

UDC: 613(=1-81)(98)(045)

DOI: 10.37482/issn2221-2698.2021.43.190

## Transformation Processes and Nutrition Factor in the Far North Residents' Resilience System \*

© **Tatyana I. TROSHINA**, D.Sc. of Historical Sciences, Associate Professor, Professor

E-mail: tatr-arh@mail.ru

Northern (Arctic) Federal University named after M.V. Lomonosov, Arkhangelsk, Russia; Northern State Medical University, Arkhangelsk, Russia

© **Olga M. MOROZOVA**, D.Sc. of Historical Sciences, Associate Professor, Professor

E-mail: olgafrost@gmail.com

Don State Technical University, Rostov-on-Don, Russia

© **Nadezhda A. VOROBYEVA**, Doctor of Medicine, Professor

E-mail: nadejdav0@gmail.com

Northern State Medical University, Arkhangelsk, Russia; Northern Branch of the National Research Center for Hematology, Arkhangelsk, Russia

**Abstract.** One of the global challenges of our time is the conflict of man and human communities with the rapidly changing world order, which has an aspect lying at the intersection of culture and human physiology — the conformity of food behavior to lifestyle and the environment. The vitality and resilience of modern humans is subjected to special challenges. Comfortable conditions of existence in the modern world have a reverse side, expressed in diseases associated with sedentary lifestyle, psychotraumatization, violation of the usual nutrition pattern. These changes are especially noticeable on the example of indigenous peoples of the North, who have lived in relative isolation for a long time, as well as on the example of migrants forced to work in unusual natural and climatic conditions and, in general, abruptly and for a relatively short period of time (which does not allow "launching" the adaptation mechanisms) to change the whole habitual way of life. These categories of population are of special interest for researchers, including in connection with the reactions of body to changes in the food model. The idea of optimal food for the human body, formed in the course of nutriological studies, often contradicts the food traditions of peoples living in conditions far from being favourable. Since the end of the 19th century, balanced consumption of fats, proteins and carbohydrates was perceived as a civilization sign of mature modern society, and any deviations were treated as primitive practices. Over time, the approach to studying the lifestyle of traditional societies evolved from the perspective of the mechanism of human adaptation to different habitats. Traditions, including eating habits, are regarded as an optimum point of survival with the highest level of food, fuel and other material resources available in a given habitat. In addition to the problems of traditional and modernized food supply, the article focuses on the painful conditions associated with the disruption of the habitual way of life, work and nutrition of various groups of northern residents — in historical retrospect and at the present stage. Archive and literary sources, results of modern medical and social research and own field material (ethnosociological and biomedical) were used for the analysis. As a result of the generalization of the data set, which includes the authors' own research, it has been concluded that, in addition to ensuring the supply of basic foodstuffs, preventive medicines and high-quality preventive medicine for permanent residents and temporary workers in the Arctic, it is advisable to take into account the survival practices of indigenous peoples that have been developed over the centuries, creating the conditions for new settlers for assimilation. The credibility of these traditions is given by their high viability and their focus on the ethnic survival of indigenous people in the North.

**Keywords:** *Arctic, indigenous peoples of the North, transformation process, adaptation, resilience, food behavior, nutrient.*

---

\* For citation:

Troshina T.I., Morozova O.M., Vorobyeva N.A. Transformation Processes and Nutrition Factor in the Far North Residents' Resilience System. *Arktika i Sever* [Arctic and North], 2021, no. 43, pp. 190–214. DOI: 10.37482/issn2221-2698.2021.43.190

### *Relevance of the research topic*

Researchers note that most of today's diseases are related to improper nutrition. Ethnic groups live in different geographical conditions, the availability of necessary nutrients varies, so in the process of adaptation to natural and climatic (and then to social) conditions, the human body changes, a culture of consumption is formed (for example, tabooing some types of food — inaccessible or those that body of a representative of the ethnic group cannot digest), along with food distribution system — daily, seasonal, as well as by age, gender and social strata. It can be assumed that modern peoples are the descendants of those who were able to adapt their sustenance to existence conditions; other human groups either perished or were absorbed by more resilient populations. In the process of this adaptation, a certain part of national cultures have developed an “economical” culture of food consumption, in which the body makes reserves of nutrients that are “spent” in conditions of food scarcity, or adapts to obtain the necessary substances from poorly edible food.

A special place among such cultures is occupied by Arctic peoples living in extremely unfavorable conditions, first of all, the nomadic reindeer herders. In the 1920s, in the framework of discussions among the members of the Committee for Assistance to the Peoples of the Northern Frontiers<sup>1</sup>, the reindeer-herding peoples were perceived as the most resilient ones. Nowadays, however, the problems of their survival, especially the health problems that are stressed due to the violation of the traditional way and rhythm of life, cause concern among researchers and medical practitioners. In this regard, there is a special interest in the experience of self-preservation of these peoples, including in relation to nutrition.

**The hypothesis** underlying this article consists of two theses: 1) adaptive practices developed at the optimum point, corresponding to the best survival with the amount of resources that could be extracted from the environment; 2) traditional adaptive practices were preserved in collision with civilization because they were able to smooth out the negative social and material consequences of modernization.

### *Level of research on the adaptive role of nutrition*

An interdisciplinary approach of representatives of various sciences is widely used in the discussion of nutrition problems: sociologists [1, Noskova A.V.], medical specialists [2, Kaznacheev V.P., Panin L.E., et al; 3, Lobanova L.P., Lobanov A.A. et al; 4, Prodovol'stvennaya bezopasnost'...; 5] and hygienists [6, Kochkin R.A. et al; 7, Eganyan R.A.; 8, Nikiforova N.A, Karapetyan T.A. et al], geographers and economists [9, Erokhin V.L.], ethnologists [10, Kabitskiy M.V.; 11, Arutyunov S.A., Voronina T.A.] and culturologists [12, Chudova T.I.], even political scientists [13, Ichijo A.] rely on conclusions made by specialists in distant sciences. Of particular note is a number of works carried

---

<sup>1</sup> State Archives of the Russian Federation. F. R-3977. Committee for Assistance to the peoples of the northern outskirts under the Presidium of the All-Russian Central Executive Committee [Protocols].

out by interdisciplinary teams of authors, which are distinguished by a comprehensive approach, as well as an orientation towards applied results [14, Borinskaya S.A., Kozlov A.I. et al; 1].

The issues of unchanged food traditions preserved by ethnic groups under conditions of urbanization and globalization [10] do not cease to be relevant. Of particular interest is the Far North, where the population demonstrates the adaptive capacity of human body to the negative living conditions. Traditionally, the following population groups are considered: the indigenous small-numbered peoples of the North (ISPN); representatives of other peoples permanently residing in the North and being already autochthonous population: Russians, Komi, Karelians, etc.; migrants living in the Far North for 1–2 generations and have already adapted to the harsh natural and climatic conditions; "migrants" who arrive in the North temporarily, for a short time, for a season, or those who work in periodic modes (rotational workers, Arctic sailors, military personnel, hydrometeorological service workers). The health condition of the latter category is more demanded; the research interest to the other groups of "northerners" is caused by health changes under the influence of westernization and modernization. The possibility to observe the state of health of a generally small, but very diverse population of the Northern territories allows comparing the adaptation mechanisms of people genetically adapted to living in the North and representatives of other cultures that have a different physiological mechanism [4].

The general conclusion of numerous medical publications is that the nutrition factor is the most important element of human health in the Far North. The specificity of health of the indigenous peoples of the North, who are moving to a sedentary lifestyle, is being investigated precisely in connection with changes in nutrition. For example, the functional activity of the thyroid gland is being studied, and it can be seen that the consumption of traditional types of food affects positively, while the negative results clearly correlate with the consumption of unfamiliar food [5]. The practical results of the research are the conclusions about necessity of "development of functional products...for prevention of consequences of living in an uncomfortable environment", while taking into account various groups of northerners, depending on adaptation of their organism to conditions of the North, terms of living there and types of labor activity [8, p. 23]. Physicians and hygienists write, in particular, about the "polar metabolic type" formed in conditions of life and labor activity in the North, which requires food with an increased proportion of proteins and fats while reducing the role of carbohydrates [15, Vorobyeva N.A., Vorobyeva A.I. et al].

