Nutrition and Food Sciences Research Vol 2, No 4, Oct-Dec 2015, pages: 1-2

Editorial

Prevention of Iodine Deficiency: Difficult to Implement, More Difficult to Sustain

Fereidoun Azizi*

Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Received: July 2015 **Accepted:** July 2015

The first concise description of disorders caused by iodine deficiency was published in 1908 (1). The term "iodine deficiency disorders" (IDD) introduced by Basil Hetzel in 1983 has transformed the world's understanding of the problem from "endemic goiter" to a wide range of conditions, indicating the vulnerability of the fetus and young children. Therefore, impaired thyroid function, retarded growth and mental development, decreased fertility, and increased prenatal mortality have long called for universal intervention (3).

In 1999, WHO estimated that 2.2 billion people were at risk for IDD in 130 countries (4). Programs to eliminate iodine deficiency were established on the basis of an informal global partnership with the distribution of iodized salt, the so-called "Universal Salt Iodization" (USI). Remarkable progress has been achieved for elimination of IDD in the last 2 decades. In 1990, 1572 million people in 110 countries were at risk of IDD, 12% had goiter, 8% had some degree of mental impairment due to iodine deficiency, and 2% were cretinous (5). From 2003 to 2011, the number of countries with iodine deficiency decreased from 54 to 32 (6), and by 2012, 71% of the global population had access to iodized salt (7). We have shown that iodine nutrition status of mothers residing in countries with mandatory iodine fortification is better than those in regions with voluntary iodine programs (8).

Although great success has been achieved in universal recognition of IDD and major steps have been taken for adequate iodine nutrition; yet universal collaboration is insufficient and incomplete (9). Successful IDD control programs are achieved when a carefully planned monitoring system is functioning. A good example of such a program is the IDD control program of the Islamic Republic of Iran (10). In 1989, an effective and functional multidisciplinary national body (IDD National Committee), responsible to the government for elimination of IDD, became active, and an executive officer responsible for the IDD elimination programme was appointed. Legislation on universal salt iodization was implemented in 1992, and salt factories began producing only iodized salt for household use. Public education and social mobilization on the importance of iodine nutrition and the consumption of iodized salt were implemented and integrated into the health network. Iran was committed to assessment and re-assessment of progress in the elimination of IDD, with increased access to iodine laboratories and regular data on salt iodine at factory, retail and household levels. National monitoring of goiter rate, iodized salt consumption and urinary iodine was performed every 5-7 years. Co-operation from the salt industry in maintenance of quality control was excellent. Monitoring in 1978 and 1986 showed adequate iodine nutrition (10, 11). Surveillance in 2007 demonstrated that median urinary iodine of schoolchildren had decreased though some inadequacy in iodine nutrition was evident in 6 out of the 31 provinces in Iran (12). The Ministry of Health & Medical Education was promptly informed of this, and it was found that appropriate monitoring had failed in a few salt factories. Evaluation and supervision of factories and retailers were enforced, and more recent data show improvement in iodine nutrition.

The lack of success in many countries in the development and sustainability of an efficient monitoring system presents a dismal picture. The lesson learned is that IDD prevention programs are fragile, and require long-term sustained commitment. Furthermore, USI, although achieved in the majority

***Address for correspondence:** Fereidoun Azizi, Prof, Nutrition and Endocrine Research Center, Obesity Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail address: azizi@endocrine.ac.ir

[Downloaded from nfsr.sbmu.ac.ir on 2026-11-12]

of countries where iodine deficiency had been a major public health problem, is not sufficient by itself to eliminate IDD. The main objective should focus on suitable and sustainable iodine nutrition (13). Greater attention needs to be paid to the development of an efficient, sustainable and operating monitoring system in every country to sustain adequate iodine nutrition and to prevent re-emergence of IDD.

Financial disclosure

The authors declare no financial interest.

Funding/Support

The study did not receive any financial support.

References

1. McCarrison R. Observations on endemic cretinism in the Chitral and Gilgit valleys. Lancet 1908; ii: 1275-80.
2. Stanbury JB. The damaged brain of iodine deficiency. Cognizant Communication, New York, 1994; pp 1-335.
3. Hetzel BS. Iodine deficiency disorders (IDD) and their eradication. Lancet 1983; ii: 1126-9.
4. WHO, UNICEF ICCIDD. Progress towards the elimination of Iodine Deficiency Disorders (IDD). WHO publ., Geneva 1999; pp 1-33.
5. WHO, UNICEF, ICCIDD. Indicators for assessing Iodine Deficiency Disorders and their control through salt iodization. WHO publ., Geneva. 1994; pp 1-55.
6. Andersson M1, Karumbunathan V, Zimmermann MB. Global iodine status in 2011 and trends over the past decade. J Nutr 2012; 142: 744-50.
7. United Nations Children's Fund. The State of the World's Children 2012: Children and Urban World. New York: United Nations Children's Fund (UNICEF); 2012.
8. Nazeri P, Mirmiran P, Shiva N, Mehrabi Y, Mojarrad M, Azizi F. Iodine nutrition status in lactating mothers residing in countries with mandatory and voluntary iodine fortification programs: An updated systematic review. Thyroid 2015; 25: 611-20.
9. Hetzel BS. Eliminating iodine deficiency disorders. The role of the international council in the global partnership. Bull WHO 2002; 80: 410-13.
10. Azizi F, Sheikholeslam R, Hedayati M, et al. Sustainable control of iodine deficiency in Iran. J Endocrinol Invest 2002; 25: 409-413.
11. Azizi F, Mehran L, Sheikholeslam R, Ordookhani A, Naghavi M, Hedayati M, Padyab M, Mirmiran P. Sustainability of a well-monitored salt iodization program in Iran: Marked reduction in goiter prevalence and eventual normalization of urinary iodine concentrations without alteration in iodine content of salt. J Endocrinol Invest 2008; 31: 422-31.
12. Delshad H, Amouzegar A, Mirmiran P, Mehran L, Azizi F. Eighteen years of continuously sustained elimination of iodine deficiency in the Islamic Republic of Iran: The vitality of periodic monitoring. Thyroid 2012; 22: 415-21.
13. Azizi F. Salt Iodization, Monitoring, and Evaluation (SIME): An Effective Replacement for Universal Salt Iodization (USI). Int J Endocrinol Metab 2003; 2:46-47.

[Downloaded from nfsr.sbmu.ac.ir on 2026-11-12]