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## OBJECTIVES

Environmental toxins, including those deriving from illegal and hazardous disposal of urban and chemical waste, are known to act as endocrine disruptors and to increase the risk of malignancy and cancer mortality. The present study aimed at investigating prevalence and characteristics of thyroid diseases in the area of Acerra, a town in the perimeter of the so called “Land of Fires”.

## METHODS

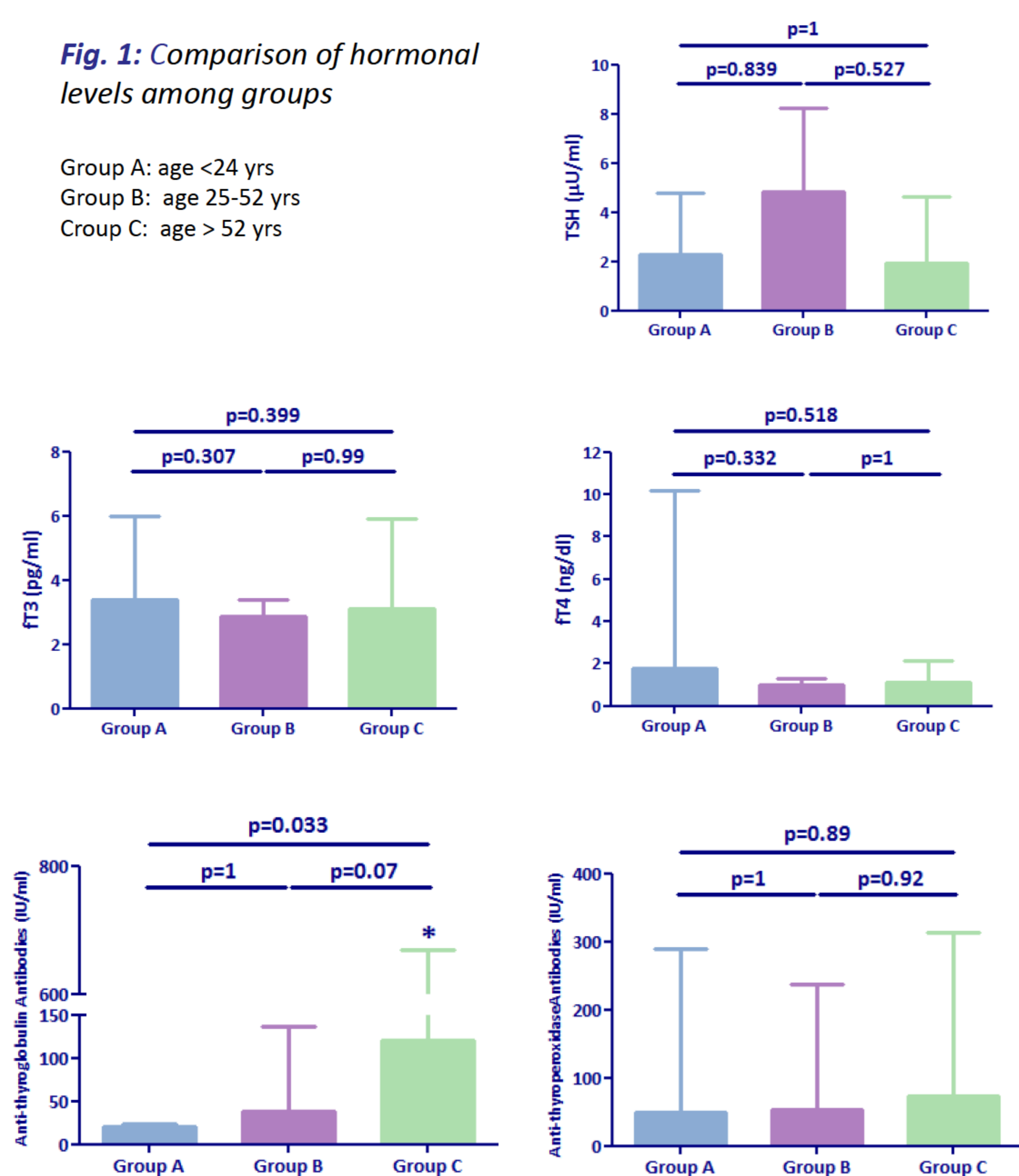
The screening included subjects aged  $\geq 15$  yrs living in Acerra (Naples). Exclusion criteria were: 1. any mental condition making the subject unable to understand the nature, scope and possible consequences of the study, or evidence of uncooperative attitude; 2. abnormal baseline findings or other medical conditions that, in the investigator’s opinion, might jeopardize patient’s safety or decrease the chance of obtaining satisfactory data needed to achieve the objective of the study; and 3. alcohol and drug abuse. Between 2014, Oct the 1<sup>st</sup> and 2015, Dec the 31<sup>st</sup> 787 consecutive subjects (631 F, 156 M, aged  $39.6 \pm 16.3$  yrs) were recruited on a voluntary basis. Iodine supplementation, anthropometric parameters (height, weight, BMI, waist circumference), thyroid palpation, biochemical and hormonal testing (TSH, fT3, fT4, antithyroid antibodies), thyroid ultrasound and fine needle cytology (FNC, when necessary) were investigated. According to the age tertiles, subjects were classified as Group A (age  $< 24$  yrs,  $n=236$ ), Group B (Age 25-52 yrs,  $n= 310$ ) an Group C (age  $> 52$  yrs,  $n=241$ ). All subjects provided a written informed consent for study participation.

