

# Comparison of thyroid nodule prevalence in two population-based studies in Bulgaria: 2006 and 2012

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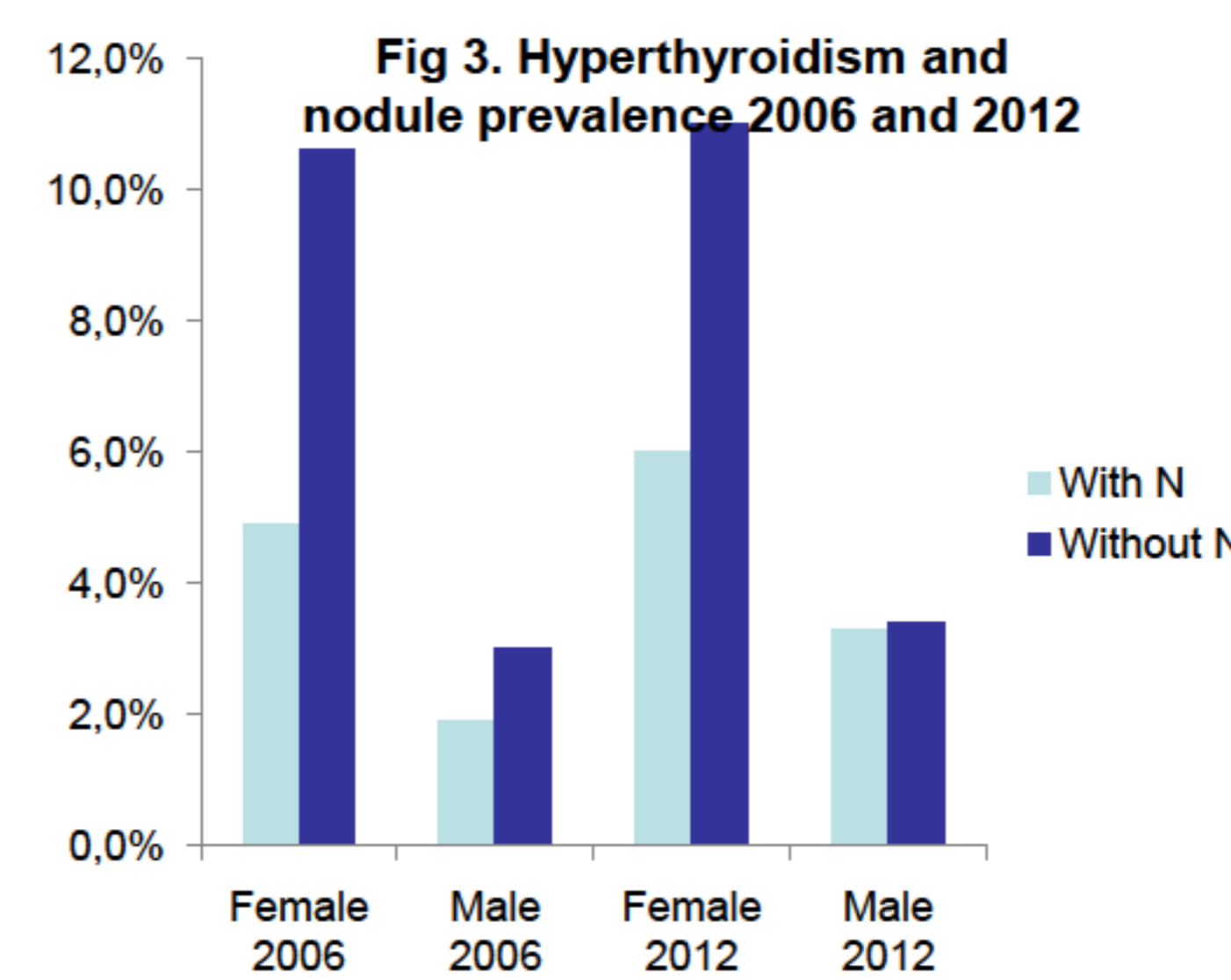
