

U.M. Lebedeva, A.M. Dokhunaeva, D.A. Chichakhov, L.I. Verbitsakaya, A.V. Sivtseva, E.V. Kondratiev,
Y.N. Ivanova

Nutrition of the Sakha (Yakutia) Republic Children: Current State, Issues and Their Solutions

ABSTRACT

The modern characteristic of providing children of early age by specialized products of baby food in the Republic of Sakha (Yakutia) is given. The assessment of the organization of medical foods in the children's medical organizations is carried out. Separate problems at various stages of the organization of free and medical foods are revealed. In the solution of these problems scientifically based recommendations about food improvement are developed, pilot platforms are created, innovative technologies of optimization of structure of food of younger generation take root.

Keywords: optimization of structure of food, food of children and teenagers, specialized products, free and medical foods, innovative technologies.

INTRODUCTION

Health protection of population in the Republic of Sakha (Yakutia) is a priority of the Head and the government of the Republic of Sakha (Yakutia), medical science, practical health care and regional innovative development specialists, with providing safe and quality healthy food, as the major issue of national security and improvement of the life quality, adaptation potential and socialization, education and teaching of the rising generation.

Meanwhile, inadequate development of healthy lifestyle and food practices, incorrect eating behaviors and low eating culture, a decrease of food quality and safety facilitating development of many deficient states and alimentary diseases (iron-deficient states and anemia, iodine-deficient states and endocrinopathy, calcium- and phosphorus-deficient states, osteopenia, and osteoporosis), as well as many non-infectious diseases (metabolic imbalance, overweight and obesity, pancreatic diabetes, arterial hypertension and many allergic diseases) which risk factors pose certain goals and objectives before medical science, practical healthcare, and innovative development of the region in solving important nutrition problems.

Material and methods. Analytical databases of standardized questionnaires approved by the Ministry of Healthcare of the Republic of Sakha (Yakutia) (Form 1), questionnaires of healthy eating, and nomenclature indicators of standard diets (Form 2) were used in the work.

Results. In recent years, the Ministry of Healthcare of the Republic of Sakha (Yakutia) carries on work in the area of optimization of population nutrition, organization of activities on promotion of healthy and clinical food according to the Agreement on Cooperation between the government of the Republic of Sakha (Yakutia) (Head G.I. Danchikova) and the Federal State Government-Financed Research Institution, Research Institute of Nutrition (Director, member of the Russian Academy of Sciences V.A. Tutelyan) of June 24, 2010. Arrangement of free food distribution for children under 3 is done according to the Resolution of the government of the Republic of

Sakha (Yakutia) No. 105 of April 16, 2015 "*The Order of Provision of Expectant and Nursing Mothers as well as Children under 3 with Adequate Nutrition in The Republic of Sakha (Yakutia)*" [1]. The adopted Order prescribes indicators for provision of expectant and nursing mothers as well as children under 3 with a diet of high nutritional quality, and secures recording, accounting, and control of nutrition provision. The document confirms the form of requirements of free healthy nutrition and a range of food for expectant and nursing mothers, as well as children till 3 years. Arrangement of clinical nutrition in children's healthcare institutions is regulated by the recommendations of the Core Commission on Dietetics, the Regional Expert Council of Healthcare, the Ministry of Healthcare of the Russian Federation and is carried out in pursuance of the Order of the Ministry of Healthcare of the Russian Federation "*On Improvement of Arrangement of Clinical Nutrition in Medical Institutions of the Russian Federation*", August 5, 2003 with amendments and additions [2]. The main coordinator of this work is the Center of Clinical and Preventive Nutrition, Research Institute, North-Eastern Federal University named after M.K. Ammosov.

Realization of measures for provision of children under 3 with free food has been conferred on the Ministry of Healthcare of the republic since 2012.

