can will choice freely. Mean value protein in little carbohydrate diet is 102 gram and for fat, is 156 gram [6].

According to view of [2] living way of vegetarian people is the best way of therapy for carnivorous people

which affected by to hyper lipoprotein and blood high pressure. They showed that vegetarianism decrease levels of cholesterol, triglyceride and L.D.L considerable and mean of weight and lipid under skin in this individuals is lesser than group of non vegetarian which consumed continuous diet in northern American [7].

Amanda, Wynne, a nutrition scientist, at the British Nutrition foundation, showed in a research in 1999, which dietary advice should focus on the inclusion of the main food groups in the daily diet. This means promoting consumption of bread and other cereals (particularly whole grain varieties) and potatoes for energy and fiber, along with a good variety of different fruit and vegetables (at least five portions a day) to ensure intake of micronutrients, fiber and beneficial antioxidant photo chemicals. Meat, fish and alternatives are useful sources of iron in the diet and milk and dairy foods (e.g. yogurt and cheese) are useful sources of calcium. Intake of fats and in particular saturated fatty acids, should not be excessive. Sugar is best consumed with meals rather than frequently throughout the day[8].

Suitable foods choice for desirable health and prevention from chronic diseases or decrease of process aging, is one of important actions. It might be possible pay attention to youth years as period of start chronic diseases and to middle-aged years as period of appearance these diseases [9].

The more individuals work in 20-30 years of age and often change in place for obtain good job. Usage to consumption of bed room foods or varieties of meats in college is hard experience, for students which living a way from one's home. Tea and coffee drinking for study in night, eat of much foods in college self service, banquet and consumption of rich in fat and sodium foods, usually cause which students increase themselves weight (2.5-12kg) in period of wintry holidays, which go to home[9].

We decided to study on consumed foods evaluation of Students diets.

## MATERIALS AND METHODS

In this research food quality value of breakfast, lunch and dinner were evaluated. Food samples were transferred to the nutrition laboratory for nutrients analysis. The first, samples were dried for measuring of fat values. Moisture values in samples were measured by drier in about 100 °C. Soxhlet methods with organic solvent of diethyl ether were

used for measuring of samples fats. The kjeldahl method were used for determination of food protein values. Total values of moisture, fat, protein and ash were subtracted from 100 for measuring of carbohydrate values (except cellulose). Values of fat, protein and carbohydrate and their energy values in percentage in food samples were determined with in some foods with using of crude, processed and cooked foods composition tables after measuring of nutrients in the laboratory. In this research, food quality values of breakfast, lunch and dinner were evaluated in all days of week. Mean values (gram) of consumed nutrients in students diets in comparison with world standard values were determined by statistical analysis method of "t" test [5, 6, 11].

## RESULTS AND DISCUSSION

Comparison of obtained results for protein in this study with results obtained by Lutz. It is observed that mean of protein value (112.6 gram) in students diet was more than obtained results by Lutz (102 gram). The high energy value in daily students diet showed that the students consumed high carbohydrates contents. Intake of fat and in particular saturated fatty acids, was not excessive. It is proposed it must be decrease to intake carbohydrate in the students diet. There is meaning different between mean values of students consumed energy in comparison with diets of Canada daily, sciences Academic of U.S.A. and W.H.O., F.A.O. with t-test (" $p < 0.05$ ") and " $X^2$ " test (" $p < 0.05$ "). There is the meaning different between the phosphor mean value in diet students in comparison with values of phosphor in world standard diets with t- test, but there is not meaning different for consumed Iron mean values in students diets in comparison with values of Iran in F.A.O., W.H.O. standard diet (for female) ( $p < 0.01\%$ ).

Table 1: Values of protein, fat and carbohydrate (in percentage) in daily consumed foods of students

Days of week	Protein	Fat	Carbohydrate
Saturday	21.56	14.40	64.02
Sunday	12.79	16.01	71.19
Monday	16.23	15.32	68.44
Tuesday	13.56	12.36	74.06
Wednesday	11.47	19.60	68.91
Thursday	19.89	11.02	69.10
Friday	13.20	14.15	72.64
Total mean	15.52	14.69	69.76

Data are meaning of three replicates.

Table 2: Comparison of daily protein and energy values in students diet with Canada and W.H.O, F.A.O and science Academic of American diets

Food diet Nutrient	Ramin College Student diet	Canada diet daily	F.A.O,W.H.O diet	Sciences Academic diet of U.S.A
calorie				
Protein (gram)	112.6	Male: 56 Female: 41	38 30	52 46
Energy (kcal)	3440.75	3000 2100	3070 2310	3000 2100