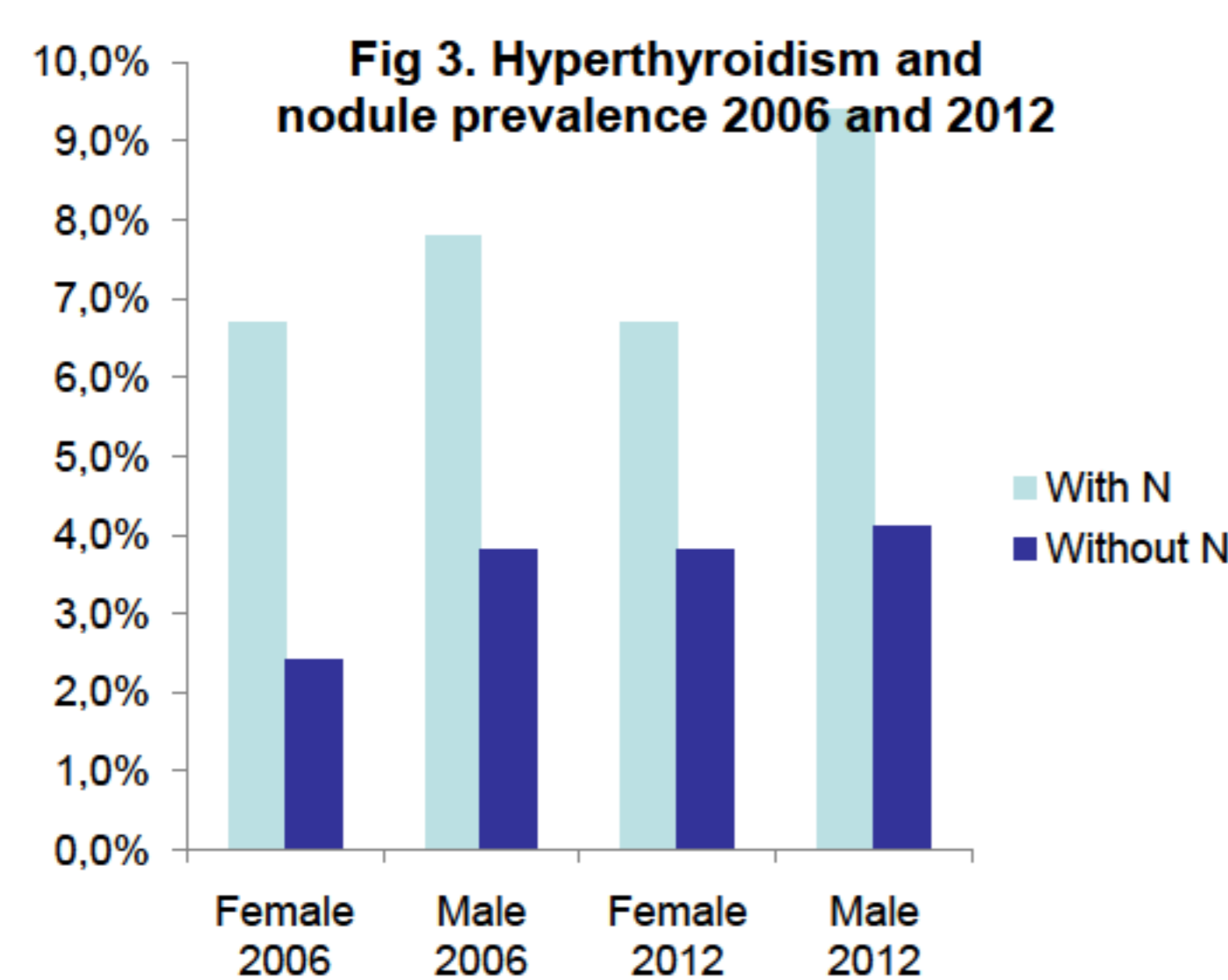
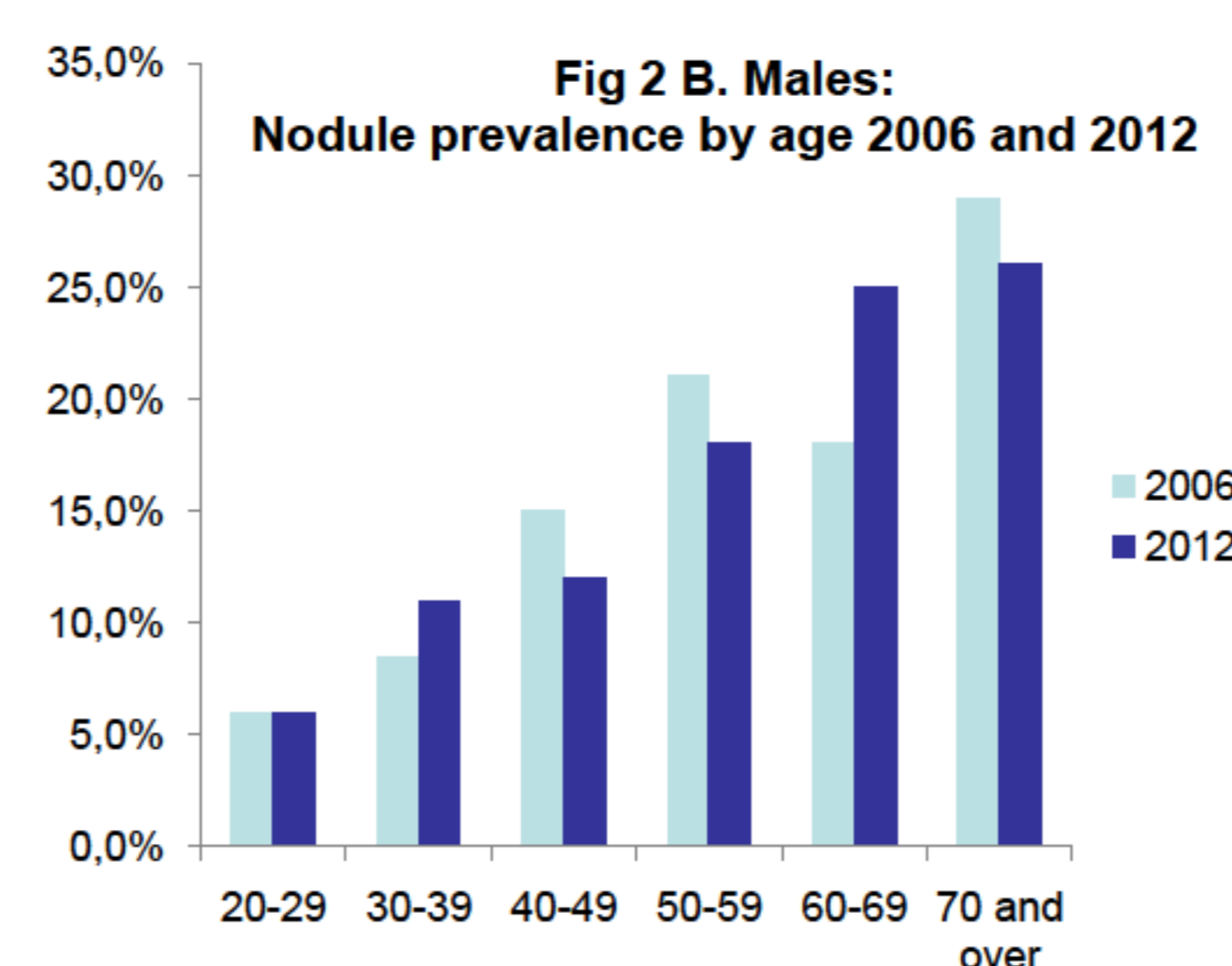