Recent literature contains review publications [8; 14], focusing on those features of organism functioning in the conditions of the Far North which are formulated as "polar stress syndrome" (pathological reactions of organism to high latitude conditions), manifested in a complex of maladaptation processes [16, Khasnulin V.I., Khasnulin P.V.].

### *Research sources*

The issues of nutrition as a reflection of public health state attracted the attention of a team of authors, consisting of historians and physicians, as part of their research on the phenomenon of human resilience in extreme conditions. The research results underlying this article are based on a set of archival documents and publications of physicians of the late 19th – early 20th centuries. The information obtained from these sources, as well as the field materials of the authors (expeditions in 2015, 2016, 2019) are used as the basis for a historical and comparative analysis, the purpose of which is to clarify the adaptive capabilities of a person in the North in historical retrospect and at the present stage.

Basic information about the health status of various groups of the population living in the Far North, at least until the 1930s, was obtained from sources of a subjective nature. These sources included descriptions of travelers, observations of doctors. To a large extent, their assessment was based on their own ideological attitudes. What was seen in a negative light by supporters of “cultural influence”, was assessed differently by observers oriented towards the uniqueness of people's experience.

The research underlying the article is an attempt to cross-study the adaptive capabilities of people to complex changes, including an abrupt change in the entire way of life. As an example, a relatively new social formation was taken — the inhabitants of the Varnek settlement on Vaigach Island. During three field seasons, the authors observed the socio-cultural and medical basis of life of this small community [for more details see: 15, Vorobyeva N.A., Vorobyeva A.I. et al, 17, Troshina T.I., Morozova O.M., 18, Svetlichnaya T.G., Vorobyeva N.A.]. "Reading" of well-known ethnographic sources and modern socio-medical literature is carried out through the prism of this observation and the concept formed under its influence.

### *Traditional nutrition of the indigenous small-numbered peoples of the North*

Traditions of food are formed in the process of population's adaptation to the natural, climatic and social living conditions. The calorie content of food, its vitamins saturation should mitigate the negative consequences of these conditions, which is especially important for the inhabitants of the Far North, assimilated by humans relatively late. The economic resources of the Far North, in particular the lack of plant food, with which the human body receives the necessary vitamins and minerals, as well as the specificity of the daylight hours, when most of the year people do not receive the necessary ultraviolet light for their development, have to be considered in understanding the optimum nutrition of the inhabitants of the region. On the other hand, on the side of the nomads of the North is their way of life and living in different natural zones (tundra, forest-tundra, taiga), providing a variety of available food products, which was of significant importance in poor conditions for human life. An example of successful adaptation to difficult natural and climatic conditions were the Nenets, who, according to the testimony of a doctor who observed their life at the beginning of the 19th century, “have no diseases”: “... accustomed to the climate,

being in continuous labors and studies, eating moderate and always the same food from infancy, they truly enjoy health" [19, Belyavskiy F.I., p. 172].

Due to the harsh conditions of the Arctic region, the "protein-fat diet" is of particular importance in the nutrition of indigenous ethnic groups to ensure excess human energy consumption in a cold climate [20, Baturin A.K., p. 321, 323]. The necessary vitamins were obtained from meat (primarily venison) and fish. In terms of the "average" optimal diet for a person, food of reindeer breeders was excessively protein-rich: 35-40% of calories came from protein (for comparison: in the temperate climatic zone — 12–15%). This corresponded to the daily food intake of about 600–800 grams of venison per day. However, the lack of animal fats, calcium and vitamins remained [21, Grigulevich N.I., p. 148–149; 4, Prodovol'stvennaya bezopasnost'].

As nutrition specialists believed at the end of the 19th century, "protein food cannot be exclusive, since it would have to be consumed too much, it is difficult for digestion" [22, Munk Im., p. 6]; at the same time, the northerners, primarily the indigenous population, had no choice, they had to consume a lot of protein, which was "burned" by a large number of physical actions and the need to generate heat to resist the cold.

Moreover, reindeer were primarily a means of transportation for northern nomads and only in extreme cases were used as "live canned food", when no other food sources were available, such as hunting or fishing [19, Belyavskiy F.I., p. 166]. The eggs of wild birds, an important source of protein, were consumed in large quantities.

For a long time, the fish-based diet of the inhabitants of the Arctic Ocean coastline was perceived as flawed. At the beginning of the 20th century, it was argued that "fish meat provides fewer nutrients than the meat of warm-blooded animals" [22, Munk Im., p. 13]. Later it was recognized that in terms of protein content, some types of fish are superior to meat, and up to 86% of fats composition in fish meat is unsaturated acids that are well absorbed by the human body. Fish contains many vitamins (including such important vitamins in fish oil as A, D, E), as well as micro and macro elements. It is not a coincidence that, as we know from the observations of travelers, even the Russians (Pomors), eating mainly fish, preserved good health state in the North. Sometimes they were forced wintering during the voyages, and, using exclusively fish oil as liquid food, the Pomors arrived home even in full health.

At the end of the 19th century, nutritionists paid attention to the need for regular meals, which must include hot liquid food at least once a day. In the North, the system of cooking and storing food did not allow such a prescription to be fulfilled. Hence, by the way, the tradition of drinking tea among Russians, primarily living in the northern part of the country, as well as the use of hot reindeer blood by the Nenets. The animals were not necessarily killed for this: it was enough to make an incision, which healed quickly, and the person received the required amount of hot, nourishing, well-digestible liquid food. In addition, hot blood of a freshly slaughtered deer, according to both population and doctors, was the best preventive measure against scurvy. Deer feed on plant food, which is inaccessible to the inhabitants of the north for most of the year; thus,

the animal's blood is saturated with useful substances that it needs for an active life in the harsh North. By eating it, people also get them. Blood does not contain parasites that can be found in raw meat. In the absence of cows among reindeer breeders, "complementary feeding" of children began early enough with "a piece of soft reindeer meat with blood, which was tied to a string so that the child would not swallow the piece or choke on it" [23, Martynov S.V., p. 51, 54]. (By the way, based on this, Russia produces a biological supplement "Pantogematogen" — hematogen based on deer blood).

Difficulties with obtaining fuel and using utensils for cooking in nomadic conditions led to the use of raw or poorly preserved meat and fish food. The Nenets ate slightly dried meat and raw fish (stroganina) since childhood, which, according to doctors, led "to the spread of gastric diseases, the main of which is helminths...". However, fermentation of food was a kind of food preservation. According to a specialist in the field of food culture, a fermented product "due to the fermentation of raw materials and raw food diet" [12, Chudova T.I., p. 41] was an additional supply of vitamins in conditions of their deficiency for most of the year due to geographical conditions.

In the process of economic interaction of the population of the European tundra (Nenets and Sami) with the newcomer Russian and Komi population, food borrowings also took place. Since the 18th century, the Nenets exchanged flour for making flatbread or adding it to meat dishes. The diet of the indigenous inhabitants of tundra and the settlers (Russians and Komi), who also ate mainly deer meat and fish, as a result, began to converge. It should be noted that other peasants of the Northern territories had a larger and more varied diet than the inhabitants of the farming regions whose diet consisted mainly of plant food, some milk, and seldom — meat or fish. Even in comparison with the Vologda peasants, the inhabitants of the northern territories of European Russia consumed food one and a half times more — in terms of calories [24, Bolshakov A.M., p. 112].

It has been repeatedly noted that among many population groups of the North — Russians, Komi, Karelians, Nenets and Lapps — in conditions of a lack of bread, it was customary to mix dry grass and tree bark into flour, as well as "chaff, rowan leaves and borshchak ..." [25, Aleksandrov N.S., p. 46]. Even when there was enough bread, the set of products of plant origin included "cabbage soup", which was cooked from wild plants. Such nutrition terrified pre-revolutionary doctors. In their view, this was one of the most striking manifestations of the people's poverty and lack of nutrition. Under the influence of hygienists, the population abandoned such additives to bread. However, in the difficult years of the Civil War, due to the cessation of grain delivery from other regions and due to a poor harvest, the peasants of the Arkhangelsk province "threshed dried straws of the dead harvest, oilcakes of the previous harvest, fish bones, small fish-fry, collected herbs with mortars— all this was ground into flour with mortars, then they baked it in iron pans, baked for the table... " <sup>2</sup>. In 1919, a representative of the American Red Cross, who travelled along

---

<sup>2</sup> Rukopisnyy fond Onezhskoy rayonnoy biblioteki. Korotkikh M. Vospominaniya [The Manuscript Collection of the Onega Regional Library. Korotkikh M. Memories]. URL: <http://www.onegaonline.ru/biblio/see.asp?kod=312>.



the western coast of Arkhangelsk province, stated in his report that “residents mix straw and moss with flour so that there would be enough for a longer period”<sup>3</sup>. In the 1920s, the really locust years, the assertion that 20–50% of the inhabitants of Pomorie were starving was based on the fact that “the population eats mostly fish, while straw, chaff and moss are mixed into bread”<sup>4</sup>.

