

FEATURES OF A DIET FOR PREGNANT AND BREASTFEEDING WOMEN

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Summary. *Of all the environmental factors that affect human health, nutrition plays a leading role. At the same time, we must not forget that the younger the child is, the more attention should be paid to nutritional issues. Scientific data of nutrigenomics indicates the effect of the nutrition factor at the gene level. A successfully developing new scientific direction – epigenomics – studies the influence of various environmental factors, and above all nutrition, on the expression of maternal and fetal genes.*

Keywords: *nutrition, lactation, pregnancy, vitamins*

Introduction

Numerous studies have proved that the health of a child is greatly influenced not only by the nutrition of pregnant and lactating women, but also by the rational nutrition of the mother and father of the child even before conception. The body of the unborn child is built from materials that are supplied to it from the mother's body - the first environment of its habitat, therefore, the lifestyle of pregnant women, their nutrition, the absence or presence of bad habits, lay the foundation for the health of the unborn child [1].

According to numerous studies, an unbalanced or insufficient nutrition in the period preceding pregnancy and during pregnancy itself has a significant impact on the health of the unborn child and can be comparable to the influence of genetic factors and active chemical or infectious influences. (table 1).

During pregnancy, during the period of active growth and development of the fetus, the mother's nutrition should cover the increased needs for all nutrients. The successful course and outcome of pregnancy depends on the state of health of both parents, therefore, during pregnancy planning, both parents need to:

- compensate for the initial malnutrition;
- normalize the ratio of body weight and length (for women);
- eliminate the manifestations of partial nutritional disorders;
- observe the energy adequacy and balance of food.

Scientists have shown that proper nutrition of pregnant women reduces the risk of birth defects of the fetus and diseases of the newborn, such as hypocalcemic seizures, respiratory disorders, and also reduces the frequency of birth of children with low body weight. According to the results of a study conducted in 1988 in the USA, due to the additional introduction of 800 kcal into the daily diet of pregnant women, it was possible to reduce perinatal mortality, achieve satisfactory anthropometric indicators of newborn pregnancy in 13 million women [2, 3].

Table 1

The effect of deficiencies and excess of nutrients in the mother's diet on possible disorders of fetal development in the womb

Violation of nutritional status	Fetal development disorder	Long-term consequences
Protein and energy deficiency	Intrauterine hypotrophy, delayed brain development	Risk of diabetes mellitus, obesity, hypertension, coronary heart disease
Deficiency of polyunsaturated fatty acids	Disorders of the development of the neural network and the brain	Vision problems, intellectual development delay
Folic acid deficiency (especially in combination with vitamin C, group B deficiency)	Defects in the development of the neural tube (anencephaly, cerebral hernia spina bifida)	Disorders of neuropsychiatric development, risk of cardiovascular diseases
Selenium deficiency	Weakness of labor activity: fetal hypoxia, iodine metabolism disorders	Selenium deficiency
Zinc deficiency	Fetal development delay, hypotrophy, prematurity	Impaired growth, decreased immunity, impaired activity of enzyme systems
Iodine deficiency	Spontaneous abortions, stillbirths, neuropsychiatric disorders, hypothyroidism	Disorders of neuropsychiatric development, hypothyroidism, stunting, delayed sexual development
Vitamin A deficiency or excess	Congenital deformities, teratogenic effect	Vitamin A deficiency or excess

The energetic value of a pregnant woman's diet

The energetic value of a pregnant woman's diet varies depending on the duration of pregnancy. In the first trimester of pregnancy, in order to maintain an optimal level of weight gain of a growing organism, it is necessary to increase the caloric intake by 100 kcal per day. In the second and third trimesters of pregnancy, it is advisable to increase the caloric content of the diet by 300 kcal per day [2, 4]. It is not recommended to exceed the specific weight of protein products in the diet above 20% of the energy value of food. It is considered reasonable that 55% of the energy value of food should be carbohydrates, 15% - protein and 30% - fats (Table 1). Lactating women to maintain lactation are recommended to increase energy consumption by 450-500 kcal / day from energy consumption for non-pregnant women, which averages 2100-2200 kcal / day. As for non-pregnant women, energy needs in this category of women depend on lifestyle, physical activity [3].

