

BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

DEPARTMENT OF HYGIENE AND ECOLOGY

Head of the department: corresponding member of NAMS of the Ukraine
MD, professor **Bardov V.G.**

Individual work

«ASSESSMENT OF INDIVIDUAL NUTRITION ADEQUACY»

Performed by student of
_____group, _____year, faculty №_____

(Name, surname)

Teacher:

Kyiv-2016

TASKS TO BE PERFORMED FOR INDIVIDUAL WORK

Work includes such sections as:

1. Determination of nutritional status.
2. Determination of energy expenditures and requirements in main nutrients.
3. Description of actual nutrition
4. Comparison and evaluation of results
5. Conclusions
6. Recommendations on rational improvement of individual nutrition

Section I. DETERMINATION OF NUTRITIONAL STATUS OF THE ORGANISM

Determination of your own nutritional status has to be started with assessment of external look and appearance and behavioral patterns along with filling in the "Questionnaire".

QUESTIONNAIRE CARD ON ORGANISM NUTRITIONAL STATUS ASSESSMENT

Date of filling in the card.

1. I.D. data
 1. Name (second name), surname, _____
 2. Sex _____ 3. Age _____
 4. Occupation _____ 5. Length of job _____
 6. Time of work _____
2. Working and living conditions
 1. Types of work: mental work (non-tensioned, slightly tensioned, tensioned, super tensioned); physical work (light, medium complexity, heavy, very heavy) (to underline).
 2. Harmful occupational factors (list them) _____
 3. Additional load: sports, gardening and so on (to specify which, how often, duration) _____
3. Results of nutritional status determination.
 - 3.1. Results of external examination:

Appearance _____

Figure _____

Constitutional type _____

State and look of the skin _____

Eyes _____

Lips _____

Tongue _____

Gums _____

Hair _____

Nails _____

Muscles and bones _____

3.2. Complains, presence of chronical diseases at the moment of examination:

Digestive system _____

Cardio-vascular system _____

Nervous system _____

3.3. Results of anthropometry determination

Body length, cm

Body mass (actual), kg

Calculated ideal body weight, kg

BMI (evaluate according to WHO recommendations).

4. Preliminary conclusion (based on nutritional status assessment results).

5. Recommendations (to list additional studies have to be performed to make differential diagnostics of supposed diseases).

6. Results of laboratory studies (if present).

Conclusions.

Make a detailed analysis of nutritional status determination. Assess the findings (whether it optimal or not, if not to state what exact it is (like excessive or insufficient / premorbid or morbid).

In the presence of deviations from optimal state provide on recommendations for further examinations to reveal the causes of a such changes and possibilities to improve the health.

Section II. DETERMINATION OF THE ENERGY EXPENDITURES AND REQUIREMENTS IN BASIC NUTRIENTS

Determination of daily energy expenditures has to be started from determination of the basal metabolism rates given in the table 1.

Table 1.

The energy expenditure per 24 hours for adults without the physical activity (basal metabolism)

Body weight, kilograms	Age			
	18-29 years	30-39 years	40-59 years	60-74 years
Males (basal metabolism)				
1	2	3	4	5
50	1 450	1 370	1 280	1 180
55	1 520	1 430	1 350	1 240
60	1 590	1 500	1 410	1 300
65	1 670	1 570	1 480	1 360
70	1 750	1 650	1 550	1 430
75	1 830	1 720	1 620	1 500
80	1 920	1 810	1 700	1 570
85	2 010	1 900	1 780	1 640
90	2 110	1 990	1 870	1 720
Females (basal metabolism)				
40	1 080	1 050	1 020	960

45	1 150	1 120	1 030	1 030
50	1 230	1 190	1 160	1 100
55	1 300	1 260	1 220	1 160
60	1 380	1 340	1 300	1 230
65	1 450	1 410	1 370	1 290
70	1 530	1 490	1 440	1 860
75	1 600	1 550	1 510	1 430
80	1 680	1 630	1 580	1 580

Comment: The basal metabolism rate has to be multiplied by the physical activity coefficient (PhAC) given in the table 2 for calculation of the daily energy expenditure by physically active adults.

Table 2

Groups of the able-bodies citizens depending on the physical activity

<i>Physical activity groups</i>		<i>Physical activity coefficient (PhAC)</i>	<i>Approximate list of specialties</i>
I	Mental worker mainly, very light physical activity, energy expenditure 1 800-2 450 kcal	1.4	scientists, students of humanitarian institutions, electronic controller operators, tutors, dispatchers, control panel workers etc.
II	Worker, performing activity with light load, light physical activity, energy expenditure 2 100-2 800 kcal	1.6	trolleybus, tram drivers, conveyer workers, loader, sewer, bundling workers, radio-electronic manufacture workers, agronomists (agriculturists), nurses, connection, service workers, foodstuffs sellers and etc.
III	Worker, performing activity with medium load, medium physical activity, energy expenditure 2 500-3 300 kcal	1.9	mechanics, adjusters, imposers, excavator, bulldozer drivers, surgeons, textile-workers, shoes makers, railway men, coil-plough machine workers, foodstuffs sellers, water-transport workers, machine operatives, chemical plant workers etc.
IV	Worker, performing activity with high and very high load, high and very high physical activity, energy expenditure 2 850-3 900 kcal	2.3 (males) 2.2 (females)	builders, driller assistants, drift miners, majority (main) of agricultural workers, machine-operators, milkmaid, vegetable workers, wood workers, metallurgists, casters, agricultural workers during sowing and harvest periods, blast-furnace operators, fellers, bricklayers, diggers, loaders with manual loading etc.

