

# Almost all pregnant women in Alexandria are iodine sufficient

**Nawal A. Elsayed, Samar Abdel-Mohsen, Samiha A. Mokhtar, Dalia I. Tayel** Nutrition and Biostatistics Departments of Public Health, Alexandria University, Egypt and **Mohga M. Fikry** Maternal and Child Health Department, Alexandria Health Directorate

## Background

In Egypt, the national salt iodization program was implemented in 1996, and a national screening and management program for neonatal hypothyroidism began in 2000–2001. Alexandria is one of 29 governorates of Egypt, which lies on the Mediterranean sea. Historically, Egypt has a high prevalence of iodine deficiency disorders (IDD), particularly in the New Valley governorate in the western desert. But there is little data on the prevalence of iodine deficiency among pregnant women. To address this gap, a study was carried out to assess urinary iodine concentrations (UIC) in pregnant women, and to estimate the prevalence of neonates with elevated values of thyroid stimulating hormone (TSH).

The study recruited 400 healthy women in the 3rd trimester of pregnancy from six government-run healthcare facilities across the Alexandria governorate. The women gave a spot urine sample for UIC analysis. Following birth, blood samples were collected from the newborns by heel prick to measure TSH. In addition, salt samples were collected from retail shops in each of the governorate's six districts and analyzed for iodine content by titration.

## Iodine intake is adequate in all but one district

The median UIC in 400 women was 170  $\mu\text{g/L}$ , with the highest median recorded in El-Gomrouk district (231  $\mu\text{g/L}$ ), and the lowest in El-Agamy district (74  $\mu\text{g/L}$ ). El-Agamy was the only district with a median UIC below the range indicating adequate iodine intakes (150–249  $\mu\text{g/L}$ ). Iodine content in salt ranged from 50 to almost 70 ppm across the six districts, and it was adequate across the governorate. There were no stillbirths or neonate congenital anomalies, and the TSH levels were found to be within the normal range in all newborns in the study.

TSH in neonates can be a valuable indicator for iodine deficiency. The increase in the number of neonates with moderately elevated TSH concentrations is thought to be proportional to the degree of iodine deficiency during pregnancy (3). A previous study in pregnant women conducted in Abbassia district (Cairo governorate) reported a mean ( $\pm\text{SD}$ ) urinary iodine concentration of 102.9 ( $\pm 3.11$ )  $\mu\text{g/L}$  (2). Because urinary iodine concentrations are typically not normally distributed in the population, it is likely that the median UIC would have been lower,

(81%), and it is lower in rural areas (87.1% compared with 96.3% in urban regions).

This variation in coverage at the sub-national level may partly explain why there are differences in the median UICs across the districts. It may also serve to emphasize the importance of monitoring iodine status in vulnerable populations and encourage iodine supplementation of pregnant women in areas at risk for deficiency. Education activities to increase the intake of iodine-rich foods is also recommended.



*Uneven coverage with adequately iodized salt might lead to pockets of insufficient iodine intake in young women and iodine deficiency during pregnancy*

indicating deficiency. In the same study, the proportion of newborns with TSH levels indicating hypothyroidism ( $>5$  mIU/L in whole blood) was 8.85%. While at odds with these findings, results from Alexandria may suggest that TSH is not always a sensitive indicator.

According to the latest Demographic and Health Survey (DHS 2014), 90.9% of households in Egypt are using iodized salt, but this proportion is lowest among households in the lowest wealth quintile

## References

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3. WHO/UNICEF/ICCIDD. Assessment of iodine deficiency disorders and monitoring their elimination: A guide for program managers, 3rd edition. WHO, 2007.