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METHODS FOR PREVENTION OF IODINE DEFICIENCY

Abstract: *The article is aimed at studying the iodine deficiency and the diseases related to it. Iodine deficiency of various types is observed almost in all Russian regions. It is most widely spread in the mountain areas: the North Caucasus, Altai, the Siberian Plateau, in the Urals. The authors make an attempt to describe the methods for prevention of iodine deficiency.*

Keywords: *iodine deficiency diseases, iodine deficiency, thyroid, Urals, awareness, iodized salt.*

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МЕТОДЫ ПРОФИЛАКТИКИ ЙОДОДЕФИЦИТА

Аннотация: *Целью данной статьи является изучение расстройств, связанных с дефицитом йода в организме человека. Расстройства, вызванные дефицитом, йода являются наиболее распространенными заболеваниями неинфекционного характера и распространены практически во всех регионах Российской Федерации. Авторы рассматривают методы профилактики йододефицитных состояний.*

Ключевые слова: *йододефицитные состояния, заболевания, йододефицит, щитовидная железа, осведомленность населения, йодированная соль.*

Many countries of the world confront the problem of Iodine deficiency diseases. Iodine is a part of the thyroid hormones. The lack of it results in the faults of the human body functioning. Thyroid hormones affect the state of the central nervous and cardiovascular systems, physical and mental development, and the immune status of the body. In case of thyroid hormone deficiency the risks of miscarriage increases.

In interaction with other hormones of the endocrine system it affects protein, lipid, carbohydrate, mineral and water-salt metabolism. Iodine is especially important for the development of the brain of the fetus, children and adolescents. Chronic iodine deficiency in nutrition leads to the development of diffuse and nodular goiter. About 95% of iodine is ingested with food, the rest with water and air. Sea products and plants growing on the coast of the seas and oceans are rich in it. If there is little iodine in the soil and water it is not sufficiently accumulated in food. And thus, the population does not receive the required amount of iodine from the outside [5].

In the early 1990s World Health Organization (WHO) adopted a resolution that stated the medical and social significance of iodine deficiency in the nutrition of the population as a very significant one. Iodine is a trace element that does not have the ability to accumulate in the body, which means that as it has already been mentioned, it must constantly enter the body with food in sufficient quantities.

Large-scale preventive measure for the IDD through the production and sale of iodized salt is the most effective method recommended by WHO. It has been proven that in the healthcare sector there is no other more cost-effective way to prevent non-communicable diseases. Nowadays 95 out of 130 countries where iodine deficiency exists have passed a law on mandatory salt iodization. In Russia there is no such law but discussions are ongoing. The actual average consumption of iodine by a Russian resident is only 40-80 mcg per day which is 3 times less than the established norm (150-250 mcg) [1,3,4].

With the help of volunteers (medical students), population surveys were held to assess the awareness of Russian citizens about IDD, its consequences, preventive measures. The surveys also aimed at the formation of awareness of people in the need in a balanced use of iodized salt and food rich in iodine. We find it necessary to consider the results of the survey specifically for our region, the Urals as a whole and the Sverdlovsk region in detail. A total of 4919 people were interviewed in the Ural region [2].

The survey results in the Urals Federal District and Sverdlovsk Region were obtained and reflected in the article by Melnichenko G.A., Troshina E.A., Platonova N.M., Savchuk P.O., Yakunchikova M.S.

Each respondent was asked three questions:

1. Do you use iodized salt?
2. Do you know about large-scale iodine deficiency in Russia? Why is it dangerous?
3. Do you support the adoption of the law on universal salt iodization in industries in Russia as a way to prevent IDD? [2].

The following tables show the results of surveys conducted in the Urals and Sverdlovsk Region.

Table 1. Survey results in the Ural Federal District [2, p. 28]

Federal District	Number of respondents	1st question		2nd question		3d question	
		Yes	No	Yes	No	Yes	No

Ural Federal District	4919	3278	1641	2997	1922	3477	1442

Table 2. Survey results in Sverdlovsk Region [2, p. 29]

Region	Number of respondents	1st question		2nd question		3d question	
		Yes	No	Yes	No	Yes	No
Sverdlovsk Region	4013	2717	1296	2473	1540	2827	1186

Analyzing the results of the survey, we can come to the conclusion that the residents of the Urals Federal District are aware of the problem of iodine deficiency and support the idea of introducing a law on mandatory iodization of edible salt.

One of the problems of iodine deficiency is the problem of restoration of iodine. The greatest amount of iodine is found in cedar oil and a little is present in sunflower oil. Among animal fats the most preferable are various kinds of fatty fish and seafood. They are considered to be the richest in iodine.

Vegetable juices such as carrot, beetroot, cabbage, potato, cucumber possess a high level of iodine content. Particular attention should be paid to red and orange juices. The richest sources of the element are walnuts and pine nuts.

Porridge and cereals are rather poor in iodine. The leader among cereals is the millet. Small amounts are also present in buckwheat, oat and rye.

Vegetable sources of iodine are tomatoes, beets, cabbage, carrots, rhubarb, green and red beans, asparagus, spinach. According to the content of the element, the record holders include seaweed. Only one portion of seaweed is able to fill the daily requirement of the body in the element. Some fruit and berries also contain iodine. Persimmon, apples, grapes, melon, strawberries, cranberries, pineapples are at the top of the list. The richest dried fruit in iodine is prunes [6].

In order for dairy products (milk, cottage cheese, yogurt, kefir, cheese) and eggs to contain a sufficient supply of the element, the animals need to grow, live and eat in appropriate conditions, as is the case with meat.

Table 3. Iodine content in some foods [6, p 1]

Food product	Iodine content in mcg per 100 g of product
Seaweed	500-3000
Freshwater fish	243
Bread	9
Beans	12,5
Chicken	6
Oats	20
Champignon	18
Eggs	18

This table shows several types of products rich in iodine, which should be included in one way or another in the diet of residents of iodine-deficient regions and localities.

It should be noted in conclusion that in order to reduce diseases related to iodine deficiency in Russia it is necessary to organize mass prevention campaign, the best means being the adoption of a law on salt iodization and its use in the processing and production. Attracting volunteers-medical students can also be efficient. With their assistance high-quality educational work is being done with people of all ages, this work helps to increase the medical literacy of the population.

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