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# ASSESSMENT OF IODINE DEFICIENCY AND PREVENTION OF ENDEMIC GOITER AMONG THE POPULATION: A LITERATURE REVIEW

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Iodine deficiency remains a significant hygienic and epidemiological problem in global health, serving as a primary etiological factor in the development of thyroid disorders, particularly endemic goiter. According to the World Health Organization, approximately 30% of the world's population is at risk of iodine deficiency.

Iodine is an essential micronutrient required for the synthesis of thyroid hormones (thyroxine and triiodothyronine). Its deficiency exerts a complex impact on metabolic, neurological, and somatic functions. The spectrum of iodine deficiency disorders (IDD) includes endemic goiter, hypothyroidism, cretinism, reproductive impairments, and reduced cognitive development in children.

Global monitoring conducted by the UNICEF and the Iodine Global Network (formerly ICCIDD) indicates that iodine deficiency is particularly prevalent in mountainous and continental regions. Central Asia, including Uzbekistan, has historically been classified as an endemic region for iodine deficiency.

Despite the implementation of preventive programs in recent decades, insufficient iodine intake persists in certain regions, necessitating comprehensive evaluation of preventive effectiveness.

The prevalence of iodine deficiency is influenced by regional, social, and environmental factors. According to WHO classification, median urinary iodine concentration (MUIC) is the primary epidemiological indicator:

– MUIC <100 µg/L indicates iodine deficiency
– MUIC 100–199 µg/L reflects adequate iodine intake

Numerous epidemiological studies (Zimmermann, 2009; Andersson et al., 2012) demonstrate that in iodine-deficient areas:

– goiter prevalence may reach 20–30%
– average IQ in children decreases by 10–15 points
– iodine deficiency in pregnant women increases the risk of neonatal complications

Countries that have implemented universal salt iodization (USI) programs have shown substantial improvements:

– in countries such as China and Iran, goiter prevalence decreased by 3–5 times
– MUIC levels approached normal ranges
– neurocognitive indicators in children improved

However, several challenges remain:

– quality and stability of iodized salt
– low public awareness
– use of non-iodized salt in the food industry

Conclusion. Iodine deficiency and endemic goiter remain pressing global and regional public health issues. Iodine deficiency is one of the main modifiable risk factors for thyroid disorders and neurocognitive impairments. Universal salt iodization represents the most effective and cost-efficient strategy for reducing iodine deficiency.

The effectiveness of preventive measures depends directly on monitoring systems, quality control, and public awareness. Modern approaches such as biofortification and targeted supplementation serve as important complementary strategies.




To optimize prevention, it is necessary to implement regional epidemiological monitoring systems and assessment based on individual biomarkers. Iodine deficiency prevention should be regarded as one of the most cost-effective ("low cost — high impact") strategies within public health systems.

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