Data are meaning of three replicates

Table 3: I.N.Q. values of students diet

Nutrients (mg) Foods	Protein (gr)	P	Ca	Fe	Vit. A	Vit. B1	Vit. B2	Vit. pp	Vit. B6	Vit. C	Vit.B12
Hen-meat	8.98	2.54	0.09 4	6.83	0.55	0.75	10.2 8	—	—	1.2 8	—
Rice	1.33	—	0.04	1.16	—	1.16	0.27	0.7 9	—	—	—
Calf-meat	3.84	—	0.02	0.69	—	0.07	0.25	0.6	—	—	—
Cheese	2.92	—	4.7	0.97	—	0.42	1.93	0.2 7	—	—	—
Egg	4.36	8.08	2.13	7.26	37.2 2	1.89	5.19	0.1 7	—	—	—
Sausages	2.21	—	0.11	1.24	—	1.32	1.61	1.7	—	—	—
Potato	1.45	0.2	0.29	1.93	—	2.32	0.68	2.4 4	—	10.3	—
Bread	1.69	—	0.55	4.6	—	—	—	—	—	—	—
Macaroni	1.46	—	0.17	0.87	—	0.73	0.2	0.5	—	—	—
Yoghurt	2.58	5.24	6.69	—	6.75	0.85	4.5	0.25	0.88	0.8	1.71
Vegetables stew	2.4	4.1	5.78	2.99	34.33	1.99	2.34	2.09	—	14.92	—
Pea	2.97	—	0.65	3.9	0.81	3.9	0.71	1.03	—	0.54	—
Tomato	0.69	3.21	1.5	4.68	80.32	3.23	1.9	3.4	—	32.13	—
Bulb	1.19	—	10.94	8.33	—	13.88	4.91	6.58	—	34.72	—
Bean	2.69	—	0.3	5.09	0.09	2.32	0.63	0.73	—	0.33	—
Broad-bean	4.35	—	0.55	4.22	0.84	1.57	6.36	2.31	—	0.84	—
Egg-plant	2.21	—	2.97	8.26	4.03	2.75	2.43	4.35	—	8.61	—
Lentil	3.79	—	0.64	6.01	0.86	2.52	1.42	0.9	—	0.57	—
Milk	3.2	—	5.7	—	2.5	1.4	4.7	—	—	1	—

Calculation is according to 3000 kcal for men needful energy

(I.N.Q.): Index of nutritional Quality

Data are meaning of three replicates.

Table 4: I.N.Q. of food groups of students diet

Nutrients (mg)											
foods groups	Protein (mg)	P	Ca	Fe	Vit A	Vit B <sub>1</sub>	Vit B <sub>2</sub>	Vit pp	Vit B <sub>6</sub>	Vit C	Vit B <sub>12</sub>
(1)	4.85	5.31	0.58	4	18.88	1.007	4.46	0.62	—	1.2 6	—
(2)	2.93	5.24	5.69	0.97	4.62	0.89	3.71	0.26	0.88	0.9	1.71
(3)	1.48	0.2	0.26	2.14	—	1.4	0.38	1.24	—	10. 3	—
(4)	3.45	—	0.54	4.8	0.65	2.57	2.28	1.24	—	0.5 7	—
(5)	1.62	3.65	5.3	6.06	39.55	5.46	2.9	4.1	—	22. 6	—

Data are meaning of three replicates.

Calculation is according to 3000 kcal for men needful energy

Group (1) - meat products and similar, contain: hen-meat, calf-meat, egg, sausage and similar products.

Group (2) - dairy products, contain: cheese, milk, yoghurt.

Group (3) - starchy foods, contain: rice, bread, potato and macaroni.

Group (4) - cereals, contain: pea, been, broad-bean and lentil.

Group (5) - vegetables, contain: egg-plant, vegetables-stew, bulb and tomato

Table 5: Consumed food quality control in students diet according to I.N.Q

Nutrients (mg)	Protein (gram)	P	Ca	Fe	Vit A	Vit B1	Vit B2	Vit pp	Vit B6	Vit C	Vit B12
foods groups											
(1)	G	G	F	G	V.G	A	G	F	—	A	—
(2)	G	G	G	F	G	F	G	F	F	F	A
(3)	A	F	F	G	—	A	F	A	—	V.G	—
(4)	G	—	F	G	F	G	G	A	—	F	—
(5)	A	G	G	V.G	V.G	G	G	G	—	V.G	—

Data are meaning of three replicates.

G: good, A: Adequate, F: Fair, V.G: Very Good

Table 6: Comparison of minerals and vitamins in students diet with Canada and W.H.O., F.A.O. and Sciences Academic American diets

Nutrients (mg)	P	Fe	Na	K	Ca	Vit A	VitB1	VitB2	Vit pp	Vit B6	Folic acid	Vit B12	Vit C
food diet													
Student Diet	231.19	28.55	359.29	451.88	455.02	1176.43	0.99	1.29	12.3	0.095	0.61	0.22	26.33
Canada diet daily	Male 800	10	—	—	800	1000	1.5	1.8	20	2	200	3	30
	female700	14	—	—	700	800	1.1	1.3	14	1.5	200	3	30
Sciences, Academic	Male 800	10	—	—	800	1000	1.5	1.8	28	2	450	3	45
diet U.S.A.	female 800	18	—	—	800	800	1.1	1.4	14	2	450	3	45
F.A.O.,	—	18	—	—	600	750	1.2	1.8	20.3	—	200	2	30
W.H.O. Diet	—	28	—	—	600	750	0.9	1.4	15.2	—	200	2	30

## CONCLUSION

Student's nutrition in 20-25 years should focus on the inclusion of the main food groups in the daily diets. These food groups should contain about 60-70 gram of high quality proteins; 100 gram of high quality fats with unsaturated fatty acids and about 50-60% of daily energy should come from complex carbohydrates such as whole grain, legumes potatoes and other starch. vegetables and squashes. It is necessary that students to consume good variety of different fruits and vegetables and milk products which are good sources of vitamins and calcium and phosphorus.

Improvements in the diet depend on a knowledgeable selection of foods that complement one another in the nutrients that they supply. It is, however, difficult in many regions to obtain such variety. Meat can complement most diets, especially those dependent on a limited selection of plant foods.

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