And were herbal additives to bread so harmful in northern conditions, when meat and fish were the most accessible food? After all, this tradition was constantly recorded by observers. Incidentally, when there was a shortage of food during wars and other popular disasters, scientists studied the various surrogates that were traditionally used for food, and it was proposed to take into account the methods of extracting nutrients and useful substances from them, to teach the population “in case of starvation” [25].

When there was a shortage of tea, which, as mentioned above, replaced the necessary hot and liquid food for the northerners, the population used various additives, for example, “they drink a thick drink made from chaga (a growth on a birch tree) or add it to tea” [23, Martynov S.V., p. 46], – but the drink must be hot. In the “hungry years” (1918 and 1919), northern doctors noted that “tea drinking is an urgent need of the population, and the deprivation of this need cannot pass without leaving a trace, without causing suffering to the people...”. Tea was necessarily supplemented with sweets, and “sugar in its chemical composition is a carbohydrate, therefore its consumption is not only a taste whim, but an essential need of the body, as a nutrient that gives heat energy in the human body ...”<sup>5</sup>.

Returning to the issues of cultural borrowing, it should be noted that the Russian population of the mainland tundra adopted the food traditions of the Nenets and liked “sour fish”: slightly salted fish was kept in barrels for several days in the sun or put in a stove. As a result, it became soft, and even gelatinous (while the bones remained white, and not blackened, as in rotting), acquired a sour taste and a strong smell, “so disgusting that an unaccustomed person can hardly bear it.” The gelatinous sour mass was scooped up with spoons and was considered to be a delicacy. It can be assumed that with a monotonous diet and in the absence of natural hot spices, such food aroused the appetite. Doctors of the past could not understand “why such food passes unpunished for the body ... There are not even symptoms of gastrointestinal disorders, usual for spoiled food.” Incidentally, according to Dr. Martynov, in this case, as with the blood of a freshly slaughtered deer, the newcomers, who at first felt nauseous from the sight and smell of “sour fish”, soon got used to it. Natural disgust turned out to be weaker than the fear of contracting scurvy. The Pechora residents themselves claimed that such a fish “gives vigor to the body. It is healthy for heart and good for people. If you eat fresh fish, it does not give much food and is only

---

<sup>3</sup> The State Archive of the Russian Federation. Fund R-16, Inventory 1, Case 76, Sheet. 44. Telegram from Major Williams, Deputy Commissioner of the American Red Cross. January 1919, Soroka village.

<sup>4</sup> GAAO. Department of documents of socio-political history. Fund 1, Inventory 1, Case 566, Sheet 81. Political summary of the Mezensky district, June 1921.

<sup>5</sup> Kargopol Municipal Archives. Fund, 75(30), Case 31, Sheet no/№ Report of the agronomist to the meeting of the county council of national economy, 1918.

needed for gentlemen, but sour fish is healthier for peasants... ”. Medicinal properties were also attributed to sour fish; allegedly, she helped even with impotence [23, Martynov S.V., p. 37, 39–40, 42].

Reindeer meat, in order to get it "with a smell", was stored in springs and put in barns for the whole summer, where it soured and gave off a strong smell; the population also attributed properties useful for the body to such (practically rotten) meat [23, Martynov S.V., p. 42]. As the “civilization” spread in the tundra, taste preferences also changed. However, at the end of the 1920s, a doctor who conducted medical examination of the Sami noted that the elderly preferred rotten meat.

Since the nutrition of ethnic groups depends on available resources, body needs and existing food preparation technologies, food prohibitions and restrictions existing in almost any culture are of particular interest. According to the researchers, the prohibitions and restrictions associated primarily with the physiological characteristics of a person were fixed in this way. For example, the indigenous population of the Far North does not eat such a protein-rich food as mushrooms, since the body of a tundra inhabitant does not have enough enzymes involved in the breakdown of polysaccharides during digestion. For the same reason, the northern peoples' bodies do not accept lactose — milk sugar.

Many food prohibitions have gradually died out. This may be due to the adaptation of body to the available types of food, which were previously poorly absorbed, or with economic circumstances — both with an increase in the volume and variety of food, and with its limitedness. For example, if in the 1830s the traveler recorded that the Nenets “will not eat carrion, nor do they eat dogs, squirrels, cats, ermines and snakes” [19, Belyavskiy F.I., p. 166]; then already at the end of the 19th century, it was noted that rich Komi reindeer herders feed their Nenets farm laborers with garbage.

### ***Migrants in the Far North***

All residents of this region, including the Nenets, were once an immigrant population.

During the resettlement of the Nenets from the mainland tundra to the islands of the Arctic Ocean (AO), their good health contributed to their rapid adaptation to the climate, and already in the report for 1909–1910, it was noted that in all the colonies of Novaya Zemlya there was not a single case of death or even a serious illness, and the physical condition of the resettled residents was quite satisfactory [26, Materialy po issledovaniyu Novoy Zemli, p. 189, 195]. The only people who died were those of a very advanced age. Noting among the colonists “a large percentage of senile and late senile age” who are “still vigorous and able to work”, the doctor asked himself: “What matters here? Is it tribal resilience, life close to nature, albeit harsh, or the exceptional purity of the air of Novaya Zemlya?”: finding no specific answer, he makes a general conclusion that all of the above “testifies to the viability of the Samoyed population” [26, Materialy po issledovaniyu Novoy Zemli, p. 202].



Indeed, for the inhabitants of the North, based on local resources, the cold was not terrible if they consumed a large amount of meat food. For northern peoples, stress was associated not with the climate to which they had historically adapted, but with the disruption of their usual way of life. Having relatively easily got used to more severe climate of the islands of the Arctic Ocean than on the mainland tundra, the Nenets tolerated changes in their usual way of life much worse. Panting from the stuffiness in huts that were built for them, the colonists of Novaya Zemlya lived in tents for a long time until they appreciated the convenience of wintering in houses with a Russian stove. Nenets children did not feel well in the school arranged for them at the meteorological station on Vaigach Island: their feet were sweating in the room even without shoes to such an extent that the skin peeled off... [27, Kozmin N., p. 320].

Reindeer husbandry in the archipelago did not root, and the population lacked the reindeer blood saving from scurvy. A new sedentary lifestyle with seasonal fishing trips, life in Russian huts, which seemed too stuffy to them, replacing fresh food inaccessible at certain times — meat and fish — with unusual imported food required state support. The only noted case of mass disease was associated with the fact that “potatoes, onions, meat, cabbage, cucumbers, oil were not brought to the camp — they were necessary on Novaya Zemlya as a remedy for scurvy ...” [26, Materialy po issledovaniyu Novoy Zemli, p. 189, 190].

While the indigenous inhabitants of the mainland tundra in the northeast of the Arkhangelsk province did not suffer from scurvy at all, the autochthonous population of the Kola Peninsula (Lappish Sami) faced this disease (possibly due to their earlier “inclusion in civilization”). Anti-scurvy therapeutic measures were described by a Russian doctor: “Against scurvy, local Lapps use cloudberry, sorrel boiled with reindeer milk, rosemary infusion, pine bark infusion, fresh reindeer blood, as well as a gymnastic tool — they bow in front of the holly image, the patient is dressed in 2-3 short fur coats, after bows they give a little rest, and then start again. Sometimes sick person faints and dies ... The task is to cause profuse sweat, in the local expression, “knead the blood” stagnant in the veins” [28, Gulevich V.R., p. 124]. For all the whimsicality, these activities included a classic set of remedies: fortified food, exercise, activation of metabolic processes.