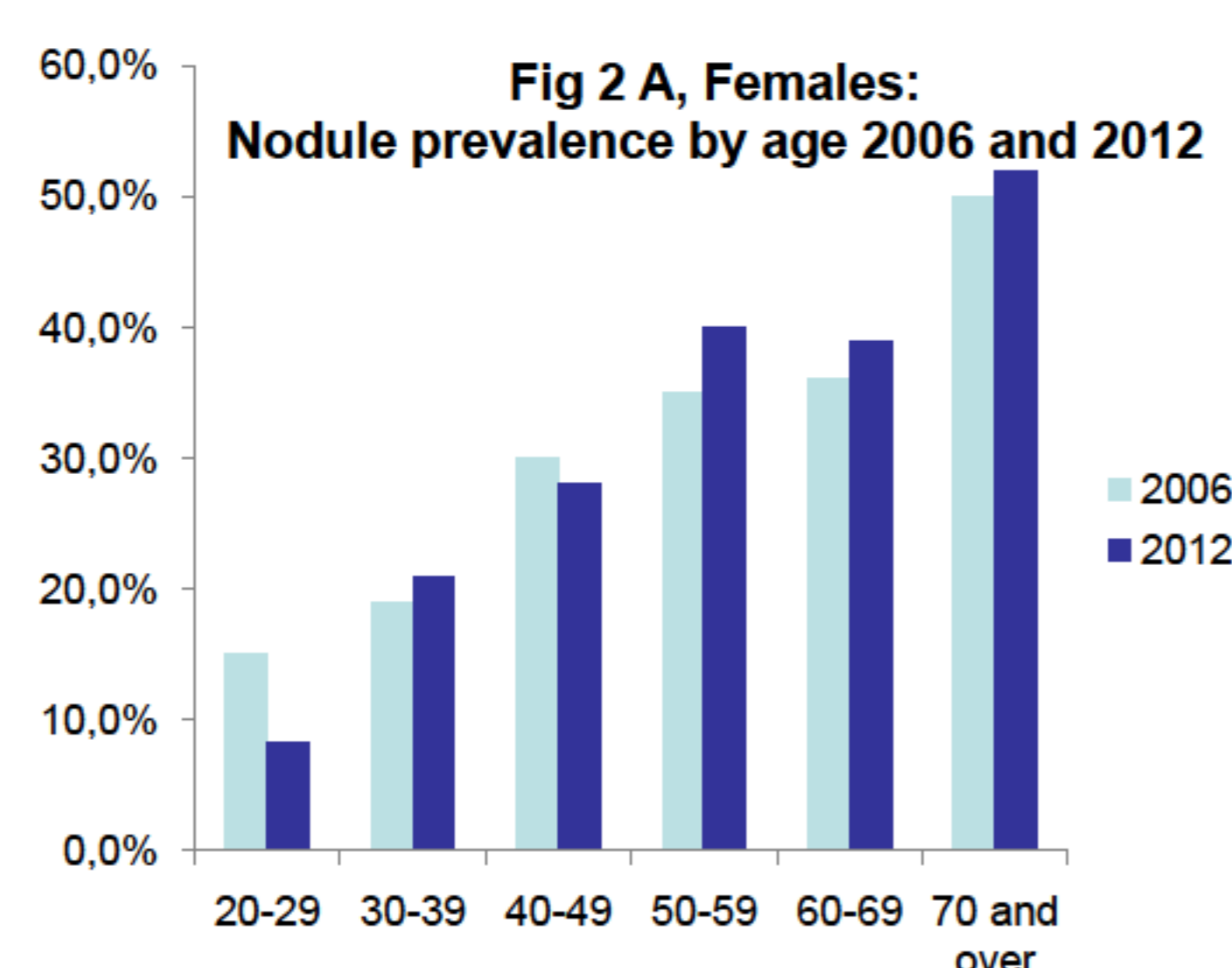
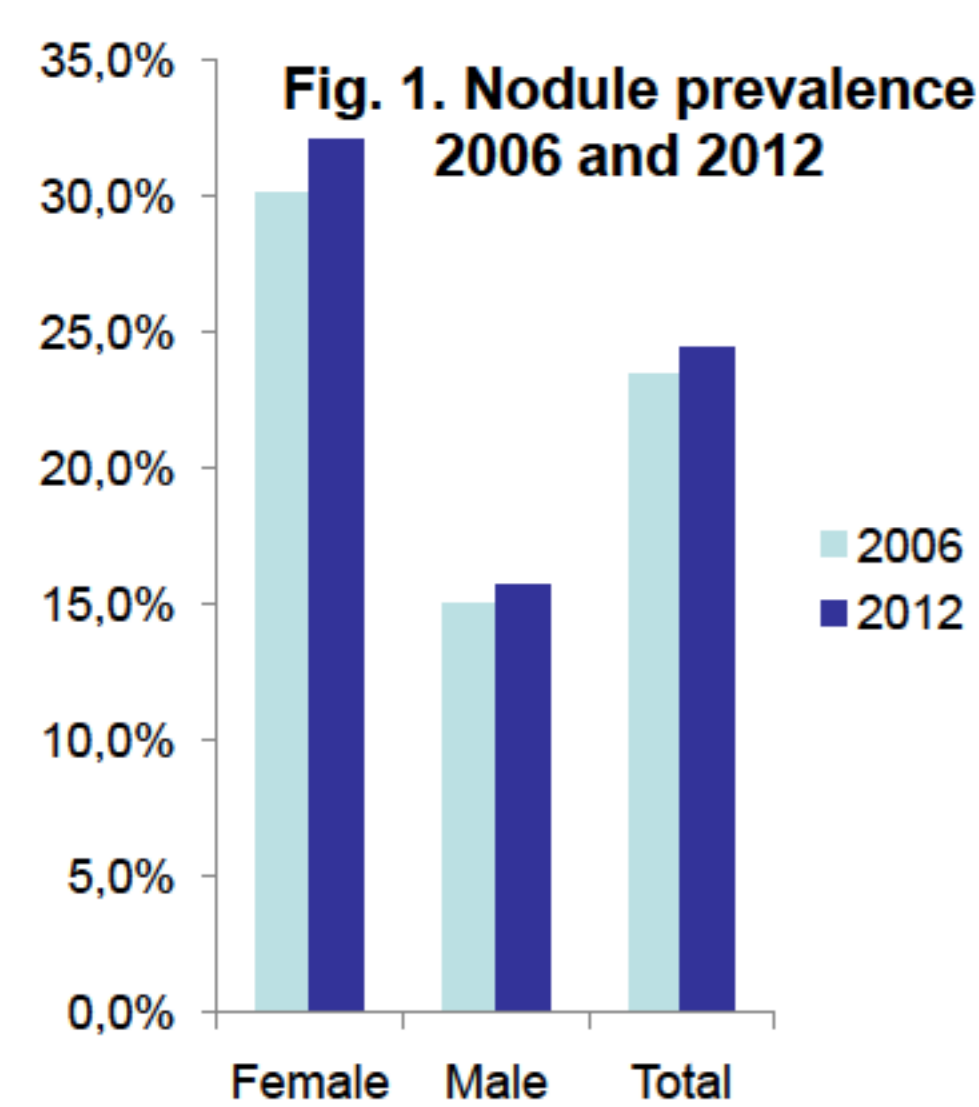
## OBJECTIVES

