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*Original Research Article*

# Prevalence of Thyroid Disorders in Pregnancy

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## ABSTRACT

**Objective:** The present study was carried out to find out the prevalence of various thyroid disorders among pregnant women in their first trimester in the southern area of Rajasthan.
Material & Methods: The study was conducted during the period of 1year from July 2017 to July 2018. 200 pregnant women attending antenatal clinic for their routine antenatal visit in first trimester were included in the study. Routine blood and urine investigations along with serum TSH, FT3 and FT4 were done in all the study participants.
**Results:** Age of the patient's ranged from 19 to 38 with the mean age of 25.66±3.90 years. Mean gestational age of study population was 8.12±1.63 weeks. The mean TSH, FT3 and FT4 values were 1.499, 2.386 and 1.410 respectively. Thyroid disorders were found in 14%patients out of 200 study participants. 86% patients were euthyroid among the study participants. 7% patients were found to be having subclinical hypothyroidism. 4% were having overt hypothyroidism and 3% were having subclinical hyperthyroidism.
**Conclusion:** The study revealed high prevalence of thyroid disorders (14%) among pregnant women in their first trimester specially hypothyroidism (11%). Routine antenatal thyroid screening should be performed in all pregnant women.

***Keywords:*** Hypothyroidism, antenatal, hyperthyroidism, eclampsia

## INTRODUCTION

Normal thyroid hormone levels are necessary in maintaining pregnancy and in development of fetus. Thyroid dysfunctions are more common in female than in male. Maternal thyroid functions changes during pregnancy and leads to thyroid disorders in absence of adaptation to these changes. Thyroid disorders during pregnancy can result in substantial adverse fetomaternal outcomes. Furthermore, thyroid dysfunction can be readily diagnosed with simple and reliable blood tests and easily corrected with economical and easily available treatments. [(1)]

Worldwide, thyroid disorders are common in women of child-bearing age. [(2)] During pregnancy, demands on the hypothalamic-pituitary-thyroid axis increases which commonly leads to borderline thyroid abnormalities. Both hyper and hypo-thyroidism types of thyroid disorders can occur during pregnancy and correction of these disorders dramatically reduces the risk of adverse fetomaternal outcomes like foetal loss, preterm birth, pre-eclampsia and eclampsia and maternal morbidity. [(3, 4)]

According to the western literature, the prevalence of hypothyroidism in pregnancy is around 2.5%. The prevalence of gestational diabetes is around 0.1–0.4% and that of thyroid autoimmunity (TAI) is around 5-10%. [(5)]

There are very few data from India about the prevalence of thyroid dysfunction in pregnancy especially in the southern Rajasthan. With this background, the present study aims to find the prevalence of thyroid disorders including hyperthyroidism, hypothyroidism and Subclinical Hypo and hyper- thyroidism during pregnancy in southern part of Rajasthan.

## MATERIALS AND METHODS

The present study was a prospective study carried out in the department of Gynaecology and Obstetrics, Ananta institute of medical sciences, Rajsamand during the period of 1 year from July 2017 to July 2018.

200 patients attending OPD in their first trimester for routine antenatal check up were randomly selected and included in the study.

**Inclusion criteria:**

1. ≤ 12 week gestation
2. Singleton pregnancy
3. Primi/ multigravidae

**Exclusion criteria:**

1. Patients who were not willing to give consent.

**Procedure:**

Detailed history of all the patients was taken regarding symptoms of thyroid disorders, past medical and obstetric history, family history and personal history. Complete general and systemic examination was done in all the patients. Per abdominal and per vaginal examination were also done and findings were recorded.

Routine blood and urine investigations along with serum TSH, FT3 and FT4 were done in all the study participants. Pregnancy ≤12 week was confirmed by clinical examination, pregnancy test and ultrasonography. The reference ranges of the test values used in this study were as per the Guidelines of American Thyroid Association (ATA) for the diagnosis and management of thyroid disease during pregnancy and postpartum. As per regulation 14.2 of ATA Guidelines, if trimester specific ranges for TSH are not available in the laboratory, the following normal reference ranges are recommended: 1st trimester - 0.1 to 2.5 m IU/L, 2nd trimester - 0.2 to 3.0 m IU/L and 3rd trimester - 0.3 to 3.0 m IU/L. Normal free T4 level is 0.7 to1.8 ng/ml and free T3 level is 1.7 to 4.2 pg/ml.

Ethical consideration: Permission was taken from institutional ethical committee and written consent was taken from all the study participants.