The experience of the temporary population of the Far North shows the moment when an organism collides with the climatic challenges of an extreme region. The difficulties of life in the Arctic and the special role of food in these conditions are known from the subjective assessments of Arctic travelers. For example, V.Yu. Vize<sup>6</sup>, describing the wintering on Franz Josef Land (1912–1913), noted the “terrible power” and “hatred for all living creatures” of the polar nature, which killed people with scurvy. At the same time, from his own experience, he was convinced that a person quickly enough gets used to working at low temperatures, but food begins to play one of the most important roles, all thoughts often concentrate on it. “With a belly tightly packed with

---

<sup>6</sup> Vize Vladimir Yu. (1886–1954) — polar explorer, geographer, ethnographer, oceanologist, meteorologist, corresponding member of the USSR Academy of Sciences. Member of the expedition of G.Ya. Sedov (1912–1914), head of the expedition, which carried out through voyages along the Northern Sea Route in 1932 and 1934.

porridge and bread” Vize experienced “torments of hunger” caused by “deadly monotonous diet” [29, Vize V.Yu., p. 88, 102, 103, 104, 105]. Northern doctors found that a person who arrived in the North needed a special “transitional diet”.

The diet of tundra natives was more than unattractive to the newcomers. Fish oil was disgusting for them, they could not eat fish constantly (for example, the cod harvested in large quantities for the workers of Murmansk construction in 1916 was almost all wasted, since the visiting workers categorically refused to eat it). Fish of the so-called “Pechora salting” (sour), which was almost a delicacy for the inhabitants of the Pechora Territory, was perceived by visitors as spoiled food, and they were forced to drink reindeer blood only by the danger of contracting scurvy.

Many cultural food prohibitions disappeared among migrants precisely due to the lack of habitual and necessary nutrients. Finding themselves in new natural and geographical conditions, they switched to food that was completely unacceptable for them from a cultural point of view, if it allowed them to smooth out the negative consequences for the body, being a kind of “medical nutrition”. The employees sent to the North got used to such food, overcoming the natural disgust, which turned out to be weaker than the fear of contracting scurvy.

Scurvy was one of the most severe diseases associated primarily with northern conditions. It began “with aversion to food, [then] weakness, indifference. <...> Forces are falling, the person is already lying ... The patient falls into quiet delirium and die...” [28, Gulevich V.R., p. 119–120]. The causes of scurvy were stated by doctors of the late 19th century, for example, insufficient food, especially the lack of fresh food and vegetables, poor-quality drinking water, as well as excessive drunkenness or even “not drinking spirits”. At the same time, it was noticed that if the nomads do not have scurvy, then the sedentary population regularly encounters it.

It can be assumed that even without medical advice, “by trial and error”, at the cost of which was health and even life, the newcomer population adapted to the harsh climate and unusual food. At the beginning of the 20th century, scurvy has practically disappeared among Murmansk fishermen, which can be explained by the adaptation of the organism to living conditions in high latitudes, even during a short seasonal labor, but repeated annually.

### ***Experiments on the implementation of a "civilized" food model***

By the end of the 19th century, scientific concept of a healthy diet was formed, which should be balanced in organic matter, available for assimilation by the human digestive system and harmless from parasites and infections. The urban educated strata were the first to receive information about the latest achievements in medicine, and then the traditions of Europeanized nutrition also fell into the environment of the common people. A significant part of the Russian population of the circumpolar zones by the end of the 19th century has already adapted to modern food, largely thanks to seasonal occupations, military service and the penetration of other-class elements into the national environment.

The traditional food of the common people was assessed by experts as harmful to health. According to the doctor of the late 19th century, peasant cabbage soup, wholemeal pies with cabbage or potatoes, raw vegetables are extremely harmful food: "When I tried the food of the peasants ... I constantly upset my digestion; only their simplicity and habit make them able to digest this rough and tasteless food "[30, Gryaznov P., p. 144].

Too much food at the expense of fiber with insufficient fats and proteins, which, according to scientists of that time, were necessary for the normal functioning of the body, is harmful to health, said P. Gryaznov, doctor of medicine. To the disadvantages of traditional nutrition, he attributed the low use of salt in the preparation of daily food, since "to digest rough food requires a significant supply of hydrochloric acid in the stomach" [30, Gryaznov P., p. 149, 153, 154]. Observing the peasants, the doctor noted constant catarrh of the gastrointestinal tract, which led to prolapse of the intestine and the appearance of hernias <sup>7</sup>. In his opinion, the reason was the wrong diet, although most likely it was the result of hard physical work.

The addiction of northern residents (Russians, Komi, Lapps) to meat and fish "with a smell" could not fail to receive an appropriate assessment. Struggling with the really unusual for a person of another culture the use of "Pechora salted fish", the production of which was seen primarily in the lack and high cost of salt, doctors recommended the use of saltpeter and salicylic sodium as preservatives [28, Gulevich V.R., p. 77]. Presumably, such additives did not have the best effect on the health of people accustomed to traditional food (at present, saltpeter is encrypted as E252, and salicylic acid is prohibited for use in the food industry in many countries).

For residents of the Nenets village on Vaygach Island, the difficulties of traditional food consumption include seasonal bans on the catch of certain types of game and fish. And if the inhabitants can eat fresh reindeer meat only during the slaughter period (fresh reindeer blood, if necessary, can be obtained from alive animal), then they eat fish all year round, and the surplus of fresh fish is preserved (salted). In addition, ready-made (commercial) foods with a high salt content are consumed almost daily, which also means a violation of the traditional diet. To remove excess sodium chloride from the body, the population consumes a lot of water (primarily in the form of tea). Salt is also harmful because it increases appetite and allows people to eat more food than they need in terms of the amount of energy expended. In combination, such diet "brings" tundra residents closer to common diseases of modern humans.

At the beginning of the 21st century, the influence of modern concepts of tasty and healthy food and storage and preparation technologies continue to influence the lifestyle and health of indigenous groups. Even at the beginning of the 20th century, the population of the tundra became addicted to drinking tea with sugar, which "they bought for any money and drank several times a day" [23, Martynov S.V., p. 46]. Doctors admit that the systematic use of freshly brewed tea contributes to the accumulation of vitamin C in the liver, kidneys, spleen, adrenal glands,

---

<sup>7</sup> In the 19th century, there were no direct methods for studying the state of the gastric mucosa, and acute gastritis and functional dyspepsia were called "catarrhs".

which facilitates the work of these organs in a healthy person and helps to heal faster in case of their illness. At the same time, the negative impact of this habit borrowed from the outside on the body of the tundra inhabitant is also noted [5, Tipisova E.V., Lobanov A.A. et al].

The most clearly manifested “diseases of civilization” include repeatedly described drunkenness of both the indigenous peoples of the North and the newcomer population. To explain the development of drunkenness among the indigenous minorities, there are versions from “external” origin (getting drunk by traders coming to the tundra) to disruption of the usual rhythm of life, primarily idleness and the absence of traditional occupations [31, Andronov S.V., Lobanov A.A. et al]. Observations of pre-revolutionary travelers are confirmed by modern researchers, in particular, the authors of this article during field work on the island. Vaygach faced with the fact that the “working” Nenets did not drink at all. In order to occupy the population in the village, various “public works” are organized, for example, the construction of wooden walkways, garbage collection, and so on.

There is no genetic predisposition to alcohol among the Arctic peoples [14, Borinskaya S.A., Kozlov A.I., Yankovskiy N.K., p. 125–127]. Physiologically, drunkenness of the indigenous peoples of the North may be associated with a violation of traditional nutrition. The “protein-lipid” diet, according to the researchers, has an anti-stress effect, since the metabolism of dietary fats produces a large amount of substances that reduce the production of steroids in the adrenal glands, as a result of which the content of “fear hormones” (corticosteroids) decreases in the blood. Among the tundra population, the “hormones of joy” previously obtained from traditional food [5, Tipisova E.V., Lobanov A.A. et al] are now less and less available due to a change in the diet. Reducing the usual amount of fat in the diet leads to an increase in the concentration of corticosteroids, therefore, to an increase in the level of anxiety, which is relieved relatively easily, although for a short time, by alcohol.

Pre-revolutionary doctors associated the abuse of alcoholic beverages by people temporarily working in the North with an unusual diet. For example, V.R. Gulevich, who provided help to seasonal fishermen in the 1870s-80s, associated this with monotonous food (consisting, among other things, of flour, cereals, salt, fresh or salted fish, tea and sugar), which leads to a loss of appetite, and since food plays an important role during hard work in difficult climatic conditions, “a worker resorts to wine, which stimulates appetite” and allows to get energized, even when “after a hard day he gets sleepy, but he needs to handle fish ...”. The doctor recommended adding onions, horseradish, mustard and other spices to the food to make it more appetising [28, Gulevich V.R., p. 101].

