

IODINE DEFICIENCY A PERSISTING WORLDWIDE PROBLEM- THE POPULATION CONSEQUENCES

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Introduction: Iodine deficiency (ID) still affects more than two billion people worldwide, (266 million school-aged children). The adverse effects of ID include an increase in the prevalence of thyroid cancer, higher percentages of the more aggressive follicular and anaplastic subtypes of thyroid cancer. An inversion of the frequency ratio of papillary to follicular thyroid cancer ratio, variable degrees of intellectual impairment and impairment of reproductive potential. Iodine is only acquired through the diet and absorbed in the digestive tract as iodide. China successfully eliminated ID through implementing legislation, in 1978, making iodized salt available to the population of the entire country. Portugal has no national general population data on iodine nutrition (IN). The evaluation of combined data on the IN of the general population through urinary iodine concentration (UIC) and thyroid histology profile from the inland region of Beira Interior (BI), Portugal is reported. A comparative evaluation of the thyroid histology pattern of the population of BI and of Johannesburg (JHB), South Africa was made. These populations although geographically distant and heterogeneous had in common being iodine deficient at the time of data gathering. Mandatory salt iodization introduced in SA in 1995 has recently been shown to have resulted in the correction of ID.

Methods: Evaluation of thyroid histology reports over a 6 year period in BI and a 5 year period in the JHB area. Median urinary iodine concentration (UIC) was obtained from a population sample of 214 volunteers from BI, (131 females and 83 males), ages ranging from 8 to 97 years (mean 51.5 years).

Results: Region of BI: 279 histology reports evaluated- 60 malignancies (21.2%): 31 papillary carcinomas, 22 follicular cancers (18 follicular carcinomas and 4 Hürthle cell tumours) 3 medullary carcinomas and 4 anaplastic carcinomas. Region of JHB: 136 histology reports- 33 malignancies (24.3%): 13 papillary carcinomas, 15 follicular cancers (10 follicular carcinomas and 5 Hürthle cell tumours), 1 medullary carcinoma, 3 anaplastic carcinomas and 1 metastatic carcinoma into the thyroid. There was an overlap in the frequencies of all histology types including the relatively high anaplastic carcinoma incidences and in the papillary to follicular carcinoma ratios being close to 1 in both areas- BI area ratio: 1.4 and JHB area ratio 0.87, with overlapping 95% CI's, confirmed by chi-square calculations. Median UIC of the population sample tested was 62.6µg/L, 92% of samples having a UIC<100µg/L.

Conclusions: Iodine supplementation consistently decreases the incidence of endemic goitre and eradicates ID. During the study periods both regions evaluated displayed patterns and results characteristic of ID evidenced particularly by the papillary to follicular carcinoma ratios (close to 1 in both areas) and the relatively high number of anaplastic carcinomas. The persistent problem of ID could be eliminated by the combination of eliciting a proactive behaviour from an informed population as to the serious consequences of ID, the availability of adequately iodised salt and promoting sea- based nutrition. These measures could be applicable to other populations in different parts of the world still experiencing ID.

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