As for 2014, the total number of children from birth to the age of 3 amounted 48.511 in the republic, from them 31.666 children were provided with free food, 65.3 % of the total number of children. The number of consumed adapted milk formulas from 0 to 6 months was 111,087 tins and cartons (Similac Premium, Similac, Selia, NAN, Nutrilon, Nestogen, Agusha Original, Bebi, Hippcombiotic). Among 7 to 12 months, 94.348 tins and cartons were distributed (Selia, Nestogen, NAN, NAN Comfort, Similac premium, Similac, Agusha original, Frisolac, Nutrilon). Among infants from birth to 12 months, 35,764 tins were distributed (Nutrilac immune bifi), NAN, Similacantireflux, Similac premium, MD Mil kozochka). Infants of 1-3 years of age received 151.275 tins and cartons (Similac, Nutrilon, Nestogen, NAN, Frisolac, Hipp). Also, food with medioprophylactic effects was distributed: hypoallergic, cultured milk, lactose-free, antireflux, for premature, based on hydrolyzate, low lactose in amounts of 58.929 pieces and special-purpose manufactured baby food (baby porridge, purée, juice) in amounts of 8.046 pieces, in general, porridge was purchased by the Tattinskaya Central Hospital, juice by the Churapchinskaya Central Hospital. In some areas (the Chirapchinskiy and Neryungrinskiy regions) liquid milk was purchased in amounts of 50.524 l pieces. Generally, delivery of products in 2014 began mostly from July 2014, in the first half of the year product realization was made based on residues of 2013, including transfer from one district to another. In rural areas, products were generally, in 82.9 % of cases, kept in healthcare organizations, being generally distributed from children polyclinics.

Suntarskiy and Tomponskiy regions still have infant feeding centers and all products are distributed through them. In 42.9 % of medical institutions there are employees responsible for baby free food distribution, including dietary nurses in Eveno-Bytantayskiy, Churapchinskiy, and Tomponskiy regions; nurses of general-duty work in 12 other regions; storekeepers, logistics managers, and technicians are engaged in 17 regions, a hospital attendant is working in Khangalasskiy region. In general, all employees responsible for baby foods have no qualifications. In 28.6 % of central regional hospitals, employees responsible for distribution of free nutrition work for one wage rate, 8 do for 0.5 wage rate, in 17 medical institutions this work is an additional duty.

Issues of arrangement of clinical nutrition in medical-prophylactic institutions are regulated, first of all, by the Order of the Ministry of Healthcare of the Russian Federation of August 5, 2003. According to this order, work of a dietary doctor, a dietary nurse, and the Council of Clinical Nutrition is organized in medical-prophylactic

institutions of the Republic of Sakha (Yakutia). Clinical and enteric nutrition in medical-prophylactic institutions is arranged in accordance with various instructions.

General management of dietary nutrition at the medical-prophylactic institution is carried out by the Head Doctor, in his or her absence- by the Deputy for Medical Work. In 82.9 % of medical-prophylactic institutions, employees responsible for arrangement of clinical nutrition were appointed by orders of Head Doctors which is 20.7 % more than in 2013 (69.2 %). 40 % of medical-prophylactic institutions have Councils for Clinical Nutrition, in comparison with 2013, this indicator increased by 13.1 %. The Council includes members of the crew for nutritive support. In 2013, a team for nutritive support worked only in the Suntarskaya Central Hospital, but in 2014 they were organized in 5 more hospitals (Kobayskiy, Megino-Kangalasskiy, Mirninskiy, Nyurbinskiy and Olenekskiy hospitals). Staffing level increased during the period under consideration: there were 37.2 % of works managers which is 17.9 % higher than in 2013 (19.2); 103 cooks of various qualifications were working in different central district hospitals in 2013, with their number increasing up to 125 in 2014.

In a medical-prophylactic institution, a nutritionist is responsible for organization of clinical nutrition. In cases of absence of a nutritionist, a dietary nurse is responsible for this work. In the Republic of Sakha (Yakutia), 3 nutritionists professionally retrained in dietetics at the Nutrition Department, Russian Medical Academy of Post-Diploma Education (Moscow), were working at various medical-prophylactic institutions in 2014: at the National Medical Center *Republican Hospital No. 1*, the National Center *Phthisiology* and part-time in the state government-financed institution of the Republic of Sakha (Yakutia) the *Yakutsk Municipal Children's Hospital*. Dietary medical nurses are trained at the Head Medical College. At the end of 2014, medical-prophylactic institutions of the Republic of Sakha (Yakutia) were staffed with dietary medical nurses making 52.2 %, which is 13.7 % more than in 2013 (38.5 %). In 2014, eight medical workers studied at advanced courses for organization of clinical nutrition in medical-prophylactic institutions. In 23 medical-prophylactic institutions, consultations for wider population on issues of healthy and clinical nutrition are held.

One of the main steps in realization of prophylactic measures on clinical nutrition is the activity of the *School of Healthy Nutrition* approved by the orders of the Ministry for Healthcare of the Republic of Sakha (Yakutia), 2005 [3]. After 2014, *Schools of Healthy Nutrition* function in 12 medical organizations of the Republic of Sakha (Yakutia) (34.3 %) which is 25.7 % more than in 2013. In 2013, such schools worked only in the Namskaya, Lenskaya, and Olenekskaya central district hospitals.