Dr. Gulevich considered vodka as a remedy against scurvy, which is a problem for either drunkards or those who do not drink strong drinks at all. But those who consume alcohol on a daily basis in limited quantities, according to his observations, have never been sick with it: “... Moderate consumption of strong drinks is a remedy, which has a tonic effect on the stomach, pro-

motes digestion and supports nutrition ...”, in contrast to “excessive drunkenness”, which through the development of scurvy “leads to fatty degeneration of our vessels” [28, Gulevich V.R., p. 122].

Interesting fact is that Soviet doctors were sympathetic to the therapeutic properties of alcohol in the North. In accordance with the recommendations, the fishermen were given vodka, however, in small quantities (a bottle for a month) and in small portions, depending on the time spent in the fishery.

The issue of smoking addiction among indigenous peoples (both sexes and all ages) remains interesting, which, as international practice shows, affects almost all aboriginal peoples. It is believed that joint smoking contributes to the maintenance of social ties, demonstrates equality. Doctor F. Belyavskiy, describing the life of the northern aborigines, whom he observed in the 1820s, emphasized that “... they do not indulge in drunkenness and very few of them drink wine; most of them do not use it at all”, but he noted their only “most important passion”: “to smoke tobacco, which is exchanged with Russians in large quantities”, smoking the pipe in a circle [19, Belyavskiy F.I., p. 157, 162].

According to the survey, the inhabitants of Varnek village smoke in all respects, starting with adolescents (the average age of starting smoking is 12.5 years). Tobacco consumption ranges from 10 to 20 cigarettes per day [18, Svetlichnaya T.G., Vorobyeva N.A.]. With regard to the northern peoples, it can be assumed that smoking a pipe or cigarettes allows some relaxation, rest, as well as warms the body and dulls the feeling of hunger. On Vaygach, tobacco products have a special attitude: at local sanctuaries and even at the cemetery, one can see broken cigarettes brought as a kind of sacrifice. According to local mythology, having got into a snow storm, one must stop, have a smoke, and the lost road will be found [21, Grigulevich N.I.].

On the other hand, smoking and working in cold conditions increase the risk of lung diseases for the indigenous population thrice [32, Lobanov A.A., Andronov S.V. et al].

### ***Soviet "northern delivery" for residents of the Arctic***

Active development of the Arctic began in the first decades of the 20th century, and even the indigenous peoples of the North were not sufficiently adapted to it. Establishment of polar meteorological and radio stations began in the western part of the Russian Arctic during World War I, and in the eastern part during the Civil War. The Soviet government was did not want to abandon the polar stations and military posts established in the years preceding the revolution, since the defence of the northern coast remained relevant. By this time, the country was faced with a grave food problem, and polar explorers were allowed to use “state-owned” deer for food. But the Nenets drove their herds to the far tundra, as a result, the polar explorers faced a lack of fresh food, which led to the spread of scurvy.

The Soviet experience in life ensuring of the new population of the Far North was formed in hard conditions in difficult contact with scientific ideas of that time. Doctors believed that replacing meat with another protein-containing food, namely fish, was undesirable at polar stations,

since the fish was delivered mostly salted, or sour (“Pechora salting”), which was thought to contribute to the scurvy development.

According to the norms of starving time, the polar ration was quite substantial. In 1920, 1.5 kg of sugar, 0.5 kg of jam, 0.5 kg of coffee and cocoa, 200 g of tea, 200 g of cheese, 2 kg of salt, corned meat (14 kg of meat and 18 kg fish); 2 kg of fat, 6 kg of cereals, 16 kg of flour, 4 kg of crackers, dried and salted vegetables, dried fruits, canned milk and fish, as well as lemon juice, mustard, vinegar essence, allspice and other spices<sup>8</sup>, which helped to flavour the generally monotonous “polar” food, were given to a person per month.

Apples for compote, jam, cocoa, condensed milk were delivered to boarding schools on the islands. Goats were kept for children to get fresh milk, which they drank with more pleasure than compotes and fruit and berry food, which they were not used to<sup>9</sup>; it is strange, since lactose intolerance has been repeatedly noted, at least among adult representatives of the indigenous minorities. Subsequently, the taste preferences of the Nenets changed, probably under the influence of active educational work of Soviet medicine. In conditions of restriction of traditional diet, which has medicinal properties for such “northern” diseases as scurvy (vitamin C deficiency) and nyctalopia (vitamin A deficiency), modern residents of Varnek village are particularly fond of sweets, citrus fruits, butter — products that are not traditional for the Nenets food culture, and it can be assumed that special need for them is explained by their potential preventive properties.

Medical nutritionists of the early 20th century were supporters of only fresh food, while they believed that replacing meat with vegetable food, such as bread, was undesirable, since for a person engaged in physical labor, such food would have to be consumed in too much volume, which could harm the digestive tract. Canned meat was believed to be as nutritious as meat, but it becomes boring rather quickly, which, coupled with the oppressive Arctic climate, can lead to loss of appetite and weakening of the body. In addition, in the 1920s, the quality of canned food has sharply decreased, for example, meat and vegetable substitutes have appeared. In conditions of a shortage of beet sugar, cane sugar was added to condensed milk, and vegetable fats were added instead of animal fats. Other surrogates have also appeared: canned soups — “a kind of dried noodles made from plant nutrients with addition of meat extract and a certain amount of fat”; powdered milk, egg powder. Bread was increasingly replaced by biscuits and crackers, which, in case of prolonged use, also contributed to the lack of essential nutrients in the body.

Sausages (meat processed for long-term storage) in the absence of refrigerators could quickly deteriorate, becoming dangerous food for humans. In addition, when manufacturing sausages, meat began to be substituted with lard, peas. Necessary for those engaged in physical labor, especially in difficult climatic conditions, meat was replaced by equivalent caloric values of smoked, salted and dried fish. Observing the health of people working in the Arctic has convinced

---

<sup>8</sup> GAAO. Fund 211, Inventory 1, Case 6. Sheet The norm of polar soldering for a hydrographic expedition. June 1920.

<sup>9</sup> GAAO. Fund 211, Inventory 1, Case 131, Sheet turnover 25, 27, 30, 39, 31. Reports at the 5th Congress of Soviets of Novaya Zemlya, 1929.



that such substitutions are undesirable. This contributed to a very good food supply for polar explorers and northern sailors in the 1930s, during the period of the development of the Northern Sea Route. The northern delivery for the population of the Arctic ocean islands was based on special nutritional standards, which included products that served as prophylaxis against diseases: in addition to bread, fish and meat, there were cereals, peas, fresh vegetables, sauerkraut, potatoes, dry vegetables, animal and vegetable oils, eggs, sugar, potato flour, dry compote, cranberries, currants, tea, salt, canned vegetables, fresh fruits, condensed milk, pasta, wheat flour, onions. For an adult person, the calculation assumed more than 5852 calories, for a schoolchild living in a boarding school — 4185 calories, for a sick person — 5082 calories<sup>10</sup>.

The nutritional values of other products were also investigated, which, unlike berries, can be obtained in the Far North for most of the year. Thus, a kilogram of northern mussels contained 563 calories, while the meat of this mollusk contains a large amount of protein, valuable fatty acids, glycogen, proteins, mineral salts, phosphorus, iron, vitamins A, B1, B6, C. Inferior in caloric content, in the amount of protein and fats to other northern products (herring, cod, navage, etc.), mussels contained carbohydrates and nonnitrogenous extractive substances that “stimulate the appetite” [33, Sbornik nauchnykh trudov..., p. 80–84]. Nutritional value of traditional food products of the indigenous peoples — venison and guillemot eggs — was substantiated [33, Sbornik nauchnykh trudov..., p. 84].

Even prisoners of the polar camps were better supplied than other Gulag inhabitants in those years [31, Gurskiy K.P., p. 19, 76]. Cut off from the mainland, carrying out a task of the highest state importance in the difficult conditions of the Arctic, workers — both prisoners and civilians — needed to be healthy and active, which was provided precisely by food. Providing “polar rations” to all categories of the camp population turned out to be less costly than ensuring the maintenance of weakened people who, in conditions of being cut off from the mainland for several winter months, could not be evacuated.

