

Treatment diets in Estonian health care institutions

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Key words: organization of dietary nutrition; nomenclature of diets; nutritional recommendations; energy and nutrients intake.

Summary. New system and nomenclature of diets for Estonian health care institutions have been developed in the university hospital based on theoretical and practical experience obtained over several years of cooperation with medical scientists from different fields of specialization. The nomenclature of diets includes ordinary food and eight groups of diet food with subgroups. The normative values of the basic nutrients are in accordance with the Estonian and Nordic nutritional recommendations. The whole system includes the menus and recipes of nutritional food portions. The system of treatment diets helps to optimize proper nutrition in different departments and organize better patient care.

Introduction

The present article introduces the nomenclature of new modern treatment diets used at the University Hospital in Tartu since 1995. The patient's nutrition has been of interest to investigators in the practical work of clinical medicine, health promotion, and physical education for many years. The WHO management guidelines for nutrition are effective to the quality hospital care and were used in medical and nursing practice in hospitals (1). However, various guidelines for nutrition have been worked out in different countries. The purpose of the general European project (EFCOSUM) was to develop a method for a European food consumption survey that delivers internationally comparable data on the set of policy relevant nutritional indicators. It is concluded that there is broad European consensus on the most suitable method for a pan-European dietary survey for the purposes of the EU Health Monitoring Program (2). The Finbalt Health Monitor project collects standardized information on health and health-related behavioral activity and related trends in Finland and those of the Baltic countries that have major public health problems with noncommunicable diseases related to the lifestyle and behavioral factors (3). These projects were also partly used as examples for the development of the new system and the nomenclature of diets at our hospital.

Basis of the development of nutritional recommendations

The new system of dietary nutrition at the Tartu University Clinicum replaces the nomenclature of

diets developed by professor M. I. Pevsner (1872–1952), which consisted of 15 basic diets and several subgroups and was earlier compulsory in Estonia and in the Soviet Union (4). The new nomenclature of diets has been developed at the university hospital on the basis of the theoretical and practical experience obtained during more than 10 years of cooperation with medical scientists from different fields of specialization (5–7). The Tartu University Clinicum consists of 17 clinics, and therefore, special catering service is obligatory in order to provide everyday different diets for about 1000 patients. The normative values of the basic nutrients are in accordance with the Estonian nutritional recommendations (8), the nutrition guidelines of the WHO Regional Office for Europe (9), and Regulation No. 131, Health Protection Requirements for Nutrition in Health Care and Social Welfare Institutions, issued on November 14, 2002, by the Estonian Ministry of Social Affairs (10). The experience of the medical scientists of the Department of Clinical Nutrition of Kuopio University and the dieticians of Meilahti Hospital of Helsinki University obtained from 1991–1995 has been taken into consideration (11).

Nutritional recommendations in Estonian health care institutions

The names and indications of the nomenclature of diets and the respective recommendations for the consumption of daily energy and basic nutrients are given in Table. The new nomenclature of diets (Table) includes ordinary food and seven groups of diet food,