## RESULTS

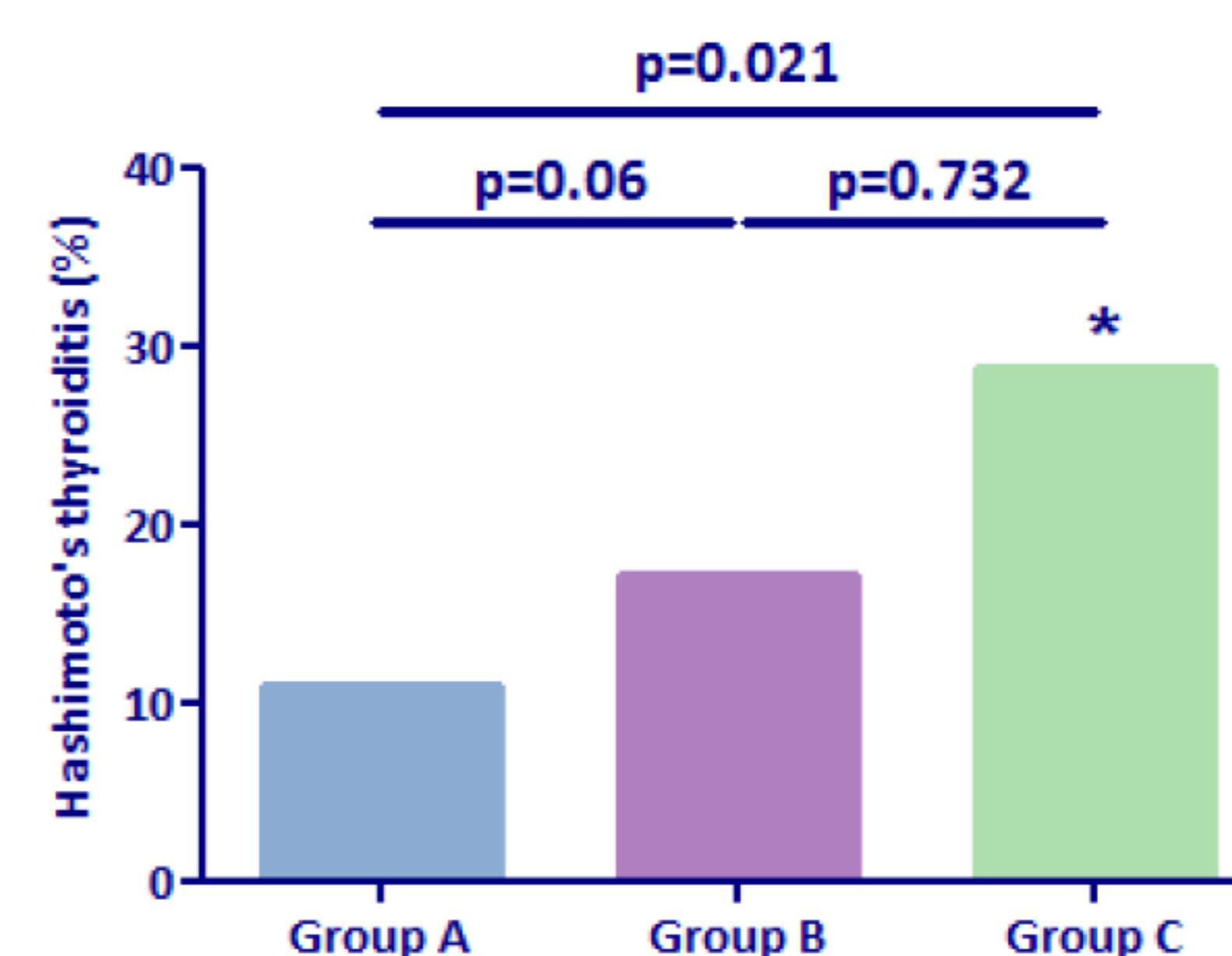
In the whole subjects cohort, anti-thyroglobulin antibodies were significantly higher in group C as compared to group A ( $p=0.033$ ), whereas no significant difference was found in TSH, fT3, fT4 and anti-thyroperoxidase antibodies levels among the three groups (Fig. 1). Prevalence of Hashimoto’s thyroiditis and nodular goiter was 13.5% and 17.5% of the whole cohort, respectively, being not different as compared to that of the Italian general population<sup>1,2</sup>. Hashimoto’s thyroiditis was significantly prevalent in group C compared to group A ( $p=0.021$ , Fig. 2), and hyperthyroidism in group C compared to group A ( $p=0.003$ ) and group B ( $p=0.03$ ) (Fig. 3). Prevalence of nodular goiter was higher in group C as compared to group A ( $p<0.0001$ ) and group B ( $p<0.001$ ), and in subjects who did not use iodine supplementation ( $p=0.032$ ) as compared to those who did (Fig. 4). In patients with abnormal thyroid function, proper medical treatment was started. Among subjects undergone FNC, none had thyroid cancer and all were classified as benign nodular disease (THY2).