At present, food standards are being actively developed for people working in the Far North; the experience of ethnic groups living here is taken into account; modern pharmaceutical industry makes it possible to find therapeutic forms of replacing missing nutrients and vitamins.

### *Experience of lifestyle regulation aimed at self-preservation in the Far North*

Representatives of the indigenous peoples of the North gave an impression of being healthy people on researchers of the past years. The reason for this is quite understandable: only the strongest survived in the harsh climatic and socio-economic conditions; high infant mortality rate, almost no chance of survival for any weak, sickly person, almost unchanged number of tundra population for many decades are a confirmation of this. Given the difficult living conditions in the tundra, according to the author of the report “On the organization of medical care for the

---

<sup>10</sup> GAAO. Fund 211, Inventory 1, Case 155, Sheet 40, 41. Nutritional norms of the population of the Arctic Ocean, 1933-1934; Ibid Case 139-B, Sheet 67. The norm of nutrition for children aged 14-16 years old boarding school on Novaya Zemlya. 1930-1931.

Samoyeds of the Arkhangelsk province" (1924), there was "a fairly high average age", when "70-year-olds are not uncommon, you can also meet 90-year-olds", indicating "high resistance to conditions" <sup>11</sup>.

The era when people physically worked "to a sweat" is over, and thus the life of people has become much easier, its duration has increased, many diseases associated with physical fatigue and occupational traumatism have disappeared. At the same time, reducing physical activity, but maintaining the traditional model of nutrition, people do not spend received energy, which leads to "diseases of civilization" — obesity, cardiovascular diseases, gallstones, diabetes and so on.

As a matter of fact, all modern medical and social studies of indigenous minorities come to a common result: the most widespread are overweight, arterial hypertension, diseases of musculoskeletal system, and bronchopulmonary pathology. There are also quite understandable differences with the newcomer population: the indigenous people suffer from high blood pressure less often than migrants, which confirms the significance of differences in the consumption of traditional food products and their influence on the development of cardiovascular pathology. Indigenous minorities, especially those engaged in traditional activities, are more likely to have pulmonary diseases, which is explained by the nature of their work in the open air throughout the year and the corresponding way of life. Doctors conclude that the consumption of traditional products is indispensable for maintaining the health of indigenous people and the necessary level of adaptation through nutrition to the harsh conditions of the Arctic of the alien population. Nevertheless, socio-economic changes lead to a decrease in the consumption of traditional food, and, accordingly, affect the deterioration of the population's health [11, Arutyunov S.A., Voronina T.A.; 18, Svetlichnaya T.G., Vorobyeva N.A.].

Comparing the tissue metabolism indicators of various groups of population, modern physicians are increasingly convinced that the best results are shown by the residents of territories in which "civilization" has been present for a relatively long time compared to the population of "poorly developed territories", which is explained by a significant difference in the diet: "due to the developed logistics, the availability of imported foodstuffs is higher ... The production of venison also meets the needs of the population ... Expansion of the diet ... of food and sufficient import of vegetables and fruits, probably, makes it possible to compensate for the potential damage from the additional environmental load associated with the industrial development of the territory" [31, Andronov S.V., Lobanov A.A. et al].

At the same time, when studying the biological equivalence of imported food products most often used to replace local fish and venison, scientists from the Yamal-Nenets Autonomous Okrug (YNAO) found that a diet enriched with venison and local fish statistically significantly increases antiatherogenic fractions of blood lipids, increases the elasticity of the vascular wall, helps to maintain normal body weight, improves microcirculation, oxygen uptake in tissues, tissue fluid

---

<sup>11</sup> GAAO. Fund 760, Inventory 1, Case 2, Sheet 129-131. Data on the organization of medical care for the Samoyeds of the Arkhangelsk province (1924).

exchange and antioxidant protection of the body against free radicals [35, Lobanov A.A., Bogdanova E.N. et al]. Based on the study of ethnographic materials reflecting the tradition of obtaining nutrients from various local sources, experimental studies are being carried out in order to create a diet more adapted for life in the North [36, Kostritsyn V.V., Lobanov A.A. et al]. Thus, the rate of consumption of deer meat, fish and other traditional food products was revealed, the regular use of which reduces the risks of developing chronic non-obstructive bronchitis of the indigenous population of the Arctic zone of the Russian Federation. For the same purpose, recommendations are given on organizing a new way of life for the indigenous peoples. For example, it was found that using stove heating doubles the chances of chronic bronchitis [32, Lobanov A.A., Andronov S.V. et al; 36, Kostritsyn V.V., Lobanov A.A. et al].

The resilience that distinguishes the nomadic peoples of the North is also present in ability to accept new things relatively easily. Historical and contemporary experience shows that the popularization of knowledge and explanatory work affect the indigenous peoples quickly. For example, a fairly large number of extreme factors affect the body of those living in the Far North: cold exposure, heliomagnetic radiation, altered photoperiodism (polar night and polar day), other additional negative health effects, including bad habits (tobacco smoking, excessive alcohol consumption, etc.) exacerbate the risk of diseases, for example, arterial hypertension.

One of the essential indicators of the viability of an ethnos is its focus on collective preservation technologies. This is a subconscious rejection of "harmful" food, and the search for ways to get rid of diseases, and a conscious attitude to the rejection of addictions. Every third resident on Vaygach island admitted that he had tried to quit smoking during the year [18, Svetlichnaya T.G., Vorobyeva N.A.]. And when asked about the motives for quitting smoking, the indigenous inhabitants of the Yamalo-Nenets Autonomous Okrug are much more likely than residents of other regions of the country to indicate socially significant ones: taking care of their own health and health of their offspring, a bad example for children, etc. [38, Gagarinova I.V., Popov A.I. et al; 21, Grigulevich N.I.]. In the village of Varnek, by the decision of a local asset, alcoholic beverages are not delivered to the island store. In response, "consumer cooperation" "took revenge" by not importing cigarettes. Now alcohol and tobacco are delivered to Vaygach in small quantities only as personal gifts from guests of the island.

Concerned about the quality of consumed water, the Nenets living on Vaygach melt snow for making tea, which is brought from remote, clean glaciers in summer, and until recently they caught small icebergs that float into the bay (now, due to climate warming, this source of fresh water practically inaccessible).

The health status of the inhabitants of the islands, who are forced to lead a sedentary lifestyle according to local conditions, is negatively affected by a lack of physical activity. The mainland Nenets, who are engaged in nomadic reindeer herding, which implies constant movement, are faced with a similar problem less often, in contrast to the islanders who have switched to a sedentary lifestyle. Over the past few decades, the Nenets of Varnek village have managed to

move away from the nomadic way of life: deer graze on the island without special supervision, moving independently from place to place in search of pasture. At the same time, despite the presence of vehicles (for example, snowmobiles, on which they move along the tundra not only in winter, but all year round), men try to make long journeys to fishing places on foot. Aimed at self-preservation, without even engaging in fishing, they walk along the coast. Previously, this method was used to collect discarded sinkers for firewood. Now the fuel is brought to the island ready-made, but the need for constant movement remains. Women, who, due to natural conditions, cannot work in vegetable gardens, wash their tiny dwellings several times a day (in permafrost conditions, houses are built small in size), or go on long walks with men.

In this one can see a form of resilience possessed by the Nenets people. This aspiration to self-preservation in any conditions, for maintaining the traditional way of life, even in a modified form, should be supported in every possible way. For example, “ethnosport” as a form of modernization of traditional types of physical activity should be developed more actively [39, Kylasov A.].

So, the problem of ethnic survival for the indigenous peoples of the North is acute; and people understand this — both consciously and subconsciously. On the example of the population of Varnek village on Vaigach island, this is manifested in the desire to go to doctors, even without a particular reason, as a preventive measure; special attitude to nutrition, dissatisfaction with the lack of fresh food in the store, the need for vegetables and fruits, especially citrus fruits, as a need for vitamin C due to the loss of the traditional form of obtaining it.

### **Results**

Analysis of literary and archival sources, a new “reading” through the information obtained in them of the results of medical research give the authors of the article grounds to be optimistic about the issue of preserving the indigenous Arctic population. Discussions about the fate of the small northern ethnic groups have been conducted for many decades, the opinion of experts fluctuated from the assertion that they are “undoubtedly doomed to extinction” [40, Beldtsytskiy N., p. 32], to the conviction of their high resilience. The focus on ethnic survival, a certain “hidden passionarity” can serve as a mechanism, the use of which will allow fulfilling an important historical mission of Russia — preservation of the unique culture of the peoples of the Far North. Propaganda efforts, coupled with other already existing mechanisms of state support, will enable the self-preservation mechanism to be activated and enhance the effect of its action.

