

Co-existing environmental iodine deficiency and iodine deficiency disorders show a poor relationship: what are we missing?

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The iodine deficiency disorders [IDD] are a major, but preventable, global cause of morbidity and mortality. Iodine deficiency is the single most important cause of preventable mental health problems [cretinism] on a world-wide scale. The role that environmental deficiency plays, however, is not completely clear.

In Xinjiang Province, China, we examined thyroid metabolism in parallel with environmental iodine levels. Despite the abolition of clinically apparent goitre by a recent government iodination programme the historical trend could still be distinguished [low-IDD district meant thyroid volume 0.53 mls; mid-IDD 0.88; high-IDD 1.03].

Soil total iodine contents in the three districts were low and broadly similar [median low-IDD 0.84 µg/g; mid-IDD 1.0; high-IDD 1.05]. The total iodine content of wheat differed little across the districts [range low-IDD 5.12 – 36.25 µg/100g; mid-IDD 3.17 – 38.87; high-IDD 5.66 – 31.4], despite active iodine dripping into irrigation water in the low-IDD district. These differences in environmental and dietary iodine were not enough to explain the variations in IDD prevalence.

The ratios of wheat/soil and cabbage/soil iodine contents give some evidence of slightly better uptake of iodine into crops in the district with the iodine dripping, indicating its potential in prevention programmes.

The continual equation of biochemical iodine deficiency with environmental deficiency has led to a number of problems:

1. underestimating the role of other possible aetiological agents, whether environmental, social or personal
2. ignoring environmental scientists' expertise in iodine pathways in planning interventions
3. possible confusion between the role of community development and the provision of iodinated salt as the reason for reductions in IDD
4. continuing narrow focus in prevention programmes with resulting poor control of IDD.

We need to

- I. acknowledge the multi-factorial nature of IDD
- II. distinguish the various determinants by joint working
- III. develop multi-faceted prevention strategies.