**Fig. 1:** Comparison of hormonal levels among groups

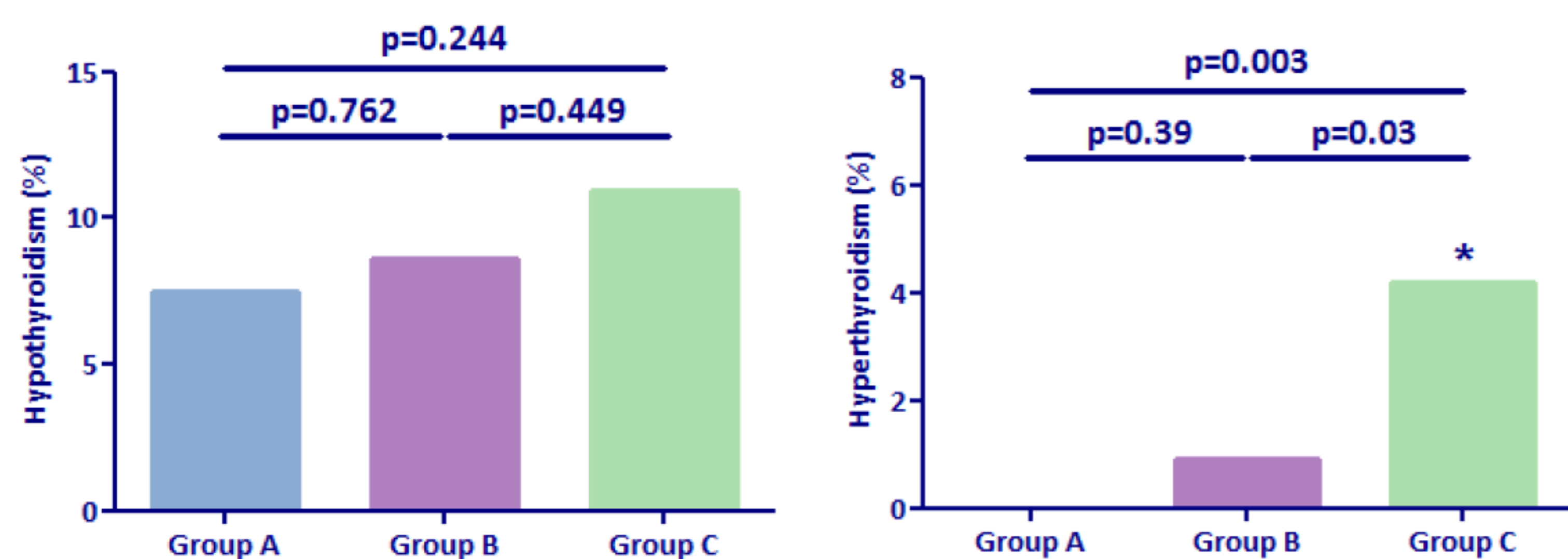
Group A: age  $< 24$  yrs  
Group B: age 25-52 yrs  
Group C: age  $> 52$  yrs