To optimize clinical nutrition, develop organization and improve management of its quality, a system of standard diets, differing in their contents of main nutrients and caloric value, technology of food preparation and average daily food assortment, is being introduced in medical-prophylactic institutions of the Republic of Sakha (Yakutia). Medical workers in 91.4 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia) use a new diet nomenclature (76.9 % in 2013), no diets have been elaborated in the Abyiskaya, Anabarskaya, and Oymakonskaya central district hospitals. In 62.9 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia), analysis of effectiveness of organization of clinical nutrition is performed by employees responsible for nutrition or a dietary medical nurse (42.3 % in 2013).

Separate nutrition units are in 94.3 % of the medical-prophylactic institutions (88.5 % in 2013), and all of them are under the medical institution itself. 22.9 % of the nutrition units of medical-prophylactic institutions of the Republic of Sakha (Yakutia) have been renovated, 31.4 % have been redecorated, 22.9 % need renovation, and 22.9 % need redecoration. In comparison with 2013, a percentage of nutrition units requiring renovation decreased

in 2014 by 42.3 and 22.9 %, respectively. 37 % of nutrition unit equipment needs replacement, 17.1 % – an overhaul, and 24.6 % – medium repair. In 2013, these indicators were 50.2, 20.8, and 29.2 %, respectively.

Generally (92.3 %) imported products are used for food preparation, local products comprise only 7.7 % of the total volume of the products served at medical organization. The technological process of clinical nutrition preparation consists of the full (94.3 %) and distributing (5.7 %) cycles. Food quality control at its arrival to a warehouse and a nutrition unit, control of food stock storage, control of food preparation is conducted by an employee responsible for organization of clinical nutrition. 85.7 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia) have a 7-day menu, the Eveno-Bytantayskaya, Tomponskaya, Tattinskaya, Verkhnekolymskaya, Amginskaya central district hospitals lack menus. 60 % of them additionally have a “winter” and a “summer” options. Analysis of major documents (distribution cards, distribution record sheet, etc.) made in 2013 revealed that 88.5 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia) did not keep the records, with only the Eveno-Bytantayskaya central district hospital being an exception. The prophylactic medical examination of employees of nutrition units and cafeterias is performed according to the confirmed schedules. In 2014, nutrition unit employees of 71.4 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia) were trained, sanitary-educational work on clinical nutrition was conducted in 68.6 % of medical-prophylactic institutions of the Republic of Sakha (Yakutia). In general, eating patterns involve 4 meals, 20 % of medical-prophylactic institutions prepare 3 meals, 60 % - 4 meals, and 20 % - 5- 6 meals a day.

According to estimations, in all children’s hospitals and departments of the republic there are 2.148 beds, including 24.029 children under treatment, the actual cost of eating for one child was in average 182 Rubles 72 Kopeks (in 2013, it made 150 Rubles 12 Kopeks). Food is unvaried, one product is insufficiently replaced by another one (25.7 %), specially prescribed products of clinical nutrition are insufficiently presented in a dietary intake (34.3 %), 26.9 % of them are produced in Russia, 15.4 % - abroad. In 31.4 % (50% in 2013) of medical-prophylactic institutions of the republic there are no standards of dietary intakes of clinical nutrition elaborated by experts. The dietary intake includes: up to 100% of white bread, 40% of rye bread, 17.1 % of potato flour, 100% of cereals, beans, and pasta, 100% of potato, 85.7 % of vegetables and greens, 65.7 % of fresh fruits, 100% of dried fruits, 62.8 % of juice, 100% of sugar, 100% of confectionary, 100% of butter, 100% of vegetable oil, 60% of eggs, 9% of curds, 37.1 % of milk and 62.8 % of cultured milk products, 34.3 % of sour cream, 42.8 % of cheese, 100% of meat of the first category, 37.1 % of sausages, 77.1 % of birds of the first category, 22.9 % of sea food, 88.6 % of fish (filet), 14.3 % of herring, 31.4 % of coffee and cocoa of the daily requirement. All medical-prophylactic institutions hold the records of prepared food (Form No. 6-lp).