Table. Nomenclature of diets with indications

	Name of diets	Abbreviations	Indications	Total energy* kcal	Protein g	Fat g	Carbohydrate g
1	2	3	4	5	6	7	8
1.	Ordinary food	OF	Suitable for those who do not suffer from maldigestion, malabsorption, or dysphagia	2700 2500–2900	100 95–110	90 85–95	370 340–400
2.	Lightened diets						
2.1.	Light food or basic diet	BD	Disorders of circulatory system, acute ischemic heart diseases, hypertensive diseases, atherosclerosis, obesity, chronic nephritic syndrome, disorders of gallbladder, biliary tract, and pancreas, chronic hepatitis, cirrhosis of liver, peptic ulcer, esophagitis and gastritis, disorders of the duodenum and intestine	2,500 2400–2600	95 90–100	85 80–90	340 330–360
2.2.	Unflavored diet	UFD	Disorders of fluid and electrolyte balance, acute and chronic nephritic syndrome, disorders of fluid, electrolyte, and acid-base balance, hypertensive diseases, edema	2500 2400–2600	95 90–100	85 80–90	340 330–360
2.3.	High fiber diet	HFD	Diseases of the circulatory system, atherosclerosis, disorders of lipoprotein metabolism and other lipidemias, obesity, diverticular disease of intestine, constipation	2100 2000–2200	80 75–85	70 65–75	285 270–300
2.4.	Protein diet	PD	Status post esophagitis, gastro-esophageal reflux disease, peptic ulcer, dialysis, surgical follow-up care, external body burn, energy malnutrition, anorexia nervosa, stress, cachexia, deficientiaae nutritionales, carcinoma	2900 2700–3000	110 100–115	95 90–100	400 370–410
2.5.	Non-lactic diet	NLD	Lactose intolerance, diarrhea, flatulence, and related conditions	2500 2400–2600	95 90–100	85 80–90	340 330–360
2.6.	Protein-restricted diet	PRD	Disorders of liver, cirrhosis of liver, chronic nephritic syndrome, acute nephritic syndrome, renal failure	1400 1300–1500	50 45–55	45 40–50	190 180–200
2.7.	Purine-lacking diet	PLD	Podagra, disorders of purine and pyrimidine metabolism, systemic conditions of the connective tissue, arthropathies	2100 2000–2200	80 75–85	70 65–75	285 270–300
2.8.	Residue-lacking diet	RLD	Crohn's disease (regional enteritis), diarrhea that is not the result of lactase deficit, gastroenteritis and colitis, for operations, posthemorrhagic condition of the digestive tract, dyspepsia, ulcerative colitis, functional disorders of stomach, for endoscopy	1200 1100–1300	45 40–50	40 35–45	160 150–180
3.	Diets with strict restrictions						
3.1.	Postoperative diet	OP	Postoperative condition of the stomach and intestines, conditions after gynecological operations, postmalnutrition condition, resumption of eating after fasting	600 500–800	20 15–25	20 15–25	80 65–95
3.2.	Diet for patients with acute pancreatitis		Acute pancreatitis, subacute pancreatitis, subacute hepatitis, acute hepatitis, disorders of biliary tract, cholecystitis and cholelithiasis, Crohn's disease (regional enteritis), acute enteritis				
		P1	First period or 1st–2nd day	900 800–1000	35 30–40	30 25–35	120 110–140
		P2	Second period 3rd–4th day	1200 1100–1300	45 40–50	40 35–45	160 150–180
		P3	Third period 5th–6th day	1500 1400–1600	55 50–60	50 45–55	200 190–220

Table continued

1	2	3	4	5	6	7	8
3.3.	Gluten-free diet	GFD	Celiac disease (gluten enteropathy)	2100 2000–2200	80 75–85	70 65–75	285 270–300
3.4.	Diet free of food allergens	AFD	Atopy, atopic dermatitis, eczema, endogenous dermatitis, atopic kerato-conjunctivitis, allergic urticaria, allergic angioedema, allergic asthma, food allergy, and gastrointestinal symptoms	2100 2000–2200	80 75–85	70 65–75	285 270–300
4. Lightened liquid diets							
4.1.	Liquid diet	LD	Inflammation of the mucous membrane of mouth and pharynx, narrowing of lumen of esophagus, postoperative condition of bones of face and jaw, post-tonsillectomy condition, feeding through stoma opening, condition following gastrointestinal hemorrhage, esophageal varices	2100 2000–2200	80 75–85	70 65–75	285 270–300
4.2.	Gluten-free liquid diet	GLD	Inflammation of mucous membrane of mouth and pharynx and accompanying celiac disease, for sufferer of celiac disease after tonsillectomy, for sufferer of celiac disease after stomach and intestinal operations, for sufferer of celiac disease after postoperative diet, feeding of sufferer of celiac disease through stoma opening	2100 2000–2200	80 75–85	70 65–75	285 270–300
4.3.	Liquid diet for diabetics	DILD	Insulin-dependent diabetes (type I diabetes) and non-insulin-dependent diabetes (type II diabetes), when the following are also present: inflammation of mucous membrane of mouth and pharynx, insulin-dependent diabetes mellitus and non-insulin-dependent diabetes mellitus, narrowing of lumen of esophagus, post-tonsillectomy condition, condition after stomach and intestinal operations, feeding through stoma opening, after postoperative diet	2000	100	66	250
5. Lightened soft diets							
5.1.	Soft diet	SD	Masticatory disorders, weakness of the muscles of the lips, tongue and palate, multiple sclerosis, the period following facial and jaw operations, dysphagia (difficulty swallowing)	2500 2400–2600	95 90–100	85 80–90	340 330–360
5.2.	Non-lactic soft diet	NLSD	Conditions accompanying hypolactasia: masticatory weakness, weakness of the muscles of the lips, tongue and palate, multiple sclerosis, the period following facial and jaw operations, dysphagia (difficulty swallowing)	2500 2400–2600	95 90–100	85 80–90	340 330–360
5.3.	Soft diet for diabetics	DISD	Type I and type II diabetes, when accompanied by masticatory disorders, weakness of the muscles of the lips, tongue and palate, multiple sclerosis, the period following facial and jaw operations, dysphagia (difficulty swallowing)	2000	100	66	250
6. Diets for diabetics							
6.1.	With carbohydrate contents 300 g	300	In the case of type I and type II diabetes, when accompanied by increased energy requirement	2400	120	80	300
6.2.	With carbohydrate contents 250 g	250	In the case of type I and type II diabetes, when accompanied by moderate energy requirement	2000	100	66	250

