

# Hyperthyroidism during Pregnancy: Who Are the Affected Women? Study of Prevalence, Sociodemographic Factors, and Contraception

Sokhna Awa Balla Sall<sup>1</sup>, Khadim Mbaye<sup>1</sup>, Ngoné Diaba Diack<sup>1</sup>, Nafy Ndiaye<sup>1</sup>, Simon Birame Ndour<sup>2</sup>, Zineb Ouazzani<sup>1</sup>, Mouhamadou Moustapha Ndong<sup>1</sup>, Khadidiatou Samb<sup>1</sup>, Moussa Gueye<sup>1</sup>, Mohamed Yakham Leye<sup>1</sup>, Abdoul Aziz Diouf<sup>2</sup>, Abdoulaye Leye<sup>1</sup>

<sup>1</sup>Endocrinology-Metabolism-Nutrition Department, Pikine National Hospital, Dakar, Senegal

<sup>2</sup>Gynecology and Obstetrics Department, Pikine National Hospital, Dakar, Senegal

Email: drendocrinologuedakar@hotmail.com

**How to cite this paper:** Sall, S.A.B., Mbaye, K., Diack, N.D., Ndiaye, N., Ndour, S.B., Ouazzani, Z., Ndong, M.M., Samb, K., Gueye, M., Leye, M.Y., Diouf, A.A. and Leye, A. (2026) Hyperthyroidism during Pregnancy: Who Are the Affected Women? Study of Prevalence, Sociodemographic Factors, and Contraception. *Open Journal of Endocrine and Metabolic Diseases*, 16, 63-72.

<https://doi.org/10.4236/ojemd.2026.163008>

**Received:** December 26, 2025

**Accepted:** March 10, 2026

**Published:** March 13, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Introduction:** During pregnancy, physiological changes lead to increased thyroid activity. In some cases, this thyroid hyperfunction may become pathological. In Senegal, the most recent data on the prevalence of hyperthyroidism during pregnancy date back to 2003. Therefore, we aimed to determine the hospital prevalence, sociodemographic characteristics, and information regarding the need for contraception in this association in a hospital setting in Dakar. **Methodology:** We conducted a prospective and retrospective, descriptive study from January 1, 2018, to June 30, 2023, in the Endocrinology-Diabetology-Nutrition Department of the National Hospital Center (CHN) of Pikine. All patients followed for hyperthyroidism during pregnancy over this period were included. **Results:** Forty patients were included. The prevalence of pregnancy among women followed for hyperthyroidism was 2%. The mean age was 29.63 years. A family history of hyperthyroidism was found in 12.5% of patients. Among patients previously followed for hyperthyroidism, 52% reported not being informed of the need for contraception. The mean gravidity was 2.85 and the mean parity was 1.37. Primiparity concerned 35% of patients. The mean gestational age at the first endocrinology consultation was 14 weeks of amenorrhea. **Conclusion:** The prevalence of this association remains high in our setting. The results also highlight a lack of information regarding the necessity of contraception. Multidisciplinary collaboration and appropriate follow-up are essential, as they determine prognosis.

## Keywords

Hyperthyroidism, Pregnancy, Prevalence, Contraception

## 1. Introduction

During pregnancy, dynamic changes in thyroid homeostasis are observed, leading to a 50% increase in thyroid hormone synthesis [1]. These pregnancy-specific physiological changes are necessary to meet increased hormonal requirements, particularly during the first half of gestation [1] [2]. In some cases, this physiological thyroid hyperfunction during pregnancy may become pathological. Persistent uncontrolled hyperthyroidism can lead to obstetric and/or neonatal complications [3]. The risk of complications is correlated with the degree of hyperthyroidism [2].

Hyperthyroidism occurs in approximately 2% - 3% of pregnancies [3]. In Senegal, the most recent data on the prevalence of hyperthyroidism during pregnancy date back to 2003, with a prevalence of 0.1% [4]. Moreover, the issue of contraception remains poorly explored in this population, although an unplanned pregnancy in a woman with active hyperthyroidism may complicate therapeutic management and increase maternal and fetal risks.

In this context, studying the prevalence of pregnancy among women followed for hyperthyroidism, identifying affected women, analyzing associated sociodemographic factors, and evaluating contraceptive practices appear essential to improve prevention, screening, and management strategies.