The next step is to receive data on the individual requirements in basic nutrients (method suitable for healthy men aged 18-59 years and women 18-54 years) on the basis of calculated energy expenditures.

Accordingly, the need for proteins make up 11-13% (for persons with 2000-2500 kcal energy expenditures it should be 13% proteins, 2500-3000 – 12%, and over 3000 – 11%) within 55% of animal origin, need for fats – 25%, within not less than 30% of plant origin fats, the rest (62-64%) - carbohydrates, of which no more than 18-20% are mono- and disaccharides. The need for dietary fibers which is 10 g per 1 MKal (20-25 g per day) also has to be taken into account. The need for main nutrients is calculated in grams (Energy value of proteins, fats and carbohydrates are divided in its energy ratios). Calculations of individual needs for vitamins have to be done on the basis that for each 1 MKal (1000 kcal) of the diet energy value following amounts of its should come: ascorbic acid – 25 mg, thiamine – 0.6 mg, riboflavin – 0.7 mg, pyridoxine – 0.7 mg, nicotinic acid – 6.6 mg, 1 mg retinol/day (with β -carotene as retinol equivalent), tocopherol 15 mg/day. Requirements for minerals are: potassium – 4,000 mg/day, calcium – 1000-1200 mg/day, but not less than 400-500 mg of total calcium should be from milk and dairy products, phosphorus – 1,200 mg/day, iron – 10-18 mg/day and no less than 1.0-1.5 mg of iron should be of heme (meat, offal, etc.).

Next step is to calculate how energy value of the diet should be allocated for the meal time (breakfast, lunch, dinner, etc.) depending on the type of work, the daily regimen, health state and indices of nutritional status of the subject. After all calculations it is necessary to make a conclusion specifying the needs of the individual in main nutrients depending on energy expenditures that have to be written in the appropriate columns ("individual needs") of table 5.

Section III. DESCRIPTION OF ACTUAL NUTRITION

Studying of your own actual nutrition have to be started from the collection of data on your meals during 3 (at least) – 7 (desirable) consecutive days. All the data are written in a dairy by the special form of table 3.

Table 3

Date	Food intake							
	1		2		3		4	
	Time	Name and amount of the meal	Time	Name and amount of the meal	Time	Name and amount of the meal	Time	Name and amount of the meal
I day								
II day								
III day								

The name of the food have to be written, as well as the amount consumed in grams or units of volume, time of food intake (including snacks and all intermediate "minor bites").

According to this information you have to fill in the layout of your diet per each day (Table 4) using data on the recipes of basic food and main chemical composition tables of food. With the access to the Internet you can use the appropriate tables of meals nutrition facts from the site <https://www.supertracker.usda.gov/foodtracker.aspx>

Section IV. COMPARISON AND EVALUATION OF RESULTS

The calculation results of actual food averages (student's ration nutrients content and energy value, Tab. 5) after entering into columns 4, 7 and 11, must be compared with the values of individual needs listed in column 3. When quantitative comparison of the results is performed indices with the difference (surplus or shortage) have to be found and written in the appropriate columns 5 or 6/8 or 9/11 or 12.

The next step – determining the frequency of specific products consumption, including average per day, evaluation the number of food intakes, its regularity, intervals between meals, rational distribution of food between food intakes by analyzing Table 3.

Section V. Conclusion

To write a reasoned opinion you should evaluate the results of the studies with a detailed analysis of nutritional status (signs and symptoms of disorders), analyze the results of comparative analysis of the actual nutrition adequacy to individual physiological needs based on all indices together with writing inconsistencies (and how much); the actual ratio between the main nutrients is estimated also (proteins, fats, carbohydrates, mono-, disaccharides, starch and dietary fibers, trace elements, magnesium, calcium and phosphorus), paying attention to the content of "milk" calcium and "heme" iron; analyze the frequency and quantity of specific products consumption together with comparison with revealed imbalance of nutrients; evaluate dietary patterns, its rationality and regularity compliance with the following connectivity analysis of revealed signs of inadequate nutritional status and actual nutrition (paying attention to the imbalance of nutrients in the diet that can cause nutritional diseases and become a factor in the development of relevant physical illnesses).

Section VI. Recommendations

Making reasonable and specific recommendations, consider a set of factors that are subjects to correction. Products for the correction have to be selected with the fact that the removal (or inclusion) of one product affects a few parameters simultaneously (indicating the amount of recommended products) and the possibility of individual intolerance presence. Also recommendations may include modification of lifestyle, physical activity, and so on.