

## Assessment of Prevalence of Thyroid Disorders Among Pregnant Women at Tertiary Care Hospital

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### Abstract

**Introduction:** Thyroid disorders are reported in higher magnitude among pregnant women, Maternal thyroid function changes rapidly during pregnancy and weaker adaptation to these changes may results in thyroid dysfunction. These changes are a result of various risk factors like an elevated thyroglobulin levels due to increase in estrogen and serum HCG levels, and also increased renal losses of iodine because of increase in glomerular filtration rate and changes in iodine transport to the placenta.

**Material & Methods:** All the pregnant women coming to OPD in 1st trimester for regular antenatal visits were selected for the sampling. After obtaining the gestational age and informed consent ,100 pregnant women in 1st trimester according to inclusion and exclusion criteria were enrolled in the present study. Clearance from hospital ethics committee was taken before start of study. Written informed consent was taken from each study participant.

**Results:** In present study, On the assessment of thyroid function test it was found that 88% of study participants were euthyroid while 9% had subclinical hypothyroidism and 3% had overt hypothyroidism. None of the study participants had subclinical or overt hyper-thyroidism in the present study. The mean serum TSH levels were  $3.85 \pm 3.1$ , mean levels of serum T3 was  $2.31 \pm 0.92$  and mean levels of serum T4 was  $1.52 \pm 0.63$ . The prevalence of thyroid disorders was 8.57% in the age group of 20-25 years. The prevalence of thyroid disorders was 22.58% in the age group of 26-30 years. The prevalence of thyroid disorders was 8.82% in the age group of more than 30 years.

**Conclusion:** We concluded from the present study that the most common thyroid disorder was subclinical hypothyroidism which was followed by overt hypothyroidism there was no case of subclinical hyperthyroidism or overt hyperthyroidism.

**Keywords:** Thyroid dysfunction, pregnancy, subclinical hypothyroidism

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## Introduction

Tonsillectomy It is well established various researches that thyroid hormones functions very important role in development, regulating metabolism, protein synthesis, and functioning of other hormones [1]. Thyroid gland is a butterfly shaped endocrine gland which is situated anatomically in the anterior aspect of root of the neck and comprises of two bulky lateral lobes which are connected by a thin isthmus [2]. Thyroid gland secretes several hormones such as triiodothyronine (T3), thyroxine (T4) and calcitonin. The prevalence and magnitude of all the thyroid disorders are associated and dependent on numerous risk factors and confounding factors [3].

The thyroid hormones control the metabolism of macromolecules, oxygen consumption and the basal metabolic rate (BMR) of body cells and are essential for normal growth and maturation of the body as well as they are essential for proper development of the peripheral and central nervous system [4]. Peripheral metabolism of thyroid hormones and pituitary-thyroid axis reported to be affected in various diseases and characterized by the Low T3 levels which is followed by subclinical hypothyroidism findings [5].

Thyroid disorders are reported in higher magnitude among pregnant women, Maternal thyroid function changes rapidly during pregnancy and weaker adaptation to these changes may results in thyroid dysfunction. Various reports have shown an increasing trend of thyroid disorders with increase in pregnant women [6]. These changes are a result of various risk factors like an elevated thyroglobulin levels due to increase in estrogen and serum HCG levels, and also increased renal losses of iodine because of increase in glomerular filtration rate and changes in iodine transport to the placenta. Various studies

reported that production of thyroid hormone and iodine requirement increases up to 50% during the course of pregnancy [7]. Various studies reported that the thyroid gland increases in size up to 10% during pregnancy, even in iodine sufficient countries. Various studies reported that pregnancy is a stress condition for thyroid gland, which results in thyroid dysfunction and leads to hypothyroidism [8]. We conduct the present study to assess the thyroid dysfunction among pregnant women at our tertiary care hospital.

## Materials & Methods

The present cross sectional, observational study was conducted at department of Obstetrics and Gynecology of our tertiary care hospital. The study was an observational study conducted during a period of six months. The study done at 95% confidence interval at 5% of maximum allowable error. The sample size of 100 patients was calculated by epi info software. All the pregnant women coming to OPD in 1st trimester for regular antenatal visits were selected for the sampling. After obtaining the gestational age and informed consent ,100 pregnant women in 1st trimester according to inclusion and exclusion criteria were enrolled in the present study. Study participants were enrolled by simple random sampling. Clearance from hospital ethics committee was taken before start of study. Written informed consent was taken from each study participant.

Previously diagnosed cases of thyroid disorders, diabetes mellitus, hypertension, obesity and multifetal gestation and had previous bad obstetric history with known cause were excluded from the present study. All the study participants were subjected to general physical and clinical examination and menstrual history, obstetric history, past medical history, family history, personal and

social history was recorded from all of them. All the study participants were subjected to routine blood investigation for complete blood count and thyroid function test. All the recorded data was entered in an Excel spread sheet on Microsoft Excel 2016. The statistical analysis was done using the Statistical software package SPSS v22 and Epi Info v7.2. A p-value <0.05 with 95% confidence intervals were considered statistically significant.