## RESULTS

200 pregnant women in their first trimester were included in present study. Age of the patients ranged from 19 to 38 with the mean age of 25.66±3.90 years. Mean gestational age of study population was 8.12±1.63 weeks.

The mean TSH, FT3 and FT4 values were 1.499, 2.386 and 1.410 respectively. (Table 1)

**Table.1 Baseline parameters of the study participants**

| S.No. | Parameters | Value (Mean ±SD) |
|---|---|---|
| 1 | Age | 25.66±3.90 years |
| 2 | Gestational Age | 8.12±1.63 weeks |
| 3 | TSH | 1.499±0.324 IU/L |
| 4 | FT3 | 2.386±0.537 ng/ml |
| 5 | FT4 | 1.410±0.461 pg/ml |

Thyroid disorders were found in 28 cases (14%) out of 200 study participants. Table 2 illustrates variety of thyroid disorders in the study population. 86% patients were euthyroid among the study participants. 7% patients were found to be having subclinical hypothyroidism. 4% were having overt hypothyroidism and 3% were having subclinical hyperthyroidism.

**Table 2. Percentage of thyroid disorders in study participants**

| S.No. | Type | Number | Percentage |
|---|---|---|---|
| 1 | Euthyroid | 172 | 86 |
| 2 | Overt Hypothyroidism | 8 | 4 |
| 3 | Subclinical hyperthyroidism | 6 | 3 |
| 4 | Subclinical hypothyroidism | 14 | 7 |
| 5 | Overt Hyperthyroidism | 0 | 0 |
| 6 | Total | 200 | 100 |

## DISCUSSION

The present prospective study was conducted in a tertiary healthcare centre of southern Rajasthan. 200 pregnant women

with ≤12 weeks of gestation, who met the inclusion criteria, were included in the study.

The prevalence of thyroid disorders was 14% in present study. Many studies done in the past had similar results. Taghavi et al found 14.6% prevalence of thyroid disorders in their study. [(6)] Ajmani et al found 13.25% cases of thyroid disorders in their study. [(7)] Similarly, Weiwei Wang et al (10.2%), Sahu et al (12.7%) and Dhanwal DK et al (14.3%) had comparable results in their studies. [(8-10)]

The prevalence of thyroid disorder was very less (5%) in a study conducted by Thanuja PM et al [(11)], while the prevalence was very high (26.5%) in a study by Rajput et al [(12)], hence the results of these studies were in contrary with present study.

The prevalence of subclinical hypothyroidism in present study was 7%. In a study done by Sangeeta Pahwa et al, the prevalence of subclinical hypothyroidism was 6%. [(13)] Similarly, in a study by Sahu MT et al, the prevalence was 6.47% which is also comparable to our study. [(9)]

All women who have been diagnosed subclinical hypothyroidism during pregnancy should be tested for antithyroid antibodies because it can be associated with other autoimmune disorders like type I diabetes and can have adverse fetomaternal outcome. [(14,15)] ATA updated its guidelines in 2017 for the management of thyroid disorders in pregnancy. They suggested that Thyroxine should be started if antithyroid antibodies are present and initial level of TSH is 2.5- 4 mIU/L. If initial TSH level is > 4mIU/L, then Thyroxine should be started irrespective of the status of antithyroid antibodies. Usually the Thyroxine is started in the dose of 50 microgram per day to treat subclinical hypothyroidism and thyroid function tests are repeated after 4 weeks of starting treatment. [(16, 17)]

The prevalence of overt hypothyroidism in present study was 2%, which was consistent with the results obtained by Saraladevi et al with the prevalence of 2.8% [(18)] and partly consistent with the results obtained by Sahu MT et al, in which the prevalence was 4.58%. [(9)]

In present study, prevalence of subclinical hyperthyroidism and overt hyperthyroidism were 3% and 0% respectively. The prevalence of subclinical and overt hyperthyroidism was 0.5 and 0.4% respectively in the study done by Stagnaro Green A. [(17)] Similarly in the study done by Saraladevi et al the prevalance were 1.8% and 0.6% respectively.[(18)]

Our study had few limitations that fetomaternal outcomes were not included in the study. The sample size was also small. Hence, further researches with large sample size are advisable.

## CONCLUSION

The study revealed high prevalence of thyroid disorders (14%) among pregnant women in their first trimester specially hypothyroidism (11%). Hyperthyroid disorders are rare in pregnant women. Due to immense impact of thyroid disorders on the fetomaternal outcome, we advocate the routine antenatal thyroid screening.

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