

Iodine concentration of household salt and its effect on serum TSH level of children aged 5- years.

V Abeysuriya, AR Wickremasinghe, KPJ Perera, A Kasturiratne
Department of Public Health, Faculty of Medicine, University of Kelaniya
Department of Pediatrics, Faculty of Medicine, University of Kelaniya

ABSTRACT

Objective

To describe the effects of household practices of salt usage on Iodine concentration in salt and the relationship between low Iodine concentration of salt and serum thyroxin level of children aged 5- years.

Method

A descriptive cross sectional study was carried out in two phases in 2 randomly selected estates in the Ratnapura district from August to November, 2009. In phase one, using a pre-tested interviewer administered questionnaire, 1683 households were surveyed to identify the pattern of salt usage. Salt samples of these houses were tested for adequacy of iodine concentration (>30ppm of Iodine) using standard rapid iodine test kits. In phase two, blood samples of 51 randomly selected children aged 5-years, from the same estates were taken after obtaining informed written consent from parents and serum TSH levels were assayed. Ethical clearance was obtained from the Ethics Committee of the Faculty of Medicine, University of Kelaniya.

Results

36.4% of households purchased salt from the retail boutique closest to them. Purchase from shops in town, shops in the village, and estate cooperative shops was reported by 27.7%, 24.4% and 13.3%. Salt powder was used by 54.5% households while salt crystals were used by the rest. 82.7% did not wash salt before use 9.6% kept salt containers near the fire place. 38.8% households stored salt in plain glass bottles and 19.3% in dark coloured glass bottles. Usage of coconut shells and plastic bottles were 21.4% and 20.4%. Adequate iodine levels were present in 88.7% of household salt samples tested. Inadequate levels of iodine was associated with keeping the container near fire place, use of glass containers to store salt and washing salt before use ($p < 0.01$ for all variables). The place of purchase was not associated with the iodine level. The mean TSH levels of children whose household salt had an adequate iodine level ($> 3\text{ppm}$) was significantly lower ($n=4171.861.11$ IU/ml) from that of children whose household salt had an inadequate iodine level ($< 30\text{ppm}$) ($n=1023.291.26$ IU/ml).

Conclusion

Place of purchase has no effect on iodine concentration of household salt. Storing salt near the fire, use of glass containers to store salt and washing before use reduces its iodine concentration significantly. Household salt with an inadequate iodine concentration was associated with higher serum TSH levels in children 5-years of age.