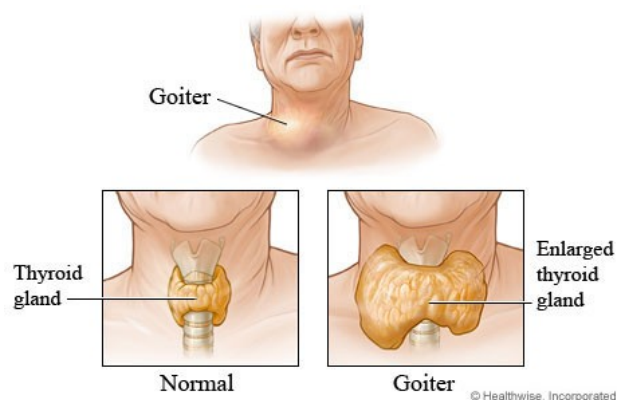


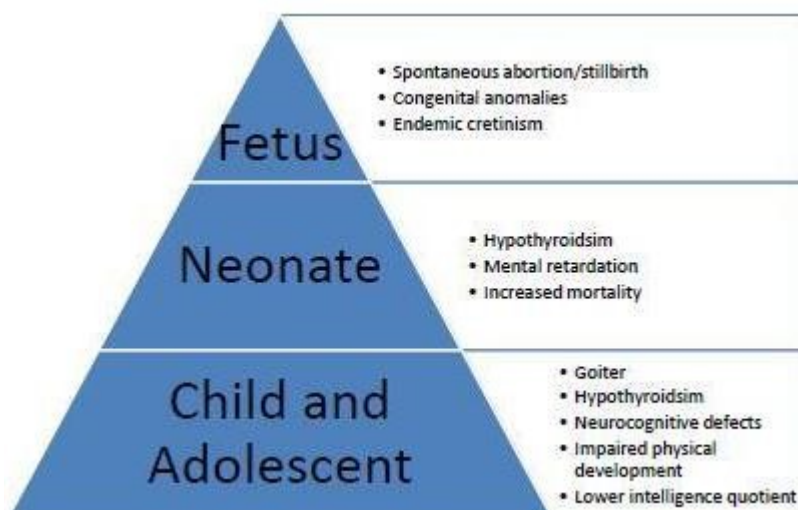
Iodine deficiency during pregnancy and early childhood

The only known function of iodine in human body is participation in thyroid hormone production. Thyroid hormones contain iodine atoms in their structure. In case of iodine deficiency thyroid hormones: thyroxine and triiodothyronine can not be produced in optimal amounts by thyroid gland. This condition is called hypothyroidism. Laboratory evaluation of hypothyroidism includes measurement of TSH (Thyroid stimulatory hormone) and FT4 (Free thyroxine) levels in the blood. When there is iodine deficiency, TSH is increased and FT4 may be low or even normal. Besides changes in thyroid function, iodine deficiency is associated with enlargement of thyroid gland that is called endemic goiter.

Georgia is endemic iodine deficient area, therefore women who are planning pregnancy should prepare beforehand with sufficient iodine intake. If unplanned pregnancy is already confirmed it has critical importance to take adequate amount of iodine as soon as possible for normal course of pregnancy and optimal fetal brain development.



Demand on iodine is significantly increased during pregnancy and lactation period. Iodine deficiency may have most detrimental effects during pregnancy and early childhood. Throughout the whole pregnancy and especially in first trimester thyroid hormones play crucial role in formation of nervous system network. After delivery during postnatal period normal level of thyroid hormones is key factor for mental, as well as physical development and growth of newborn child.



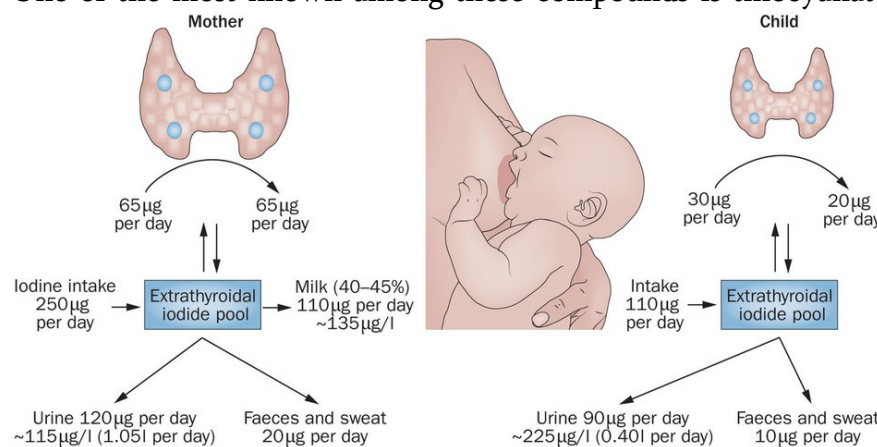
Normal iodine intake is essential for uncomplicated course of pregnancy and delivery. Iodine deficient hypothyroidism is associated with infertility and in case of pregnancy iodine deficiency is associated with such a severe complications as spontaneous abortion, stillbirth, preterm delivery, congenital abnormalities of

fetus, mental retardation and low IQ later in adulthood. The most severe manifestation of iodine deficiency is cretinism, a medical condition characterized by significantly impaired physical and mental retardation due to mother's hypothyroidism. Cretinism is medical

curiosity nowadays but mild to moderate iodine deficiency during pregnancy is still affecting and having its negative impact on baby's growing organism.

There are very recent data from UK observational study, showing us that children whose mothers had mild iodine deficiency during their pregnancy had lower (10-12 score) IQ and impaired reading skills at age 8-10. The alarming result that was found in this study sends us significant message, that even mild to moderate iodine deficiency during pregnancy could have significant effect on baby's intellectual and mental development process and should not remain unnoticed.

During lactation the best and the only way to take iodine is mother's milk. Many chemicals inhibit iodine uptake by thyroid gland and its transport into mother's milk. One of the most known among these compounds is thiocyanate (SCN⁻) that is found in



cigarette smoke and is capable to affect thyroid gland's function and cause iodine deficient hypothyroidism.

Therefore mothers who are smokers are strongly recommended to cease smoking at least during pregnancy

and lactation; And for those who could not stop smoking higher doses of iodine supplementation are recommended to overcome thiocyanate's effect on thyroid gland and avoid iodine deficiency. Those newborns who are on artificial feeding should take extra iodine per day for prevention of iodine deficiency and its consequences on developing brain and nervous system.

Normal reference range of TSH for non-pregnant women is 0.4-4.0 µIU/L, but as already mentioned, demand on thyroid hormones is increased during pregnancy, therefore TSH has special reference ranges according to trimesters and it should be taken in consideration during interpretation of test results. For the first trimester normal TSH level is 0.1-2.5 µIU/L, for second trimester TSH should be 0.2-3 µIU/L and for the third trimester it is optimal to have TSH from 0.3 to 3 µIU/L. higher values of TSH in spite of normal level of FT4 is called subclinical hypothyroidism and is associated with complications mentioned above.



In many countries, including Georgia, iodized salt is used for prophylaxis of iodine deficiency in population. Iodized salt is easily degraded after thermal treatment and should not be used in boiling or frying food. Dish should be salted when it is ready to be eaten. Iodized salt is not enough source of iodine during pregnancy and

lactation as demand on iodine in these periods is increased. Most women should take iodine supplementation pills with particular dosage under medical doctor's supervision.

The article was prepared by Natia Vashakmadze

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