Thus, we conducted this study in one of the main Endocrinology-Diabetology-Nutrition departments in Dakar (National Hospital Center of Pikine).

The primary objective of this study was to determine the hospital prevalence of pregnancy among women followed for hyperthyroidism. The secondary objective was to determine the sociodemographic characteristics and information regarding the need for contraception in this association among our patients.

## 2. Methodology

Our study was conducted in the Endocrinology-Diabetology-Nutrition, Gynecology, and Otolaryngology departments of the National Hospital Center of Pikine (CHNP) in Dakar, Senegal.

This was a retrospective and prospective, descriptive study with analytical purposes, monocentric, over a 66-month period from January 2018 to June 2023.

All patients followed in the aforementioned departments of the CHN of Pikine presenting one of the following situations were included:

- Occurrence of pregnancy in a patient followed for hyperthyroidism, confirmed by a positive urinary pregnancy test and/or ultrasound evidence of pregnancy, or serum  $\beta$ -hCG levels greater than 5 IU/L.
- Identification of clinico-biological thyrotoxicosis in a pregnant woman:
  - With suppressed TSH:
    - Less than 0.1 mIU/L in the first trimester,
    - Less than 0.2 mIU/L in the second trimester,
    - Less than 0.3 mIU/L in the third trimester,
  - And elevated free T4 greater than 22 pmol/L.

The following parameters were studied:

- Prevalence.
- Sociodemographic data: age, lifestyle.
- Medical and surgical history and clinical background, gynecological history.
- Information on the need for contraception prior to pregnancy.
- Duration of hyperthyroidism and gestational age at the first consultation

Patients in the retrospective cohort were identified through medical record review and were subsequently recalled, when possible, to verify and complete missing data. The prospective cohort included consecutively recruited patients during pregnancy. The same inclusion criteria were applied to both cohorts, with no differences in inclusion methods.

Data were collected using a pre-established form and entered using SPSS software (Statistical Package for the Social Sciences), version 2.

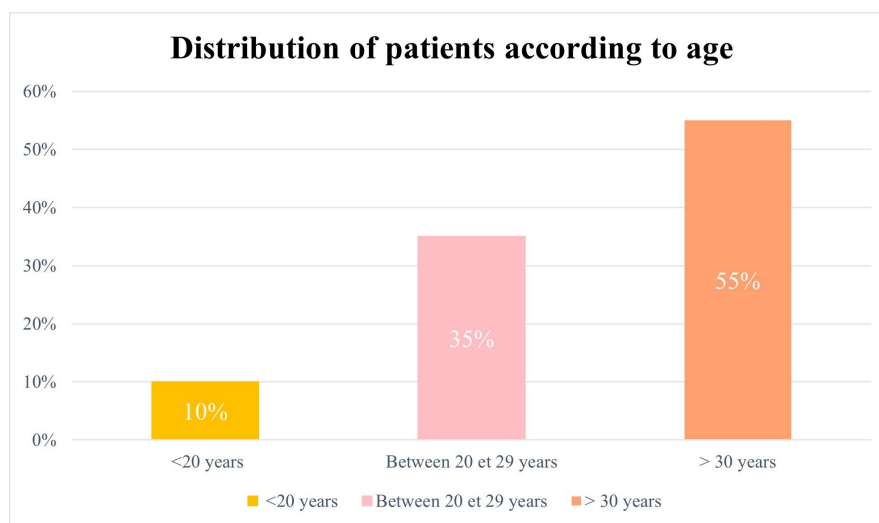
Descriptive analysis was performed by calculating frequencies and proportions for qualitative variables and means for quantitative variables, with standard deviation. In the discussion, the studied parameters were compared with data from the literature, and hypotheses were formulated.

### 3. Results

#### ➤ Sociodemographic Data

During the study period, 40 patients met the study criteria. A total of 1946 patients consulted for hyperthyroidism during this period. Among them, 40 were pregnant, corresponding to a hospital prevalence of 2%.

The mean age was 30 years, with extremes of 18 and 39 years and a standard deviation of 6.44. A remunerative activity was reported in 25% of patients (30/40 patients). The distribution of patients according to age is summarized in **Figure 1**.