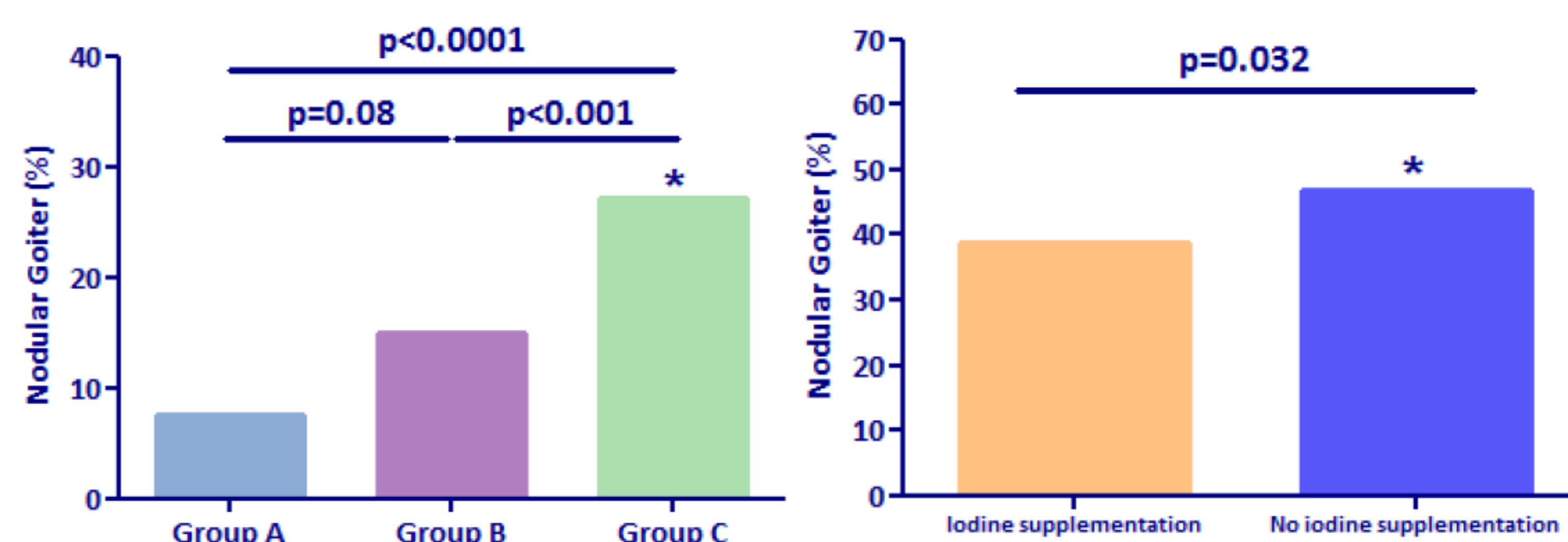
**Fig.2:** Prevalence of Hashimoto’s thyroiditis across groups



**Fig.3:** Prevalence of hypothyroidism and hyperthyroidism across groups



**Fig.4:** Prevalence of nodular goiter across groups



## CONCLUSIONS

The findings of the current study suggest that subjects living in the area of Acerra had a similar prevalence of thyroid diseases as compared to the Italian general population and did not present with an increased prevalence of thyroid cancers despite chronic exposure to environmental pollutants. Further studies are still needed to confirm and extend these data, better elucidating the burden and the role of environmental pollutants as endocrine disruptor in the “Land of Fires”.

## References

- Latina A, et al. Hashimoto’s thyroiditis: similar and dissimilar characteristics in neighboring areas. Implications for the epidemiology of thyroid cancer. *PLoS ONE* 2013, 8(3):e55450.
- Aghini Lombardi F, et al. The effect of voluntary iodine prophylaxis in a small rural community: the Pescopagano survey 15 years later. *J Clin Endocrinol Metab.* 2013 Mar;98(3):1031-1039.