

Iodine Deficiency in Pregnancy and Challenges to Measure the Level of Deficiency

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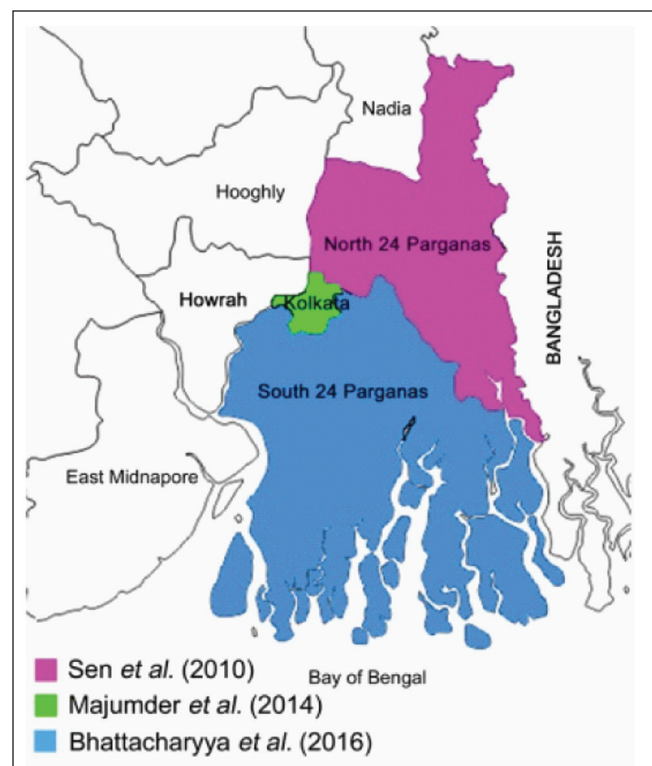
Sir,

We read an original article titled “A Community Based Survey on Prevalence of Iodine Deficiency among Pregnant Women in a Municipality Area of West Bengal, India” (2016 Oct, Vol-4(4): PO10-PO13) in Community paediatrics section in your renowned journal – IJNMR. In the study, investigators assessed the prevalence of iodine deficiency among pregnant women by measuring urinary iodine level. The study was carried out in a municipality area in South 24 Parganas district which is an iodine-repleted area in West Bengal.

Study by Sen TK et al., in another district of West Bengal – North 24 Parganas showed that 72.9 percent households were consuming adequately iodized salt [1]. Study by Majumder A et al., studied the prevalence of iodine deficiency among pregnant and lactating women in Kolkata and found that salt iodination program was adequate for general population but not adequate for pregnant and lactating mothers [2]. District wise fact sheet of National Family Health Survey – 4 (2015-2016) showed that 94.6 percent household use iodized salt in South 24 Parganas district [3]. The districts of West Bengal where these studies were carried out are shown in [Table/Fig 1]. Hence, from these studies and survey, it is evident that the fortification of salt with iodine is adequate in these three adjacent districts of West Bengal. From these data, it can be assumed that dietary source of iodine for pregnant women were similar as of general population.

Maternal hypothyroidism, even a mild-low T4 level or elevated TSH level may cause cognitive delay in babies because thyroid hormone is essential for neurodevelopment. During pregnancy, the demand of iodine is increased as the thyroid hormone production is increased. The underlying reasons for increased thyroid hormone synthesis in pregnancy are –

- 1) Increased levels of serum thyroxine-binding globulin,
- 2) Thyrotropin receptor stimulation by human chorionic gonadotropin hormone, and



[Table/Fig-1]: Districts of West Bengal where studies were carried out.

* Map is not according to accurate scale.

- 3) Initiation of fetal thyroid hormone production in second half of pregnancy [4].

Hence, WHO recommends increased dietary intake of iodine during pregnancy (250 µg/day) whereas, for non-pregnant woman the recommended daily intake is 150 µg/day. So, increased demand may be a contributing factor for decreased urinary excretion of iodine found in the study of discussion.

Another factor to consider is - increased Glomerular Filtration Rate (GFR) in pregnancy. Renal iodine clearance depends on GFR as there is no evidence of tubular secretion, and reabsorption is partial, passive and decreased by osmotic

diuresis. It is also observed that urinary iodine is increased during pregnancy in iodine-replete areas [5]. As the area from where the sample size was taken was an iodine-replete area, this factor might under estimate the actual iodine deficiency of study population.

Despite these confounding factors, further studies may give us better result between association of maternal urinary iodine level and low birth weight of babies. Absolute values of urinary iodine level can be used as predictor variable and low birth weight as outcome variable. Correlation between these two variables would reflect the association, if any and extent of association.

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REFERENCES

- [1] Sen TK, Das DK, Biswas AB, Chakrabarty I, Mukhopadhyay S, Roy R. Limited access to iodized salt among the poor and disadvantaged in North 24 Parganas District of West Bengal, India. *J Health Popul Nutr.* 2010;28(4):369-74.
- [2] Majumder A, Jaiswal A, Chatterjee S. Prevalence of iodine deficiency among pregnant and lactating women: Experience in Kolkata. *Indian J Endocrinol Metab.* 2014;18(4):486-90.
- [3] District Fact Sheet South Twenty Four Parganas West Bengal. National Family Health Survey, India. Available from: <http://rchiips.org/nfhs/FCTS/WB/South%20Twenty%20Four%20Parganas.pdf> [last accessed on 2017 Jan 29].
- [4] Leung AM, Pearce EN, Braverman LE. Iodine nutrition in pregnancy and lactation. *Endocrinol Metab Clin North Am.* 2011;40(4):765-77.
- [5] Soldin OP. Controversies in urinary iodine determinations. *Clin Biochem.* 2002;35(8):575-79.

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REPLY FROM THE AUTHOR

Majumder et al., conducted the study in Kolkata "Prevalence of iodine deficiency among pregnant and lactating women: Experience in Kolkata" [1] which is also iodine replete area had shown that in Kolkata the salt iodination programme was adequate for general population but not sufficient for pregnant women.

District wise surveys had shown that fortification of salt is adequate but our study had shown that 37% of pregnant women had inadequate urinary excretion which is supported by a study done in Ghana among pregnant women [2]. Due to increased demand during pregnancy the urinary iodine excretion is decreased.

That study shows that although adequate amount of iodine

(50 ppm) exist in iodized salt in Ghana, the methods of food processing, and cooking in individual households, some food restriction during cultural restriction during pregnancy is likely to have affected the iodine levels in the participants.

REFERENCES

- [1] Majumder A, Jaiswal A, Chatterjee S. Prevalence of iodine deficiency among pregnant and lactating women: Experience in Kolkata. *Indian J Endocrinol Metab.* 2014;18(4):486-90.
- [2] Simpong DL, Adu P, Bashiru R, Morna MT, Yeboah FA, Akakpo K, et al. Assessment of iodine status among pregnant women in a rural community in Ghana - a cross sectional study. *Arch Public Health.* 2016;74:08.

Regards—

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