**Figure 1.** Distribution of patients according to age.

None of the patients were smokers or alcohol consumers. Artificial skin depigmentation using topical corticosteroids was reported in two patients. One patient was divorced. A stressful context was reported in 20% of patients (marital prob-

lems or family bereavement).

### ➤ Medical and Surgical History and Clinical Background

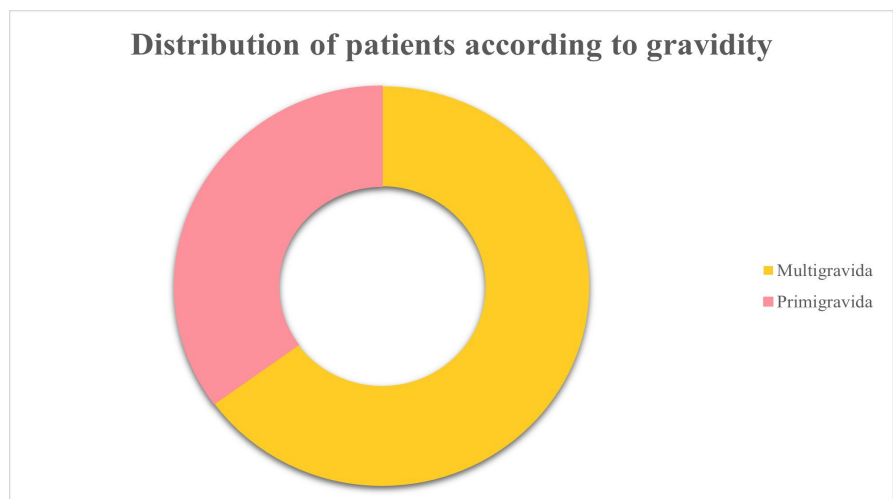
Medical and surgical history and clinical background are summarized in **Table 1**.

**Table 1.** Distribution of patients according to medical and surgical history and clinical background.

Medical and Surgical History	Cases (N = 40)	Percentage (%)
<b>Medical history and background</b>		
Diabetes (Type 1 and Type 2)	2	5
Chronic Hypertension	1	2.5
Chronic adrenal insufficiency	1	2.5
<b>Surgical history</b>		
Tonsillectomy	1	2.5
Ovarian cystectomy	1	2.5

### ➤ Gravity, Parity, and Obstetric History

Mean gravidity was 2.85 (range 1 - 8; SD 1.96). Mean parity was 1.37 (range 0 - 5; SD 1.51). Primiparity accounted for 35% of patients (**Figure 2**).



**Figure 2.** Distribution of patients according to gravidity.

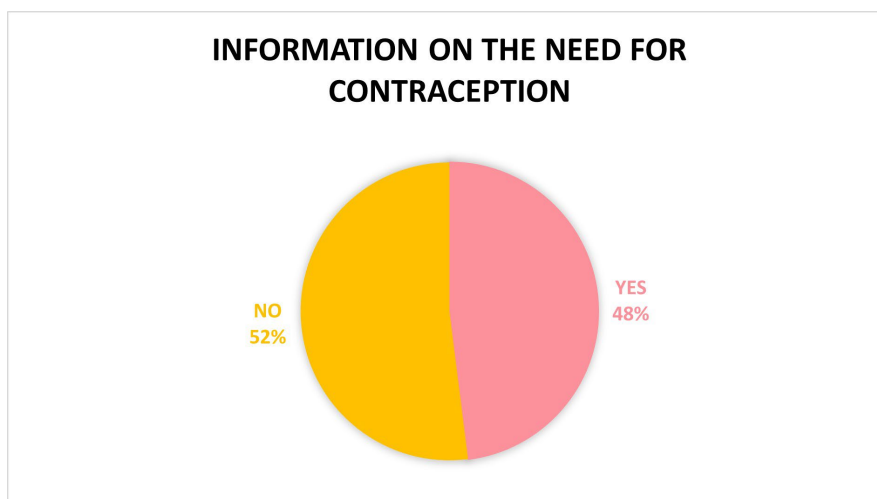
Obstetric history among multigravida patients is summarized in **Table 2**.

