The iodine nutritional status in the Italian population: data from the Italian National Observatory for Monitoring Iodine Prophylaxis (OSNAMI) (period 2015–2019)

Dear Editor:

In the April 2019 issue of the Journal, Campanozzi et al. (1) reported results of a study aimed at assessing dietary iodine intake in a national sample of Italian schoolchildren and adolescents (aged 6–18 y) using 24-h urine collections [24-h urinary iodine excretion (UIE)]. The study was conducted in the framework of the program MINISAL-GIRSCI (2).

The authors conclude that the nutritional iodine intake is still inadequate in the Italian population 14 y after the approval of law n.55/2005, which introduced a nationwide program of iodine prophylaxis on a voluntary basis in our country (3). Their results and conclusion do not reflect the current iodine nutritional status of the Italian population, which appears to be adequate as ascertained by the second survey (period 2015–2019) conducted by the Italian National Observatory for Monitoring Iodine Prophylaxis (OSNAMI) (4; De Angelis et al. 2019, communication at the 40th National Meeting of the Italian Society of Endocrinology). Specifically, it should be considered that the young population the authors studied was recruited in 2009 when the program MINISAL-GIRSCI was implemented (2). In the same period, consistently, the first survey conducted by OSNAMI (2007–2012) on 7455 schoolchildren (age 11–14 y) residing in 9 Italian regions showed that most of the regions were iodine deficient at that time [median spot urinary iodine concentration (UIC) <100 μg/L]; only the Liguria, Tuscany, and Sicily regions showed iodine sufficiency [median UIC ranging from 100 to 160 μg/L). In addition, only 43% of salt sold in Italy was iodized at that time, and the prevalence of goiter in schoolchildren (range: 6%–9%) was slightly higher than the threshold value of 5% in all the examined regions (5). After this time, the General Direction of Food Safety and Nutrition at the Ministry of Health together with the panel of OSNAMI experts at the National Institute of Health decided to intensify nationwide informative campaigns on the use of iodized salt promoting the slogan "less salt but iodized," in agreement with the nationwide strategy of reducing sodium intake in the population. These efforts have led to the achievement of iodine sufficiency in our country, as demonstrated by the preliminary results of the second OSNAMI survey conducted on 2523 schoolchildren (age 11–13 y) residing in rural (42%) and urban areas (58%) of 7 Italian regions (Liguria, Toscana, Emilia Romagna, Marche, Umbria, Lazio, Sicilia). Analysis of data regarding 3 further regions (Veneto, Lombardia, Calabria) is still ongoing. These preliminary results showed the use of iodized salt in 75% of the Italian school canteens, a median UIC of 118 μg/L (rural areas: 119 μg/L; urban areas: 117 μg/L), and a prevalence of goiter $<5\%$ in 6 of the 7 regions (range 1%–4.7%). Only Umbria showed a borderline goiter prevalence value (5.4%). In regard to this, it is important to underline that the assessment of goiter in schoolchildren by ultrasound is an indicator of long-lasting adequate iodine intake in a population. In fact, it has been demonstrated that iodine prophylaxis is able to prevent the development of goiter in children born after the implementation of iodized salt and to further control thyroid enlargement in older children, although it is less effective in reducing goiter size in children exposed to iodine deficiency in the first years of life (6).

In their study Campanozzi et al. (1) also suggest to continue monitoring the iodine intake in the Italian population by using 24-h UIE measured in children to properly document changes in iodine intake over the years. They support this conclusion on the basis of the observation that significant discrepancies between 24-h UIE and UIC were found in the first (<7.8 y) and second (7.8–10 y) quartiles of age, where the average 24-h urinary volume was <1 L, but not in the third (>10–12.5 y) and fourth (>12.5–18 y) quartiles of age of the young population they recruited. In particular, they underline that the measurement of UIC in spot samples could lead to an underestimation of iodine deficiency in younger subjects because of the age-related smaller urine volumes producing spuriously higher iodine concentrations. Actually, we believe that the collection of 24-h UIE in a large number of schoolchildren to monitor the iodine nutritional status in the population is not necessary. UIC from spot samples is the recommended indicator for population assessment and monitoring of iodine interventions globally (7, 8). According to the WHO classification, adequate iodine status is indicated by a population median UIC ≥ 100 μg/L with no more than 20% of samples <50 μg/L; where the median value is <100 μg/L the iodine intake is considered inadequate. If a large number of samples are collected, variations in hydration among individuals (9) and day-to-day variation in iodine intake (10) generally even out, so that the median UIC in spot samples correlates well with the median from 24-h samples (8). Therefore, if the daily volume of urine produced by a group approximates 1 L/d, as Campanozzi et al. (1) demonstrated to occur in schoolchildren aged >10 y, then the UIC (in micrograms per liter) is interchangeable with the 24-h UIE. Because both OSNAMI surveys were conducted in schoolchildren at such an age that their urine volume can be assumed to be $\sim$1 L, we are confident that the results so far obtained by OSNAMI are reliable. Furthermore, considering that spot urine samples are far simpler to obtain than 24-h urine collections, in the future the UIC assessment will allow monitoring of iodine nutritional status in the Italian population more frequently than would be possible if 24-h urine collections were undertaken. Consequently, this higher frequency will provide the advantage of a more accurate evaluation of the sustainability of iodine sufficiency just achieved in our country.

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