Table continued

1	2	3	4	5	6	7	8
6.3.	With carbohydrate contents 200 g	200	In the case of type I and type II diabetes, when accompanied by lower than usual energy requirement, overweight or obesity accompanying diabetes	1600	80	53	200
6.4.	With carbohydrate contents 150 g	150	In the case of type I and type II diabetes, when accompanied by lower than usual energy requirement, overweight or obesity accompanying diabetes	1200	40	40	150
7. Various individual diets							
	Individual diets	ID	Nausea, constipation, cancer, diseases of the hematogenous organs (anemia, leukemia), multiorgan dysfunction, posthemorrhagic condition of the esophagus, stomach and intestines, condition following cardiac infarction, condition following liver transplant, hepatic encephalopathy, post kidney transplant, obesity, fluid disorders, electrolyte and acid-base balance. Energy expenditure and protein, fat, carbohydrate requirements are calculated on an individual basis, taking into consideration the patient's clinical condition, weight, age, height and sex, and the amount of fluid consumption is determined	Daily requirement 1100–2900	40–110	40–95	150–400
8. Enteral nourishment*****							
8.1.	Standard tube food**	STF	Unconsciousness, limited functioning of stomach and small intestine, paralysis, blockage of esophagus, anorexia nervosa	500 mL=500	500 mL=18.8	500 mL=16.7	500 mL=68.8
				Nutritional value 1 mL=1 kcal			
8.2.	Protein tube food***	PTF	Extensive protein loss with bodily fluids, malnutrition, burns, sepsis	500 mL=650	500 mL=32.5	500 mL=29	500 mL=65
				Nutritional value 1 mL=1.3 kcal			
8.3.	High fiber tube food***	FTF	Unconsciousness, severe trauma, cachexia, malnutrition, paralysis, constipation	500 mL=500	500 mL=18.8	500 mL=16.7	500 mL=68.8
				Nutritional value 1 mL=1 kcal			
8.4.	Protein-lacking tube food****	LTF	Unconsciousness, uremia, azotemia, cirrhosis of the liver	500 mL=500	500 mL=18.8	500 mL=16.7	500 mL=68.8
				Nutritional value 1 mL=1 kcal			
8.5.	Tube food for diabetics***	DTF	Unconsciousness, uremia, azotemia, cirrhosis of liver, blockage of esophagus, limited functioning of small intestine	500 mL=500	500 mL=20.5	500 mL=17.5	500 mL=64.5
				Nutritional value 1 mL=1 kcal			
8.6.	Special tube food***	SPTF	Crohn's disease (regional enteritis), pancreatic dysfunction, nutrient hypersensitivity, acute renal failure, severe metabolic dysfunction of the liver, cholestasis, cirrhosis of the liver, severe respiratory dysfunction, hypercatabolic processes, septicemia, toxicemia	500 mL=500	500 mL=22.5	500 mL=8.5	500 mL=84
				Nutritional value 1 mL=1.3 kcal			

* Total energy measurements is expressed in kilocalories (kcal), wie es are used in Estonian hospitals.

** Daily requirement 2000 mL.

*** Daily requirement 1500–2000 mL.

**** Daily requirement 1500 mL.

***** The basis of the B. Braun Melsungen AG recommendations are calculated.

which are in turn divided into subgroups. The detailed description, the amount of basic nutrients, and the list of indications for the use of respective diet food in the event of various diseases have been added to each subgroup.