**Table 2.** Distribution of patients according to obstetric history among multiparous women.

Obstetric history	Cases (N = 26)	Percentage (%)
Miscarriages	8	31
Cesarean section	5	19
Stillbirth	4	15
Neonatal death at day 7	2	8
Gestational hypertension	1	4
Prematurity	1	4

### ➤ Information on the Need for Contraception

Among the included patients, 52% reported not being informed about the need for contraception (**Figure 3**). Among these patients, 17% had previously experienced a pregnancy associated with hyperthyroidism.



**Figure 3.** Distribution of previously followed patients according to information on the need for contraception.

Reasons for the absence of contraception among previously followed patients are summarized in **Table 3**.

**Table 3.** Reasons for the absence of contraception among patients previously followed for hyperthyroidism.

Reason for absence of contraception	Cases (N = 29)	Percentage (%)
Not informed	15	52
Fear of contraception	10	35
Husband's refusal	3	10
Intolerance to contraception	1	3

### ➤ Data on the Duration of Hyperthyroidism

Hyperthyroidism was diagnosed before pregnancy in 72.5% of patients. The mean duration of hyperthyroidism was 28 months, with extremes of 5 months and 120 months (10 years) and a standard deviation of 31.01 (**Figure 4**).

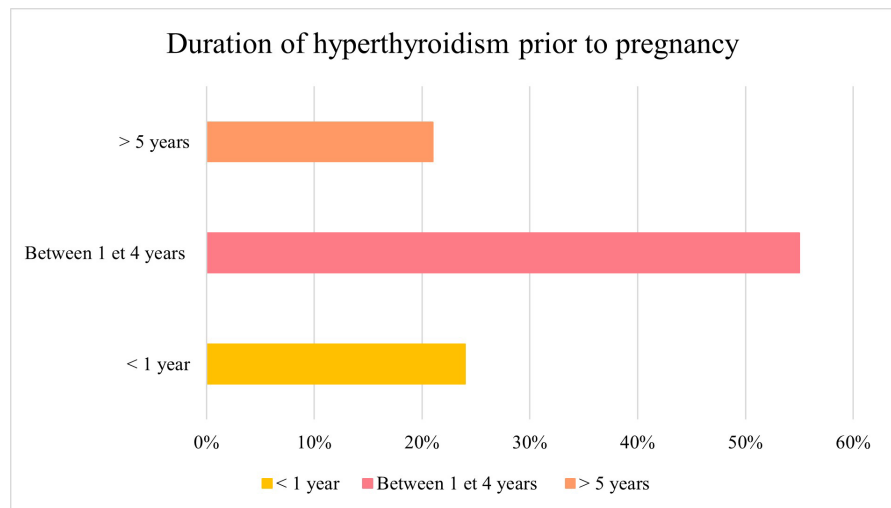
Among the 29 patients previously followed for hyperthyroidism, 13 had irregular follow-up with voluntary treatment discontinuation ranging from 1 month to 3 years. All regularly followed patients were on antithyroid drugs at the time of pregnancy diagnosis, and two of them were on propranolol.

### ➤ Data on Gestational Age at First Consultation

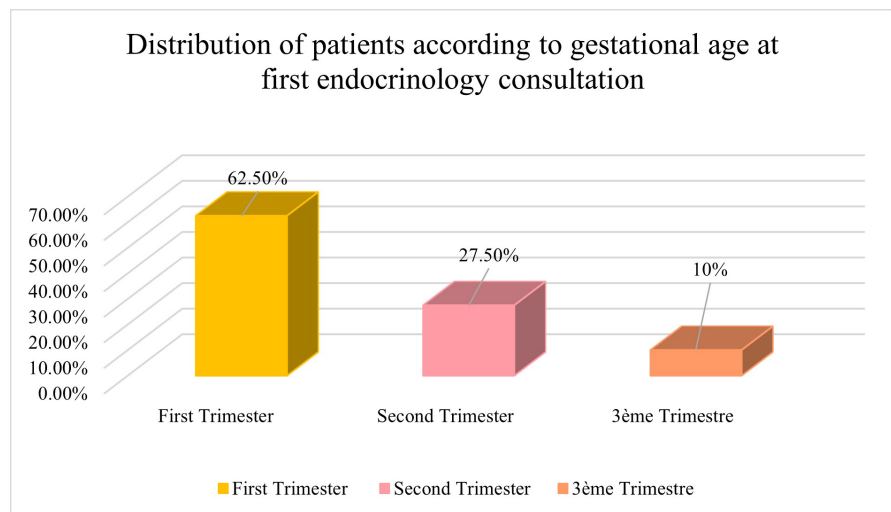
The mean gestational age at the first endocrinology consultation was 14 weeks of amenorrhea, with extremes of 6 and 34 weeks.

