

# Size-specific and histology-specific analysis of thyroid cancer incidence and trends in Algeria over two decades as proxies to distangle a true increase from overdiagnosis

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## Abstract

### Background:

Thyroid cancer (TC) incidence is increasing worldwide. However, the question remains on whether this increase is true due to known or still unknown risk factors, or apparent due to overdiagnosis of small indolent tumors. In Algeria TC incidence has increased over the past two decades. We carried out a detailed population-based analysis in order to determine TC incidence rates (IRs) and temporal trends, according to factors such as gender, histological subtypes, and tumor size over a 21-year period in the province of Oran in Algeria.

### Population and Methods:

We carried out a retrospective cohort study using population-based TC cases diagnosed among residents of the province of Oran during the period 1993-2013. Age-adjusted (to the world population) IRs were calculated by gender, histology, and tumor size. Annual IRs were computed and temporal trends in IRs were assessed by calculating the estimated annual percentage change (EAPC). The joinpoint regression analysis was used to identify time points (in calendar years) where changes had occurred.

### Results:

Between 1993 and 2013 TC incidence has more than tripled for women and men (EAPC : +5,56%,  $p < 0,05$  and +11,16%,  $p < 0,05$ ), mostly driven by an increase in PTC (EAPC : +5,48% ;  $p < 0,05$  and +14,38% ;  $p < 0,05$ ), while IRs of the follicular subtype significantly decreased (EAPC : -3,95% ;  $p < 0,05$ ). Incidence of microcarcinomas significantly increased for women (EAPC : +17,34%,  $p < 0,05$ ), while for men a significant increase in carcinomas  $> 40$  mm was observed (EAPC : +20,24 ;  $p < 0,05$ ). When considering the subgroup with PTC, incidence of tumors of all sizes increased significantly increased for women and men including tumors  $> 40$  mm (EAPC : +13,73%,  $p < 0,05$  and +10,97%,  $p < 0,05$ ).

### Conclusions:

More extensive thyroid surgery for benign thyroid conditions, and improved microscopic examination technics may have led to over-diagnosis. However the increased incidence of PTC, accompanied with a decreased incidence of FTC, and an increased incidence of TC of all sizes suggest that there is a true increase in TC incidence in Algeria. Factors such as iodine deficiency and supplementation, obesity, metabolism syndrome, and possibly exposure to ionizing radiation can be hypothesized as possible risk factors. Epidemiologic studies are needed to assess risk factors of TC in a context of moderate iodine deficiency.



### Biography:

Dr. Houda Boukheris earned her medical degree and a postgraduate degree in Epidemiology and Preventive Medicine from the University of Algiers in Algeria. From 2001 to 2003, she served as an epidemiologist in a district in eastern Algeria where she developed, implemented, coordinated and evaluated programs to prevent transmissible diseases, including immunization programs.

*Speaker Publications:*

1. Iodine-131 dose dependent gene expression in thyroid cancers and corresponding normal tissues following the Chernobyl accident.
2. Risk of Salivary Gland Cancer Following Childhood Cancer: A Report From The Childhood Cancer Survivor Study
3. Incidence of carcinoma of the major salivary glands according to the WHO classification, 1992 to 2006: a population-based study in the United States
4. Expression of cell cycle modulators and telomere lengths in papillary thyroid carcinoma: a comparative study between radiation-associated and spontaneous cancers
5. A viral conjunctivitis outbreak at the University Hospital of Oran in 2003. A nosocomial infection originating from the community outside

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