The basis of the Nordic and Estonian Nutritional recommendations are calculated for a standard person, a man weighing 70 kg and a woman – 60 kg (8, 12). The recommended intake of fat, carbohydrates, and protein as percentages of total energy intake (E%) for groups of 15–65 years with a heterogeneous age and sex distribution are given in Table. Proteins should provide 10–20 E%. The diet minimum daily protein requirement is 0.6–0.9 g/kg. Fat, calculated as the total fat content including glycerol and other lipid components, should provide 25–35 E%. Carbohydrates should provide 50–60 E% (8, 12).

Individual recommendations for energy intake are given in respect to the metabolic rate, the body composition, and the degree of physical activity.

The four different treatment diets for diabetics are categorized based on the carbohydrate content and deserve particular attention. Enteral and parenteral nutrition have been examined, and four different options of tube food for standardized enteral nutrition have been offered. The possible compositions of individual diets have been provided.

In order to use the nomenclature of treatment diets rationally, each item on the nomenclature includes a list of particular foodstuffs used as diet food. The foodstuffs are classified into the following groups: the cereal, milk, meat, potato and vegetable group, the berries and fruits group, the fat and sweet substance group, the drinks, flavorings and additives group. The list of foodstuffs in each group has in turn been divided into three groups: recommended, not recommended, and prohibited foodstuffs. Each item in the nomenclature of treatment diets includes the recommended diet foods composed of the foodstuffs in the above-mentioned list. Those are divided into soups, roasts, sauces, casseroles, hotpots, porridges, desserts, pastries, salads, sandwiches, additives, and drinks.

The whole system includes 227 recipes to specify the foodstuffs and the nutrient content of each food. Energetic value has been calculated in kilocalories and kilojoules. The nutritional content of each component of the food has been calculated based on the edible parts of the foodstuffs. Each recipe specifies to which diet the particular food belongs.

In order to facilitate the organization of dietary nutrition in the hospital, the sets of daily specimen

menus, composed of diet food, have been prepared according to the nomenclature (breakfast, lunch, dinner; snacks, if necessary). Different daily specimen menus for ordinary food are provided for 20-day periods. For each subdivision of the diet food nomenclature, daily specimen menus have been composed for five different days. Each daily specimen menu specifies the amount of food energy and basic nutrients.

The complete nomenclature of diet food and additional data:

1. A list of foodstuffs,
2. Diet food,
3. Daily specimen menus.

All the data of the diet nutrition have been linked to the clinic's integrated computer system since 1997. Example menus and recipes were published in Estonian as a handbook for doctors and dieticians (13).

Discussion

The new system of treatment diets in Estonia helps to optimize proper nutrition in different departments and organize better patient care. The Ministry on Social Affairs of Estonia recently accepted the present nutritional recommendations as a basis work in the development of the new system of treatment diets in all the Estonian health care institutions (13). There are differences between national databases in the various countries concerning nutrient intakes, and more research is needed for the development of food composition databases in the certain region (14). Several misunderstood dietary concepts are still prevalent in the Baltic countries. The correct beliefs related to salt intake and the types of fat were not consistent predictors of healthier food behaviors. In-depth qualitative investigations are needed to better describe and understand the dietary beliefs and attitudes in the Baltic countries and to identify the barriers to the adoption of healthy food habits (15). The mean proportion of energy from fat was high in Lithuania (44%) and Latvia (42%) compared with Estonia (36%). In contrast, the percentage of energy from carbohydrate, protein, and alcohol was higher in Estonia. The mean protein intake was generally not high in some population subgroups. Median vegetable intakes were very low (<200 g/day) in the Baltic countries (16). The nutrition programs aimed at the dietary change have a long history of public responsibility in several Nordic and Northern European countries (17). Roos, Lean, and Anderson have described the organization and the implementation of nutrition policies, and examined the intervention strategies for the dietary change in

three Scandinavian countries (18). The recommendations concerning healthy diet among population are also acceptable in our country.