The distribution by trimester was: 62.5% first trimester, 27.5% second trimester,

and 10% third trimester (**Figure 5**).



**Figure 4.** Distribution of patients according to duration of hyperthyroidism prior to pregnancy.



**Figure 5.** Distribution of patients according to gestational age at first endocrinology consultation.

#### 4. Discussion

We conducted a prospective and retrospective descriptive study for analytical purposes over a period of 66 months. This study included 40 patients. A hospital prevalence of pregnancy among women followed for hyperthyroidism 2% was found. In Senegal, the latest data on the prevalence of this association between hyperthyroidism and pregnancy dated back to 2003. In addition, there are only a few studies conducted on our continent on the prevalence of hyperthyroidism during pregnancy.

However, this study has some limitations:

- This was a hospital-based study, so there is a possibility that the prevalence was

overestimated.

- Part of the study was conducted retrospectively, with the possibility of certain biases.
- Difficulties in performing certain biological tests, such as TRAK dosage, due to the poverty of some patients.

### **Hospital Prevalence**

The prevalence of pregnancy among women followed for hyperthyroidism reported in our study was 2%. This was higher than those reported in the literature. Gadiaga A. reported a prevalence of 0.1% in Senegal in 2003. It was higher than that reported by Aggarawal [5] (0.25%), El Guendouz F. (0.3%) [6], and Feki [7] (1.3%). This can be explained by the fact that the study was conducted in one of the largest referral centers for endocrinology. In addition, information on contraception was lacking for most of our patients.

### **Sociodemographic Data**

The average age found in our study was 30 years. Our results were comparable to those in the literature: it was the same as that reported by Delannoy *et al.* in Belgium, which was 30 years [8]. It was slightly lower than that reported by Abdous *et al.* [9] in Morocco, which was 31 years. It was higher than that reported by Aggarawal *et al.* in India, which was 26 years [5]. The most affected age group was those aged 30 years and older, with 30% aged over 35 years. This differed from that of Zakiri *et al.* [2], which was between 20 and 29 years.

### **Medical history, gestation, parity, and obstetric history**

Diabetes was found in 5% of patients, which is higher than that reported by Mannisto *et al.* in the United States, which was 3.8% [10]. These cases involved type 1 and type 2 diabetes.

The average gravidity was 2.85, ranging from 1 to 8. Our results are similar to those of Dulek [11], which was 2.4.

The average parity was 1.37, which is similar to the series by Dulek [11] and Zakiri [2], which were 1.2 and 1.34, respectively.

Primiparity was reported in 35% of patients, which is similar to the results of Aggarawal *et al.* [5] and Zakiri *et al.* [2], which were 32% and 37.5%, respectively.

A previous pregnancy associated with hyperthyroidism was reported in 17% of patients. Among these patients, one had a baby who died on day 7 of life as a result of a malformation probably related to ATS. This patient had never been informed of the need for contraception. Four patients had had repeated abortions and two patients had had repeated stillbirths.

### **Information on the need for contraception**

Contraception is recommended until hyperthyroidism is controlled. It is a major reproductive health issue, particularly in a context where pregnancy during uncontrolled hyperthyroidism exposes both mother and fetus to significant risks.

In our study, the majority of patients previously followed (52%) had never been informed of the need for contraception [12]. This may be partly explained by insufficient information and counseling regarding the role of contraception in the

comprehensive management of hyperthyroidism. This result is concerning, especially when 17% of these patients had already had a previous pregnancy associated with hyperthyroidism. Several structural and provider-level barriers may have contributed to inadequate contraceptive counseling in our setting, including limited consultation time, lack of standardized counseling protocols for women with thyroid disease, insufficient coordination between endocrinology and obstetric services, and constraints in human and material resources. These systemic factors likely contributed to gaps in contraceptive counseling, in addition to individual lack of awareness.

Fear of contraception, reported by 35% of patients, is the second leading cause of not using contraception. This fear may be linked to misconceptions about hormonal side effects, future fertility, or possible interaction with antithyroid treatment. Studies show that these misconceptions are common in populations where access to reliable, personalized information is limited [13].

