Biological Trace Element Research (2019) 190:281
https://doi.org/10.1007/s12011-018-1512-x

Pre-analytical Factors Influence Accuracy of Urine Spot Iodine Assessment in Epidemiological Surveys

Zheng Feei Ma [1,2,3]

Received: 17 May 2018 / Accepted: 5 September 2018 / Published online: 12 September 2018
© Springer Science+Business Media, LLC, part of Springer Nature 2018

This letter is regarding the recent publication of "Pre-analytical factors influence accuracy of urine spot iodine assessment in epidemiological surveys" by Doggui et al. (Biol Trace Elem Res 2018; https://doi.org/10.1007/s12011-018-1317-y) [1]. The findings by the authors are relevant and interesting. Although the study did not collect other biomarkers including thyroglobulin (Tg) [2–4], its findings have provided a valuable information in assessing iodine status in school-aged children, who are vulnerable to iodine deficiency [5].

The authors examined some pre-analytical factors including timing since eating breakfast and urine void rank that might affect the urinary iodine concentration (UIC). However, these pre-analytical factors did not affect the categorisation of iodine status in school-aged children (i.e. iodine sufficient with a median UIC > 100 μg/L) regardless of adjustment. For example, the authors reported that whether the children ate breakfast or not, the median UIC of the group was still > 100 μg/L, indicating iodine sufficiency. Similarly, whether if there was a difference in time between last meal and urine sampling or urine void rank, the median UIC of the group still remained to be > 100 μg/L. Although the authors reported that significant differences were found in the statistical tests, it appeared that the authors might have missed the main point of using UIC for determining the iodine status of population. It is unclear if the authors were trying to use a single spot urine sample to determine individual iodine status. However, spot urine samples can only be used to categorise iodine status in a group. In order to determine individual iodine status, multiple spot urine samples are needed from an individual over a certain time period. This is because UIC has high inter- and intra-individual variation [6].

Dietary intake might influence the excretion of urinary iodine. However, the authors did not report about the dietary intake and foods consumed before the collection of urine samples which are an important factor. Therefore, additional data should be to be included in future large randomised study where the dietary iodine input would be taken into account. This is because some of these pre-analytical factors might have influenced the accuracy of UIC.

Compliance with Ethical Standards

Conflict of Interest The author declares that there is no conflict of interest.

References

1. Doggui R, Ati-Hellal ME, Traisac P, Ati JE (2018) Pre-analytical factors influence accuracy of urine spot iodine assessment in epidemiological surveys. Biol Trace Elem Res. https://doi.org/10.1007/s12011-018-1317-y
2. Ma ZF, Skeaff SA (2017) Assessment of population iodine status. In: Pearce EN (ed) Iodine deficiency disorders and their elimination. Springer, Cham, pp 15–28
3. Ma ZF, Skeaff SA (2014) Thyroglobulin as a biomarker of iodine deficiency: a review. Thyroid 24(8):1195–1209
4. Ma ZF, Venn BJ, Manning PJ, Cameron CM, Skeaff SA (2016) Iodine supplementation of mildly iodine-deficient adults lower thyroglobulin: a randomized controlled trial. J Clin Endocrinol Metab 101(4):1737–1744
5. Jones E, McLean R, Davies B, Hawkins R, Meiklejohn E, Ma ZF, Skeaff S (2016) Adequate iodine status in New Zealand school children post-fortification of bread with iodised salt. Nutrients 8(5):298
6. Ma ZF, Venn BJ, Manning PJ, Cameron CM, Skeaff SA (2018) The sensitivity and specificity of thyroglobulin concentration using repeated measures of urinary iodine excretion. Eur J Nutr 57(4):1313–1320

✉ Zheng Feei Ma
Zhengfeei.Ma@xjtlu.edu.cn

[1] Department of Public Health, Xi'an Jiaotong-Liverpool University, Suzhou, China

[2] School of Medical Sciences, Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia

[3] Health and Sustainability Innovation (HSI) Lab, Health Technologies University Research Centre (HT-URC), Xi'an Jiaotong-Liverpool University, Suzhou, China