Nutrition units (83.9 %) are equipped with fully mechanical, heating, and refrigerating machines. Heat equipment is available in the Anabarskaya and Zhiganskaya central hospitals (5.7 %), the Eveno-Bytantayskaya, Ust-Yanskaya, Srednekolymskaya, Abyiskaya central district hospitals (11.4 %) are equipped with refrigerating machines. For primary food processing, the following mechanical equipment is available: machines to process cereals, potato, and vegetables (15.4 % of the total number of medical-prophylactic institutions), machines to process meat and fish (53.8 %), machines to prepare dough (26.9 %), tanks and machines for dish washing (53.8 %), machines to cut bread and eggs (11.5 %), mixing machines for liquid formulas (26.1 %). For hot food processing, the following equipment is available in nutrition units of medical-prophylactic institutions of the Republic of Sakha (Yakutia): cooking (53.8%), frying (76.9%), and non-mechanized (42.3%) machines. From refrigerating equipment there are refrigerating chambers (88.5%) and refrigerating cabinets (57.7%). In 85.7% of medical-prophylactic institutions of the Republic of Sakha (Yakutia) they provide meals for caretakers of sick children. Prophylactic

examinations for employees of the nutrition units are held 1-2 times per year. Vitamin fortification of food is made in 60% of medical-prophylactic institutions, enteral nutrition is arranged and patients' nutrition status is estimated in 54.3% of medical-prophylactic institutions. To provide enteral nutrition, instant special purpose products are used (Nutrison, Neoshur, Alfare, Prenan, broths, 5% porridges), mostly enteral nutrition formulas were injected through a feeding sound in 71.4% of medical-prophylactic institutions, through a tube in 5.7% of medical-prophylactic institutions, and through a stoma in 2.8% medical-prophylactic institutions of the republic.

Thus, arrangement of clinical nutrition in medical institutions is one of the main medical measures for different diseases and pathological states. Clinical nutrition is a component of integrated therapy. One of problems of nutrition and health of infants is an increase of the number of functional health disorders. According to data of clinical-epidemiological examination conducted by the Nutrition Center, Research Institute of Health, North-Eastern Federal University, 2/3 of infants have functional disorders of digestion, iron-deficient states, paratrophic disorders, and others, exposing them to risk of many chronic non-infectious diseases further in adult life. In this regard, the government of the republic pays a great attention to social aid to population with low income. At present, monitoring is conducted and the draft of the program "*National Program on Optimization of Nutrition of Infants from 1 to 3*" is being developed by Russian specialists.

Issues of prevention and treatment of children with diseases related to nutrition disorders have become a special topic of advanced training courses for medical workers of the republic. The course of training of specialists on dietetics and nutrition are held with participation of the department of dietetics and nutrition, Russian Medical Academy of Post-Diploma Education (Moscow). The course of training was taken by more than 200 employees from children medical-prophylactic institutions, medical institutions of higher and specialized secondary education, as well as workers of research institutes. For the last 5 years, 5 doctors in dietetics were trained in courses of professional retraining by the Ministry of Healthcare of the Republic of Sakha, 144 h thematic advanced training course *Modern Aspects of Nutrition of a Sick and Healthy Child* was held by the department of pediatrics with the courses of gastroenterology, nutrition, and dietetics, the Russian Research Medical University named after N.I. Pirogov, two webinars on important issues of children's nutrition (Kranskoyarsk State Medical University named after Voyno-Ysenetskiy), several elective cycles were held.

According to the Order of Dietetic Aid for Population, nutritionist rooms providing consulting and diagnostic aid to children have been organized. Within the framework of implementation of measures on modernization of healthcare, the Order of Providing Nutrition Aid to Children and Adolescents has been developed.

Informative and educational work on formation of healthy lifestyle including healthy eating is held through the network of Departments of Medical Prophylaxis and Centers of Health of the Ministry of Healthcare of the Republic of Sakha (Yakutia). Mobile expedition consulting-diagnostic work on estimation of health and nutrition statuses is held. The programs of the School of Health involving certain educational courses School of Healthy Eating and School of Breast Feeding have been introduced for medical workers and population.

Important are issues of nutrition arrangement at educational institutions and welfare teams. There arises a question of optimization of nutrition in organized collectives. Ministry of Education of the Republic of Sakha (Yakutia) and the Nutrition Center, Research Institute of Health, North-Eastern Federal University are elaborating a system of modernization of children's nutrition in preschool-school educational institutions, 24-day uniform menus for school meals and 21-day uniform menus for sanitary educational centers of the republic are being introduced. A pilot set is the Republican center for recreation and sanitation of children Sosnoviy Bor ("Pine Wood").