Spousal refusal, found in 10% of cases, highlights the influence of sociocultural factors and family context on reproductive health decisions. This result is consistent with the fact that the data comes from a country where contraceptive decisions are often shared with the male partner [14]. Finally, although contraceptive intolerance is rare (3%), it highlights the importance of offering suitable alternatives, particularly non-hormonal methods where indicated.

Overall, these results underscore the need to systematically include contraceptive counseling in the follow-up of women of childbearing age with hyperthyroidism. A multidisciplinary approach involving endocrinologists, gynecologists, and midwives would improve information, alleviate unjustified fears, and promote contraception tailored to the clinical and sociocultural profile of patients.

Therapeutic education thus appears to be an essential lever for reducing the occurrence of unplanned pregnancies and their associated complications.

#### **Data on the duration of hyperthyroidism**

Most patients were previously monitored for hyperthyroidism (72.5%) at the beginning of pregnancy. This result was higher than that of Abdous [9], which was 20%.

Patients who were previously monitored and who were monitored during pregnancy have an increased risk of complications compared to those who were monitored before pregnancy [15].

The majority of our previously monitored patients (N = 13/29 patients) were not monitored before pregnancy due to irregular follow-up. This may be due to a lack of resources or a lack of therapeutic education.

A family history of hyperthyroidism was found in 12.5% of patients. These results were lower than those reported in the literature, which was 14% for Rchachi *et al.* [16].

#### **Pregnancy data**

The average gestational age at the first endocrinology consultation was 14 weeks, with a minimum of 6 weeks and a maximum of 34 weeks. This result was slightly

higher than the series of Chambon [17], which reported an average of 9 weeks, but is similar to the series of Guzel *et al.* and Hiéronimus S. *et al.*, which reported 13.94 weeks and 14 weeks, respectively [18] [19]. At this first consultation, 62.5% of our patients were in their first trimester, 27.5% were in their second trimester, and 10% were in their third trimester. Our results differed from those of Zakiri *et al.* [2], who found 75%, 10%, and 6%, respectively.

Compared to the results in the literature, our patients consulted much later, which delayed treatment.

## 5. Conclusions

Our study showed a prevalence of pregnancy among women followed for hyperthyroidism of 2%, indicating that this condition remains relatively common in our population. This prevalence is higher than that reported in most international series. This suggests the existence of local factors, probably related to the sociodemographic context, access to care, and screening practices, justifying increased vigilance in pregnant women.

The results also highlight a lack of information regarding the need for contraception in women previously treated for hyperthyroidism, with lack of information being the main reason for not using contraception. Furthermore, the occurrence of previous pregnancies associated with hyperthyroidism in some patients highlights the risk of repeat high-risk pregnancies.

These findings reveal the importance of comprehensive care that goes beyond hormone control to include appropriate therapeutic education and systematic contraceptive counseling. Strengthening these measures could help reduce prevalence and unplanned pregnancies and improve maternal and perinatal outcomes in our context.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] Alexander, E.K., Pearce, E.N., Brent, G.A., Brown, R.S., Chen, H., Dosiou, C., *et al.* (2017) 2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and the Postpartum. *Thyroid*, **27**, 315-389. <https://doi.org/10.1089/thy.2016.0457>
- [2] Zakiri, B. (2023) Les hyperthyroïdies gravidiques. Medical Thesis, Université Cadi Ayyad, No. 0315, 141 p.
- [3] Chazot, F.B. and Caron, P. (2017) Thyroïde et Grossesse. [https://www.sfdiabete.org/files/files/INDES/2017/jndes\\_2017\\_borson.pdf](https://www.sfdiabete.org/files/files/INDES/2017/jndes_2017_borson.pdf)
- [4] Gadiaga, A. (2003) Etude sur les hyperthyroïdies et la grossesse au CHU de Dantec à Dakar, 2003. Dical Thesis, UCAD, No. 80, 117 p.
- [5] Aggarawal, N., Suri, V., Singla, R., Chopra, S., Sikka, P., Shah, V.N., *et al.* (2014) Pregnancy Outcome in Hyperthyroidism: A Case Control Study. *Gynecologic and Obstetric Investigation*, **77**, 94-99. <https://doi.org/10.1159/000357615>
- [6] Guendouz, F., Boussouf, H. and Hammoune, N. (2017) Etiology of Hyperthyroidism