The reliance on historical material convinces that the decline in the health level of the indigenous population of the Far North, caused by significant violations of the traditional nutrition system and lifestyle, can be overcome with reliance on the internal resources of both the human body and the society itself. Of course, the issues of support for northern ethnic groups cannot be removed from the agenda. With regard to the labor resources attracted to work in the Arctic, the task of improving the quality of life with the help of nutrition, preventive drugs and high-quality preventive medicine remains relevant. At the same time, one should take into account the whole

complex of traditions accumulated by various groups of the population living in the North with regard to the food system and way of life.

### *Acknowledgments and funding*

The article was prepared within the framework of a project supported by RFBR grant (project No. 18-00-00814 “Socio-cultural and medico-biological sources of viability of the human body”).

### *References*

1. Noskova A.V. Pitaniye: metodologicheskie podkhody k issledovaniyu i povsednevnye praktiki [Research of the Nutrition Problem: Methodological Approaches and Daily Practices]. *Vestnik MGIMO-Universiteta* [MGIMO Review of International Relations], 2014, no. 6 (39), pp. 209–218.
2. Kaznacheev V.P., Panin L.E., Kovalenko L.A. Aktual'nye problemy ratsional'nogo pitaniya prishlogo naseleniya Zapolyar'ya i aborigenov Severa [Present-Day Problems of Rational Nutrition of Newcomers and Aborigines of the Arctic]. *Voprosy pitaniya* [Problems of Nutrition], 1980, no. 1, pp. 23–27.
3. Lobanova L.P., Lobanov A.A., Popov A.I. Primer urbanizirovannogo uglevodnogo tipa pitaniya v netskom poselenii [An Example of an Urbanized Carbohydrate Type of Diet in a Nenets Settlement]. *Nauchnyy vestnik Yamalo-Nenetskogo avtonomnogo okruga* [Scientific Bulletin of the Yamal-Nenets Autonomous District], 2014, no. 4 (85), pp. 51–54.
4. *Prodovol'stvennaya bezopasnost' korennykh naseleniy Arkticheskogo regiona v usloviyakh izmeneniya klimata: vyzovy i resheniya* [Food Security of the Indigenous Population of the Arctic Region in the Context of Climate Change: Challenges and Solutions]. Arkhangel'sk, KIRA Publ., 2019, 120 p. (In Russ.)
5. Tipisova E.V., Lobanov A.A., Popkova V.A., Gorenko I.N., Andronov S.V., Popov A.I. Sootnoshenie dofamina, gormonov, autoantitel sistemy gipofiz — shchitovidnaya zheleza i faktorov ratsional'nogo pitaniya u korennykh naseleniy Yamala [Ratio of Dopamine, Hormones, Autoantibodies of the Pituitary-Thyroid Body and Regimen Factors in the Indigenous Population of Yamal]. *Ekologiya cheloveka* [Human Ecology], 2019, no. 9, pp. 15–23.
6. Kochkin R.A., Lobanov A.A., Andronov S.V., Kobelkova I.V., Nikityuk D.B., Bogdanova E.N., Popov A.I., Kostitsyn V.V., Protasova I.V., Lobanova L.P., Martinchik A.N. Vliyaniye potrebleniya razlichnykh vidov zhirov na ustoychivost' tsentral'noy nervnoy sistemy k kholodovomu stressu [Influence of Consumption of Different Types of Fats on the Resistance of the Central Nervous System to Cold Stress]. *Vestnik novykh meditsinskikh tekhnologiy* [Journal of New Medical Technologies], 2019, no. 2, pp. 172–180. DOI: 10.24411/2075-4094-2019-16310
7. Eganyan R.A. Osobennosti pitaniya zhiteley Kraynego Severa Rossii (obzor literatury) [Peculiarities of Nutrition of the Inhabitants of the Far North of Russia (Literature Review)]. *Profilakticheskaya meditsina* [The Russian Journal of Preventive Medicine], 2013, no. 16 (5), pp. 41–47.
8. Nikiforova N.A., Karapetyan T.A., Dorshakova N.V. Osobennosti pitaniya zhiteley Severa (obzor literatury) [Nutritional Characteristics in Dwellers of the Far North of Russia (A Review of Literature)]. *Ekologiya cheloveka* [Human Ecology], 2018, no. 11, pp. 20–25.
9. Erokhin V.L. Ekonomicheskie aspekty prodovol'stvennoy i pishchevoy bezopasnosti v territoriyakh arkticheskoy zony Rossii [Economic Aspects of Food and Nutrition Security in the Territories of the Russian Arctic]. *Teoriya i praktika obshchestvennogo razvitiya* [Theory and Practice of Social Development], 2019, no. 1 (131), pp. 49–54.
10. Kabitskiy M.E. Vvedeniye v temu: antropologiya pishchi i pitaniya segodnya [Anthropology of Food and Nutrition Today]. *Etnograficheskoe obozreniye*, 2011, no. 1, pp. 3–7.
11. Arutyunov S.A., Voronina T.A. *Traditsionnaya pishcha kak vyrazheniye etnicheskogo samosoznaniya* [Traditional Food as an Expression of Ethnic Identity]. Moscow, Nauka Publ., 2001, 293 p. (In Russ.)
12. Chudova T.I. *Etnokul'turnye osobennosti sistemy pitaniya komi (zyryan) v XX — nachale XXI v.: traditsii i innovatsii* [Ethnocultural Features of the Komi (Zyryan) Food System in the 20th — Early 21st Century: Traditions and Innovations]. Moscow, 2019. (In Russ.)