Fats in the diet of pregnant and breastfeeding women

In recent years, a lot of attention has been paid to the quality of fats in the diet of pregnant and breastfeeding women. Fats in the diet of a pregnant and breastfeeding woman should be represented mainly by easily digestible vegetable oils rich in polyunsaturated fatty acids and vitamin E. Sufficient content of the fat component in the diet of a woman with an optimal ratio of omega-3 and omega-6 acids contributes to the normal development of brain structures and the visual analyzer of the fetus and child at an early age [5].

The need for vitamins during pregnancy and breastfeeding

To date, about 30 vitamins are known and studied, 13 of them are indispensable for the human body. Some vitamins are synthesized in the body, but some of them are not produced in the body, and therefore must come from outside (Table 2) [4, 5].

Table 2

Sources of vitamins and their functions in the body

Vitamin	Sources	Biological role	Need/ day, mg
A(retinol)	Beef liver, cod fish oil), chicken egg. Beta-carotene (provitamin A \ rowan, sea buckthorn, rosehip, dried apricots, tomato carrot sweet red pepper, spinach celery, parsley	It affects the metabolism in the retina of the eyes. It acts as a cofactor in enzyme systems, is necessary for bone growth, ensuring embryonic development, regulation of growth and differentiation of tissues	2-2.5
D (cholecalciferol)	Fish oil cod liver, Atlantic herring, egg yolk butter, synthesized under the action of ultraviolet light	Promotes optimal absorption and metabolism of calcium and phosphorus, Regulates bone growth, Increases muscle tone	0.01
E (tocopherol)	Unrefined vegetable oils (soy, corn, sunflower peanut), sprouted wheat grains peas rye	It is a part of cell membranes, Antioxidant properties Normalizes reproductive function Maturation of fetal lung tissue	15ME
F (unsaturated fatty acids)	Unrefined vegetable oil	Convert cholesterol into soluble compounds and promote its excretion	-

There are two groups of vitamins: water-soluble and fat-soluble vitamins. Fat-soluble vitamins, entering the body, are deposited in the depot organs, and the supply of water-soluble vitamins must be replenished daily, since they are rapidly destroyed in physiological environments. The need for vitamins in women increases during pregnancy and lactation by 1.5 times [4].

Protein intake during pregnancy and breast-feeding

Protein is necessary for the growth and development of the fetus, uterus, placenta, mammary glands, increasing the volume of circulating blood and amniotic fluid. In the first trimester of pregnancy, it is recommended to increase protein intake by 5 g / day, in the second - by 20 g / day and by 24 g / day - in the third trimester [5]. Exceeding the proportion of protein over 15% of the total energy value is impractical, since it can affect the health of the child, in particular, studies have shown that with an increased protein content in the mother's diet, the percentage of children born with low body weight is higher. Studies have also shown a small effect of changes in the amount of protein consumed by the mother on the final volume of milk [6].

Carbohydrates in the diet of pregnant and breastfeeding women

The average daily need for carbohydrates is 350 g. Pregnant and lactating women should consume carbohydrates containing vegetable fiber (bread from coarse flour, bran, cereals - buckwheat, rice, oatmeal, vegetables, fruits). Sufficient consumption of vegetables and fruits helps to eliminate constipation, a frequent problem that occurs during pregnancy [5, 7].

Conclusion

To sum up, rationally organized nutrition of pregnant women and nursing mothers, built taking into account the recommended norms of physiological needs for macro- and micronutrients and energy provided by appropriate sets of products, using specialized nutritional products enriched with vitamins and minerals, will certainly help to maintain a woman's health and ensure adequate development of both the fetus and an infant.

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