Beside regional differences in dietary habits, there are indeed many problems concerning the nutrition needs for patients with different diseases. Therefore, the development of the modern system of treatment diets in Estonian hospitals was difficult. In addition, nutritional counseling of patients that represents a part of patient care and rehabilitation had been set up. Many aspects like patient age, gender, diagnosis, also functional status and cognitive function should be taken into account (19). Moreover, the nutritional status assessment should be used in routine clinical practice. In the clinical study of Kuopio University Hospital, the role of the body composition during rapid weight loss in obese persons with the metabolic syndrome was assessed (20). Both aspects – the nutritional counseling and the nutritional status assessment – were taken into account by the author, and a proper system was set up with the help of clinicians at the university hospital. The best results of collaboration were achieved with pediatricians, intensive care unit doctors, endocrinologists, and nephrologists (21). There are lots of data about the importance of diet, for example, in the treatment of renal diseases. The lower levels of dietary protein intake slow the increase in proteinuria and renal disease progression both in clinical and experimental studies (22–24). Based on the meta-analyses and secondary analyses of the randomized trials, it can be concluded that protein restriction slows the progression of the renal disease. When patients are carefully monitored, protein-restricted diets, rather than inducing malnutrition, may even prevent it (25, 26). Different specialties have specific nutritional problems and many studies have been performed in order to demonstrate the importance and the need for various diets. The hospitalized patients insufficient food intake was often attributed to the causes other than the disease, there should be a potential to improve the hospital meal service (27). The departments had been screened for nutritional problems the hospital's were not followed. The patients' in hospital had an inadequate nutritional status and the dietary requirements on practical aspects (28).

A prospective study investigated the structure and the organization of dietary nutrition in German hospitals (29), and in conclusion, better patient care was achieved with proper nutrition. Undernutrition is a serious problem in the clinical practice (28), especially in the intensive care unit (7). For instance, in critically ill patients, the risk of death was 56% lower in patients who received enteral nutrition (30). Hakala et al. studied the differences in foods between the two countries' results and experiences from a Swedish-Finnish study and the methodological differences in the assessment of nutrient intakes (31). In children with functional gastrointestinal disorders, less-organized food habits considering their association with psychosocial factors were revealed (32). Monitoring dietary intake in the children is important in order to explore and prevent the onset of adult health problems (33). The diets rich in fruits and vegetables have been of interest because of their potential health benefits against chronic diseases such as cardiovascular diseases and cancer (34). Information on phyto-estrogen intake in foods was reported in the Finnish National Food Composition Databases (35). In conclusion, the systematization of nomenclature of treatment diets in the multiprofile health care institutions is essential in patients' care.

Conclusion

In the current study, a new nomenclature of diets has been developed at the university hospital based on the theoretical and practical experience obtained over several years of cooperation with medical scientists from different fields of specialization. The nomenclature of diets includes ordinary food and eight groups of diet food with subgroups. The normative values of the basic nutrients are in accordance with the Estonian nutritional recommendations. The whole system includes the menus and the recipes of nutritional food portions. The systematization of the nomenclature of treatment diets in the multiprofile health care institution is essential in patients care.

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Gydomųjų dietų sistemos plėtra Estijos ligoninėse

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Raktažodžiai: dietinės mitybos organizavimas, dietų nomenklatūra, mitybos rekomendacijos, energijos ir maisto produktų vartojimas.

Santrauka. Pacientų mityba, kuri klinikinės medicinos praktikoje jau daug metų buvo tyrėjų susidomėjimo objektu, taip pat pacientų sveikatos būklės gerinimas ir kūno lavinimas.

Tyrimo tikslas – sukurti Estijos medicinos įstaigoms naują dietologijos sistemą ir nomenklatūrą. Gydomųjų dietų sistema padeda optimaliai sureguliuoti ligonių mitybą ir organizuoti geresnę ligonių priežiūrą. Pagrindinių maisto produktų vertė yra suderinta su Estijos mitybos rekomendacijomis, su Pasaulinės sveikatos organizacijos Regioninio štabo Europos praktika medikams mokslininkams, Kuopio universiteto klinikinio maitinimo skyriaus mitybos nuorodomis ir su Helsinkio universiteto Meilahti ligoninės dietologais.

Dietų nomenklatūra, indikacijos ir atitinkamos rekomendacijos kasdieniam energijos ir bazinių produktų vartojimui nurodyti naujoje dietų nomenklatūroje. Pavyzdiniai valgiaraščiai ir receptai buvo publikuoti Estijoje kaip žinynas gydytojams ir dietologams.

Gydomųjų dietų sistema padeda optimaliai sureguliuoti ligonių mitybą skirtinguose skyriuose ir organizuoti geresnę pacientų priežiūrą.

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