13. Ichijo A., Ranta R. *Food, National Identity and Nationalism: From Everyday to Global Politics*. Basingstoke, U.K., Palgrave Macmillan, 2016, 196 p.
14. Borinskaya S.A., Kozlov A.I., Yankovskiy N.K. Geny i traditsii pitaniya [Genes and Nourishing Traditions]. *Etnograficheskoe obozrenie*, 2009, no. 3, pp. 117–138.
15. Vorobyeva N.A., Vorobyeva A.I., Yuryev N.A., Volokitina A.M. Osobennosti folatnogo obmena kak prediktor riska gipergomotsisteinemii v usloviyakh ostrovnogo prozhivaniya korennoogo naseleniya etnosa v arkticheskom regione Rossii [Peculiarities of Folate Metabolism as a Risk Predictor of Hyperhomocysteinemia in Permanent Island Residence of Indigenous Ethnos in Russian Arctic Region]. *Tromboz, gemostaz, reologiya* [Tromboz, gemostaz I Reologiya], 2017, no. 4, pp. 82–88. DOI: 10.25555/THR.2017.4.0815
16. Khasnulin V.I., Khasnulin P.V. Sovremennyye predstavleniya o mekhanizmax formirovaniya severnogo stressa u cheloveka v vysokikh shirotakh [Modern Concepts of the Mechanisms Forming Northern Stress in Humans in High Latitudes]. *Ekologiya cheloveka* [Human Ecology], 2012, no. 1, pp. 3–11.
17. Troshina T.I., Morozova O.M. "Mezh staroyu i Novoyu zemley": opyt sotsial'nogo samosokhraneniya u zhitel'ey ostrovnnykh territoriy Arktiki ["Between the Old and the New Land": the Experience of Social Self-Preservation among the Inhabitants of the Arctic Island Territories]. *Etnograficheskoe obozrenie*, 2017, no. 6, pp. 91–109.
18. Svetlichnaya T.G., Vorobyeva N.A. Obraz zhizni i zdorovye nentsev v usloviyakh postoyannogo ostrovnogo prozhivaniya v Arktike [Lifestyle and Self-Perceived Health of the Nenets Population Living on the Arctic Island of Vaigach]. *Ekologiya cheloveka* [Human Ecology], 2019, no. 12, pp. 20–25.
19. Belyavskiy F.I. *Poezdka k Ledovitomu moryu* [Trip to the Arctic Sea]. Moscow, 1833, pp. 147–182. (In Russ.)
20. Baturin A.K. et al. Osobennosti khimicheskogo sostava ratsiona i pishchevogo statusa korennoogo i prishlogo naseleniya Arktiki [Features of the Chemical Composition of the Diet and Nutritional Status of Indigenous and Newcomers in the Russian Arctic]. *Gigiena i sanitariya* [Hygiene and Sanitation], 2019, vol. 98, no. 3, pp. 319–323. DOI: 10.18821/0016-9900-2019-98-3-319-323
21. Grigulevich N.I. Pitaniye kak vazhneyshiy mekhanizm etnoekologicheskoy adaptatsii [Nutrition as the Most Important Mechanism of Ethno-Ecological Adaptation]. *Traditsionnaya pishcha kak vyrazhenie etnicheskogo samosoznaniya* [Traditional Food as an Expression of Ethnic Self-Awareness]. Moscow, Nauka Publ., 2001, pp. 108–194. (In Russ.)
22. Munk Im. *Pitaniye mass: v obshchedostupnom izlozhenii* [Nutrition of the Masses: In the Public Domain]. St. Petersburg, 1902. (In Russ.)
23. Martynov S.V. *Pechorskiy kray. Ocherki prirody i byta. Naselenie, kul'tura, promyshlennost': dnevnik ekspeditsii po opisaniyu sanitarnogo sostoyaniya Pechorskogo kraya, 1903 g.* [Pechora Territory. Essays on Nature and Everyday Life. Population, Culture, Industry: A Diary of an Expedition Describing the Sanitary State of the Pechora Region, 1903]. St. Petersburg, 1905, 276 p. (In Russ.)
24. Bolshakov A.M. *Derevnya posle Oktyabrya* [Village after October]. Leningrad, Priboy Publ., 1925, 403 p. (In Russ.)
25. Aleksandrov N.S. *Surrogaty pitaniya rastitel'nogo proiskhozhdeniya Severnoy oblasti i Rybinskoy gubernii* [Plant Food Surrogates of the Northern Region and Rybinsk Province]. Rybinsk, 1922, 24 p. (In Russ.)
26. *Materialy po issledovaniyu Novoy Zemli* [Materials for the Study of Novaya Zemlya]. Ch. Management of Land Management and Agriculture. St. Petersburg, 1910, 123 p. (In Russ.)
27. Kozmin N. Ostrov Vaygach i ego obitateli — samoedy [Vaygach Island and Its Inhabitants — Samoeds]. *Izvestiya Arkhangel'skogo obshchestva izucheniya Russkogo Severa* [News of the Arkhangel'sk Society for the Study of the Russian North], 1917, no. 7–8, pp. 313–326.
28. Gulevich V.R. *Murmanskiy bereg v promyslovom i sanitarnom otnoshenii: zapiski vracha Vl. Gulevicha* [Murmansk Coast in Commercial and Sanitary Terms: Notes of Doctor Gulevich]. Arkhangel'sk, 1883, 133 p. (In Russ.)
29. Vize V.Yu. God na zemle Frantsa-Iosifa [A Year in the Land of Franz Joseph]. *Izvestiya Arkhangel'skogo obshchestva izucheniya Russkogo Severa* [News of the Arkhangel'sk Society for the Study of the Russian North], 1918, no. 3–4, pp. 80–88; *ibid* no. 5–6–7, pp. 101–123.
30. Gryaznov P. *Opyt sravnitel'nogo izucheniya gigienicheskikh usloviy krest'yanskogo byta i medikotopografiya Cherepovetskogo uezda* [The Experience of a Comparative Study of the Hygienic Condi-



- tions of Peasant Life and Medical Topography of the Cherepovets District]. St. Petersburg, 1880, 213 p. (In Russ.)
31. Andronov S.V., Lobanov A.A., Popov A.I., Lobanova L.P. Zavisimost' pokazateley mikrotsirkulyatsii ot ratsiona pitaniya u zhiteley Yamalo-Nenetskogo avtonomnogo okruga [Dependence of Microcirculation Indices on the Diet in Residents of the Yamalo-Nenets Autonomous Okrug]. *Nauchnyy vestnik Yamalo-Nenetskogo avtonomnogo okruga* [Scientific Bulletin of the Yamal-Nenets Autonomous District], 2014, no. 4 (65), pp. 3–8.
  32. Lobanov A.A., Andronov S.V., Popov A.I., et al. Faktory riska khronicheskogo neobstruktivnogo bronkhita u korennykh zhiteley Arkticheskoy zony Zapadnoy Sibiri [Risk Factors for Chronic Non-Obstructive Bronchitis in the Indigenous Inhabitants of the Arctic Zone of Western Siberia]. *Prodovol'stvennaya bezopasnost' korennoy naseleniya arkticheskogo regiona v usloviyakh izmeneniya klimata: vyzovy i resheniya* [Food Security of the Indigenous Population of the Arctic Region in the Context of Climate Change: Challenges and Solutions]. Arkhangel'sk; Severodvinsk, 2019, pp. 99–101.
  33. *Sbornik nauchnykh trudov Arkhangel'skogo oblastnogo sanitarno-bakteriologicheskogo instituta za 1935–1937* [Collection of Scientific Papers of the Arkhangel'sk Regional Sanitary-Bacteriological Institute for 1935–1937]. Arkhangel'sk, 1939, iss. 1, pp. 80–84. (In Russ.)
  34. Gurskiy K.P. *Moy Vaygach (zapiski zaklyuchennogo)* [My Vaygach (prisoner's notes)]. Naryan-Mar, 1999, 140 p. (In Russ.)
  35. Lobanov A.A., Bogdanova E.N., Andronov S.V., Popov A.I., Kochkin R.A. et al. Issledovanie traditsionnogo pitaniya zhiteley Arkticheskoy zony Zapadnoy Sibiri [Study of the Traditional Diet of the Inhabitants of the Arctic Zone of Western Siberia]. *Voprosy pitaniya* [Problems of nutrition], 2018, vol. 87, no. 5, pp. 31–32.
  36. Kostritsyn V.V., Lobanov A.A., Kochkin R.A., Kobelkova I.V., Popov A.I., Andronov S.V., Lobanova L.P. Eksperimental'nye issledovaniya pri sozdanii funktsional'nykh produktov pitaniya na osnove rastitel'nogo syr'ya Yamalo-Nenetskogo okruga [Experimental Studies in the Creation of Functional Food Products Based on Plant Raw Materials of the Yamalo-Nenets Okrug]. *Nauchnyy vestnik Yamalo-Nenetskogo avtonomnogo okruga* [Scientific Bulletin of the Yamal-Nenets Autonomous District], 2016, no. 4 (93), pp. 144–149.
  37. Lobanov A.A., Bogdanova E.N., Andronov S.V., Popov A.I., Kochkin R.A. Traditsionnoe pitanie kak faktor sberezheniya zdorov'ya korennoy naseleniya Krasnosel'kupskogo rayona Yamalo-Nenetskogo avtonomnogo okruga [Traditional Nutrition as a Factor in Preserving the Health of the Indigenous Population of the Krasnoselkupsky Region of the Yamalo-Nenets Autonomous Okrug]. *Prodovol'stvennaya bezopasnost' korennoy naseleniya arkticheskogo regiona v usloviyakh izmeneniya klimata: vyzovy i resheniya* [Food Security of the Indigenous Population of the Arctic Region in the Context of Climate Change: Challenges and Solutions]. Arkhangel'sk; Severodvinsk, 2019, pp. 44–59.
  38. Gagarinova I.V., Popov A.I., Andronov S.V., Lobanov A.A. Kurenie tabaka kak faktor riska pri gipertonii v Arkticheskoy regione [Tobacco Smoking as a Risk Factor for Hypertension in the Arctic Region]. *Nauchnyy vestnik Yamalo-Nenetskogo avtonomnogo okruga* [Scientific Bulletin of the Yamal-Nenets Autonomous District], 2015, no. 4 (89), pp. 32–35.
  39. Kylasov A. *Etnosport. Konets epokhi vyrozhdeniya* [Ethnosport. End of the Era of Degeneration]. Moscow, Territoriya budushchego Publ., 2013, 144 p. (In Russ.)
  40. Beldtsytskiy N. Neskol'ko dney sredi izhemsikh zyryan [Several Days Among the Izhma Zyryans]. *Izvestiya Arkhangel'skogo obshchestva izucheniya Russkogo Severa* [News of the Arkhangel'sk Society for the Study of the Russian North], 1910, no. 24, pp. 29–37.

Received on September 24, 2020