



# Assessing function and immunogenicity of the thyroid gland during chronic treatment with Methadone



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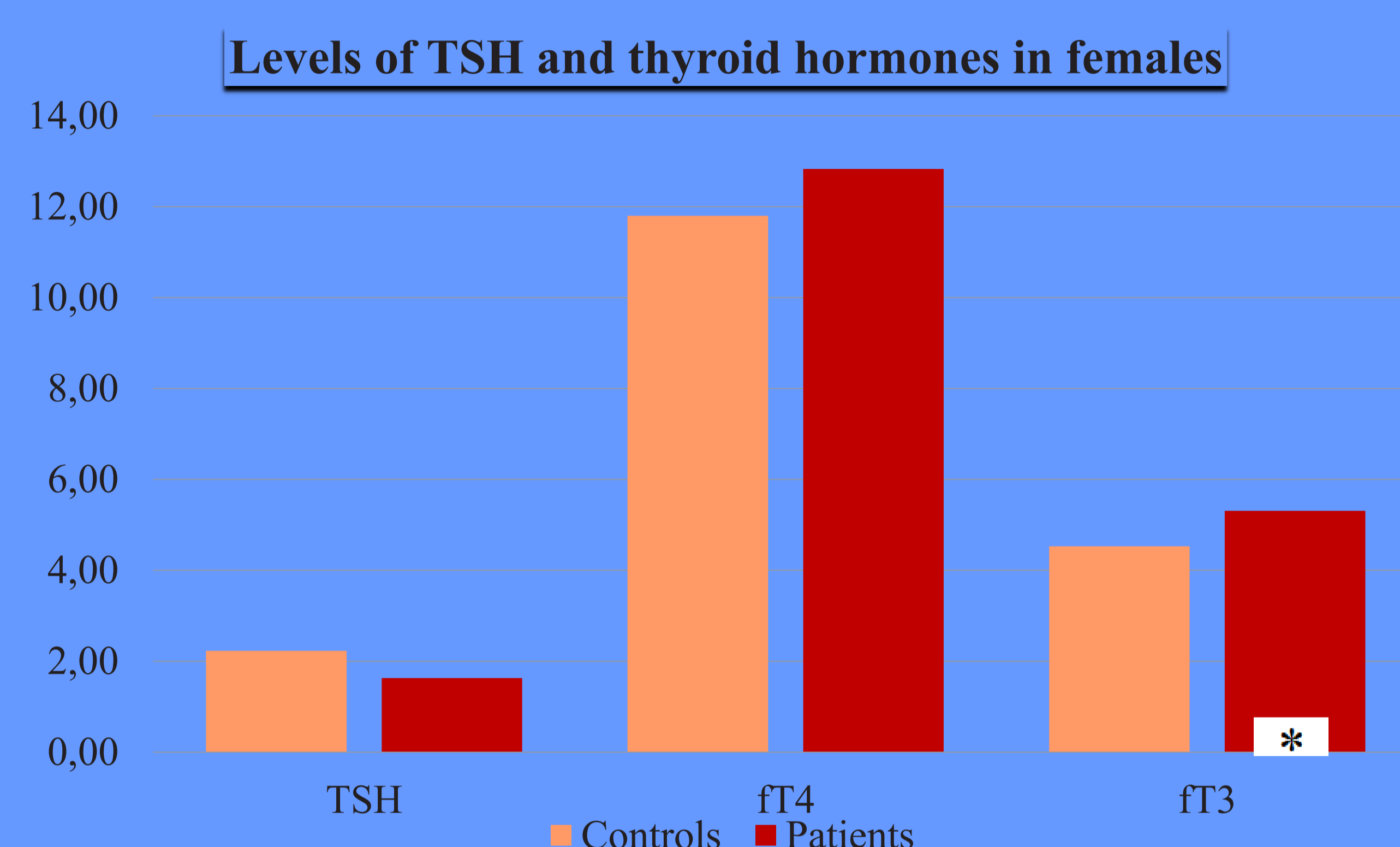
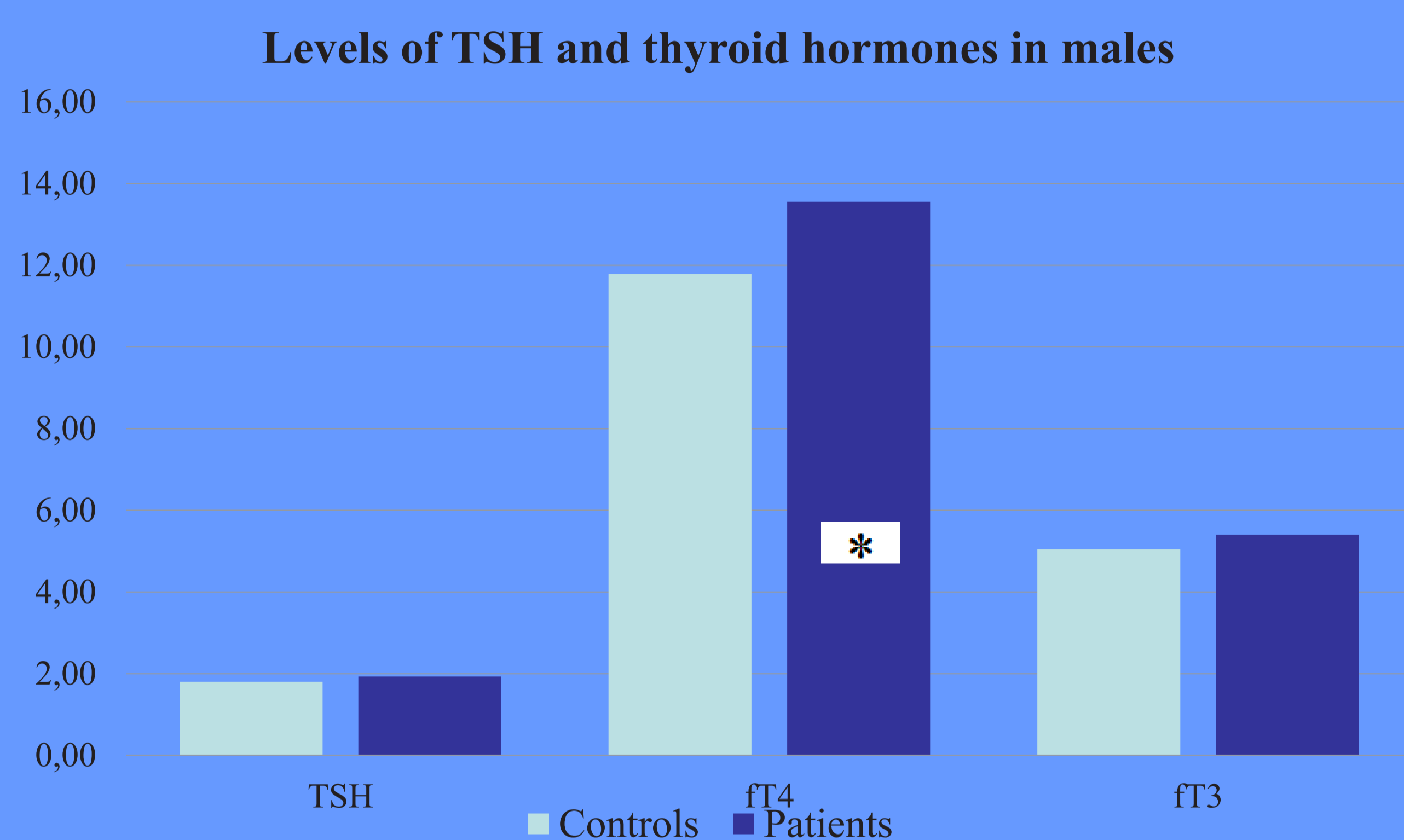
## Objectives:

The most commonly used drug for the treatment of opioid dependency in Bulgaria is Methadone. In the literature there are controversial data about the influence of the chronic methadone exposure on thyroid function. The aim of the study was to assess the function and immunogenicity of the thyroid gland in patients undergoing chronic treatment with the opiate agonist Methadone.

## Methods:

The present cross-sectional, observational, case-control study included patients from 18 to 40 years of age having undergone a chronic treatment with Methadone for at least 6 months. A total of 176 participants took part in the study - 140 patients (117 males and 23 females) from 5 clinical programs in Bulgaria, and 36 clinically healthy people (22 males and 14 females) without a history of endocrine disorders and opiate use, serving as a control group. The patients and the controls were age- and BMI-matched. The patients' group was subdivided into different subgroups according to the Methadone dose, the time of exposure to Methadone and the duration of the heroin abuse before starting the Methadone treatment by using the 25. 50. and 75. percentile of each value. The thyroid function and immunogenicity was assessed in all study participants by measuring the levels of free T4 (fT4), free T3 (fT3), thyroid stimulating hormone (TSH), anti-thyroid peroxidase antibodies (anti-TpoAb), antithyroglobulin antibodies (anti-TgAb). The serum prolactin levels were normal in both patients and controls.

## Results:



1. a) Mean daily dose of Methadone was 98.9±41 mg; b) Mean duration of Methadone treatment was 33.91±24.57 months; c) Mean duration of heroin abuse prior to starting the Methadone treatment was 6.61±4.0 years. There were no significant differences in the levels of the thyroid hormones and TSH between the different subgroups of the patients, divided according to the dose and duration of the Methadone treatment, and the previous heroin abuse.
2. The male methadone users were with significantly higher levels of fT4 compared to the healthy males (13.55±2.48 vs 11.79±0.97 pmol/L, P<0.01), and with a trend towards higher levels of fT3, while TSH levels were similar between the groups.
3. Similarly, the female methadone users were with a trend towards higher levels of fT4 and with significantly higher levels of fT3 (5.31±0.43 vs 4.53±0.32 pmol/L, P<0.01) compared to the healthy females. There was also a trend towards lower TSH levels in the patients but the number of the female participants was relatively low for the differences to reach significance and for definitive conclusions.
4. Three out of the 117 male patients were with high anti-TpoAb titers and 1 with high both anti-TpoAb and anti-TgAb titers. Two out of the 23 female patients were with high titers of the anti-thyroid antibodies. In the control group 1 male and 2 females were positive for the anti-thyroid antibodies. No significant differences in the thyroid immunogenicity were observed between patients and controls, P>0.05.

## Conclusions:

In our study the Methadone maintenance treatment (MMT) was found to induce an elevation of the thyroid hormones in both the male and female users that is probably due to a direct effect of the Methadone on the thyroid gland as TSH still remains not significantly changed. MMT render no influence on the immunogenicity of the thyroid gland. Further investigation is necessary to elucidate the mechanisms of Methadone induced thyroid injury.

## References:

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