The nodular goiter is the most prevalent thyroid disorder and one of the most common endocrine disorders as well. Its prevalence increases with age and reaches over 70%. Most thyroid nodules are asymptomatic and are discovered accidentally on palpation or ultrasound. About 5-15% of the nodules might be malignant. The aim of the study was to compare the nodule prevalence and characteristics in two cross-sectional population-based studies of thyroid disorders, carried out in Bulgaria in 2006 and 2012.

## METHODS

Data from two cross-sectional population-based studies of endocrine disorders were compared. Two thousand four hundred and two subjects (1347 female and 1053 male, age range 20-94 years) were enrolled in the first (year 2006) and 2022 (1073 female and 949 male, 20-88 years) were enrolled in the second (year 2012). The studied population had sufficient iodine intake. All subjects had signed Informed Consent and then filled structured interviews on current and past disease and medication history. Body weight, height and serum TSH and AntiTPO antibodies were measured. Thyroid function was assessed as hypothyroidism if TSH >5.0 mIU/l or subject with known hypothyroidism; euthyroidism if TSH 0.34-5.0 mIU/l without antithyroid or levothyroxin therapy; and hyperthyroidism – if TSH <0.34 mIU/l or subject on antithyroid medication. All subjects underwent neck ultrasound. The echogenicity of the thyroid was assessed and if present, nodules >5 mm in diameter were described: number – single or multiple, echo structure – solid, cystic or mixed, calcifications.

## RESULTS



Thyroid nodules were significantly more prevalent in the females in both studies (both  $p < 0.001$ ). In both genders the prevalence of nodules increased with age (Fig. 1). The male prevalence remained lower for all age groups in both studies (Figures 2 A and 2 B). Low TSH/Hyperthyroidism was more prevalent in the subjects with than without nodules irrespective of the gender in both studies (Figure 3). High TSH/Hypothyroidism on the other hand was more prevalent in the females but not in the males without nodules (Figure 4).

## CONCLUSIONS

In both studies the thyroid nodule prevalence was similar to the figures cited for other European countries. The two studies replicate the gender differences and age trends reported in previous publications. No differences were observed between the two studies. It might be inferred that the interval between them is too small to demonstrate a change in the population nodule prevalence even if such existed. Nodules were associated with hyperthyroidism more often than with hypothyroidism.

## References

1. Borissova A-M, Kovatcheva R, Shinkov AD et al. Thyroid function, immunologic and ultrasound features in the Bulgarian population. VIII National Congress of Endocrinology, Plovdiv. 19-21 Oct. 2006, Endokrinologiya, 2006;11 (3) (Suppl): 59
2. Durante C, Costante G, Lucisano G et al. The natural history of benign thyroid nodules. JAMA. 2015;313(9):926-35
3. Ferris RL, Baloch Z, Bernet V et al. American Thyroid Association Surgical Affairs Committee. American Thyroid Association Statement on Surgical Application of Molecular Profiling for Thyroid Nodules: Current Impact on Perioperative Decision Making. Thyroid. 2015; 25(7):760-8
4. Huang LY, Lee YL, Chou P et al. Thyroid fine-needle aspiration biopsy and thyroid cancer diagnosis: a nationwide population-based study. PLoS One. 2015;10(5):e0127354
5. Krejbjerg A, Bjergved L, Pedersen IB et al. thyroid nodules in an 11-year DanThyr follow-up study. J Clin Endocrinol Metab. 2014; 99(12):4749-57
6. Shinkov A, Borissova A-M, Vlahov J et al. Prevalence of thyroid nodules in an adult Bulgarian population. National Congress of Endocrinology, Plovdiv. 8-11 Oct. 2015