- in Pregnancy. *International Journal of Advanced Research*, **5**, 916-918. <https://doi.org/10.21474/ijar01/6038>
- [7] Feki, M., Omar, S., Menif, O., Tanfous, N.B., Slimane, H., Zouari, F., et al. (2008) Thyroid Disorders in Pregnancy: Frequency and Association with Selected Diseases and Obstetrical Complications in Tunisian Women. *Clinical Biochemistry*, **41**, 927-931. <https://doi.org/10.1016/j.clinbiochem.2008.05.002>
- [8] Delannoy, P., Grandfils, S., Lebrethon, M., Chantraine, F., Van linthout, C., Beckers, A., et al. (2019) A Series of 9 Pregnancies with Hyperthyroidism and Graves Disease: Fetal and Maternal Follow up. *Abstract Book: Annual Congress of the Belgian Society of Internal Medicine*, Dolce La Hulpe, 13-14 Decembre 2019. <https://hdl.handle.net/2268/244942>
- [9] Abdous, B. (2016) Hyperthyroïdiennes et Grossesse. *Annales d'Endocrinologie*, **77**, 381. <https://doi.org/10.1016/j.ando.2016.07.423>
- [10] Luton, D., Châtel, P., Ceccaldi, P.F., Davtian, C., et al. (2020) Thyroïde et Grossesse EMC Le Manuel Du Résident—Endocrinologie Métabolisme Nutrition. Elsevier Masson SAS, 1.
- [11] Dulek, H., Vural, F., Aka, N. and Zengin, S. (2019) The Prevalence of Thyroid Dysfunction and Its Relationship with Perinatal Outcomes in Pregnant Women in the Third Trimester. *Northern Clinics of Istanbul*, **6**, 267-272.
- [12] Kobaly, K. and Mandel, S.J. (2019) Hyperthyroidism and Pregnancy. *Endocrinology and Metabolism Clinics of North America*, **48**, 533-545. <https://doi.org/10.1016/j.ecl.2019.05.002>
- [13] Sedgh, G. and Hussain, R. (2014) Reasons for Contraceptive Nonuse among Women Having Unmet Need for Contraception in Developing Countries. *Studies in Family Planning*, **45**, 151-169. <https://doi.org/10.1111/j.1728-4465.2014.00382.x>
- [14] Cleland, J., Conde-Agudelo, A., Peterson, H., Ross, J. and Tsui, A. (2012) Contraception and Health. *The Lancet*, **380**, 149-156. [https://doi.org/10.1016/s0140-6736\(12\)60609-6](https://doi.org/10.1016/s0140-6736(12)60609-6)
- [15] Sorah, K. and Carlson, K. (2025) Hyperthyroidism in Pregnancy. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK559203/>
- [16] Rchachi, M., Houari, H., El Ouahabi, H. and Ajdi, F. (2016) Hyperthyroïdie au cours de la grossesse. <https://www.em-consulte.com/article/1078458/hyperthyroïdie-au-cours-de-la-grossesse>
- [17] Chambon, M. and Cogne, M. (2017) Étude rétrospective de femmes enceintes hospitalisées pour hyperémésis gravidarum révélant une hyperthyroïdie transitoire: Comparaison des formes infracliniques versus thyrotoxicoses. *Annales d'Endocrinologie*, **78**, 234. <https://doi.org/10.1016/j.ando.2017.07.266>
- [18] Güzel, E., Sivri Aydın, D., Çilesiz Göksedef, B.P. and Boran, A.B. (2015) The Incidence of Thyroid Dysfunction in Pregnant Women. *Perinatal Journal*, **23**, 96-100. <https://doi.org/10.2399/prn.15.0232008>
- [19] Hiéronimus, S., Trastour, C., Wagner, K., Hilmi, M. and Brucker-Davis, F. (2017) Hyperémèse gravidique et dysthyroïdie: Quels sont les enseignements d'une cohorte suivie en consultation dédiée «thyroïde et grossesse»? *Annales d'Endocrinologie*, **78**, 260. <https://doi.org/10.1016/j.ando.2017.07.127>