A systematic work on issues of analysis, systematization, and control of meals arrangement at educational institutions is underway. An active work on automated monitoring of nutrition system of children and adolescents studying at educational organizations of the Republic of Sakha (Yakutia) is performed. The educational-instructional guide book "Nutrition of Children and Adolescents Studying in Educational Organizations of the Republic of Sakha (Yakutia)" published by employees of the Nutrition Center, Research Institute of Health, North-Eastern Federal University is for now a reference book for medical and pedagogical workers of educational organizations. The guide book is a winner of all-Russian and international exhibitions and is the best educational-instructional guide book of Russia, it is included into the database of the Russian Index of Scientific Citation with a high impact-factor. According to the Agreements on Mutual Cooperation between the Center SosnoviyBor and Health Center of the Ministry of Healthcare of the Republic of Sakha, as well as the Research Institute of Health, North-Eastern Federal University for Scientific-Methodical Support, innovative health-protecting and health-developing programs of revival and promotion of healthy eating are implemented. The republican center of recreation and sanitation of children SosnoviyBor is an innovative venue. It was proved by the joint I republican forum for medical workers and workers of nutrition units of educational organizations *Let us Keep our Health* in Yakutsk organized by the Ministry of Healthcare of the Republic of Sakha (Yakutia), the Ministry of Education of the Republic of Sakha (Yakutia), and the Nutrition Center, Research Institute of Health, the North-Eastern Federal University with participation of representatives of departments of higher and specialized secondary institutions of medical education of the North-Eastern Federal University named after M.K. Ammosov and Krasnoyarsk State Medical University named after professor Voyno-Yasenetskiy. Information about the conducted work is reflected in the Proceedings of the Forum.

Thus, at present, the Sakha Republic witnesses a number of problems of provision of children and teenagers with high quality food at various levels. To solve these problems, integrated systematic work on optimization of nutrition of children and adolescents and modernization of nutrition in organized children collectives is held, also free food for families with infants a charity is available. The conducted work is most effective in development of skills and culture of healthy lifestyle and eating, keeping and promotion of health of children and adolescents in the Republic of Sakha (Yakutia).

A part of work has been conducted within the base part of the state task of the Ministry of Education of the Russian Federation No. 3048.

References

1. PostanovleniePravitel'stva RS(Y) ot 16.04.2015 "O poriyadkeobespecheniyapolnosennympitaniemberemennyykhzhenshchin, kormyashchikhmaterei, a takzhedetei v vozraste do trekh let v Respublike Sakha (Yakutia) [The decree of the Government of Sakha (Yakutia) from 16.04.2015 №105 «On theprocedure of ensuring adequate nutrition for pregnant women, lactating mothers and children aged up to three years in the Republic of Sakha(Yakutia)»].
2. PrikazMinzdrava RF ot 5 avgusta 2003 g. N330 "O merakhposovershenstvovaniyjulechebnogopitaniya v lechebno-profilakticheskikhchrezhdeniyakhRossiyskoyFederatsii" (s izmeneniyamiidopolneniyami) [The order of Ministry of health of the Russian Federation from August 5, 2003 №330 «On measures on improvement of therapeutic feeding in health care institutions of the Russian Federation» (with changes and additions)].
3. PrikazMZRS (Y) № 01–8/4–17) ot26.01.2005 "Oshkolakhzdorovogopitaniya" [The order of Ministry of health of the Republic of Sakha (Yakutia) № 01-8/4-17) from 26.01.2005 "About the Schools healthy eating"]].

Authors:



LEBEDEVA Uljana Mikhailovna- cand. med. sciences, head of the Centre of medical and prophylactic nutrition SI of Health NEFU of M.K.Ammosov, chief non-staff dietician FEFD, the Dietology commission advisory council member in the sphere of public health MHRF, ulev@bk.ru; **DOKHUNAEVA Alena Mihajlovna**– junior researcher SI of Health NEFU of M.K.Ammosov, dohunaeva@list.ru; **CHICHAHOV Djulustan Anatolevich**–doct. med. sciences, chief pediatrician of MHRS (Y), minzdrav@sakha.gov.ru; **VERBITSKAYA Lyudmila Ilyasovna**–cand. med. sciences, deputy minister of public health RS (Y), minzdrav@sakha.gov.ru; **SIVTSEVA Albina Vladimirovna**- director SE “Republican centre of medical prevention” MHRS (Y), centrmedprof@mail.ru; **KONDRATYEV Edward Vladimirovich** - first deputy minister of education RS (Y), minobr@sakha.gov.ru; **IVANOVA Yana Nikolaevna**- director SAERS (Y) “Sosnoviybor» children’s rehabilitation centre, member of Public chamber RS (Y) sb_ykt@mail.ru.