## Results

In present study we enrolled a total of 100 pregnant women in 1st trimester according to

inclusion and exclusion criteria were enrolled in the present study. Among the study participants, the mean age was  $24.4 \pm 3.6$  years. Majority of pregnant women were above 21 years of the age and no participant in present study was below 18 years. The mean period of gestation of study participants was  $7.2 \pm 2.8$  weeks. On the assessment of thyroid function test it was found that 88% of study participants were euthyroid while 9% had subclinical hypothyroidism and 3% had overt hypothyroidism. None of the study participants had subclinical or overt hyper-thyroidism in the present study. (Table 1)

**Table 1: Distribution of study subjects according to the study parameters.**

Parameters	Diabetes group
Age (Mean $\pm$ SD)	$24.4 \pm 3.6$
Period of gestation ( weeks)	$7.2 \pm 2.8$
Euthyroid	88%
Subclinical hypothyroidism	9%
Overt hypothyroidism	3%

In present study, On the basis of assessment of thyroid function test it was found that the mean serum TSH levels were  $3.85 \pm 3.1$ , mean levels of serum T3 was  $2.31 \pm 0.92$  and mean levels of

serum T4 was  $1.52 \pm 0.63$ . None of the study participants had subclinical or overt hyper-thyroidism in the present study. (Table 2)

**Table 2: Distribution of study subjects according to the thyroid profile.**

Study parameters	Results (Mean $\pm$ SD)
TSH	$3.85 \pm 3.1$
T3	$2.31 \pm 0.92$
T4	$1.52 \pm 0.63$

In present study, out of total study participants, based on the thyroid function test status, the total number of pregnant women who had thyroid dysfunction were 12%. Out of these 2% were in age group of 20-25 years, 7 % in 26 -30 years of age and 3% in more than 30

years of the age group. The prevalence of thyroid disorders was 8.57% in the age group of 20-25 years. The prevalence of thyroid disorders was 22.58% in the age group of 26-30 years. The prevalence of thyroid disorders was 8.82% in the age group of more than 30 years. (Table 3)

**Table 3: Thyroid dysfunction among study participants.**

Age (years)	Number of pregnant women	No. of pregnant women having thyroid disorders	Prevalence (%)
20-25	35	2	8.57
26-30	31	7	22.58
>30	34	3	8.82
Total	100	12	12.00

## Discussion

In present study we enrolled a total of 100 pregnant women in 1st trimester according to inclusion and exclusion criteria were enrolled in the present study. Among the study participants, the mean age was  $24.4 \pm 3.6$  years. Majority of pregnant women were above 21 years of the age and no participant in present study was below 18 years. The mean period of gestation of study participants was  $7.2 \pm 2.8$  weeks. On the assessment of thyroid function test it was found that 88% of study participants were euthyroid while 9% had subclinical hypothyroidism and 3% had overt hypothyroidism. None of the study participants had subclinical or overt hyper-thyroidism in the present study. Similar results were obtained in a study conducted by Pahwa S et al among 100 antenatal pregnant women in the first trimester according to their study Prevalence of thyroid dysfunction was evaluated in first trimester pregnant women, with subclinical hypothyroidism prevalence was 6%, overt hypothyroidism prevalence was 2%, subclinical hyperthyroidism prevalence was 2% and overt hyperthyroidism prevalence was 0% means no case was reported [9].

In present study, On the basis of assessment of thyroid function test it was found that the mean serum TSH levels were  $3.85 \pm 3.1$ , mean levels of serum T3 was  $2.31 \pm 0.92$  and mean levels of serum T4 was  $1.52 \pm 0.63$ . None of the study participants had subclinical or overt hyperthyroidism in the present study. Similar results were obtained in a study conducted by Vimal N et al among 483 antenatal pregnant women

in the first trimester according to their study the most common thyroid disorder was subclinical hypothyroidism which was followed by overt hypothyroidism which was followed by subclinical hyperthyroidism [10]. Similar results were obtained in a study conducted by Meenakshi T et al among 33 antenatal pregnant women in the first trimester according to their study the most common thyroid disorder was subclinical hypothyroidism which was followed by overt hypothyroidism there was no case of subclinical hyperthyroidism or overt hyperthyroidism in their study [11].

In present study, out of total study participants, based on the thyroid function test status, the total number of pregnant women who had thyroid dysfunction were 12%. Out of these 2% were in age group of 20-25 years, 7% in 26-30 years of age and 3% in more than 30 years of the age group. The prevalence of thyroid disorders was 8.57% in the age group of 20-25 years. The prevalence of thyroid disorders was 22.58% in the age group of 26-30 years. The prevalence of thyroid disorders was 8.82% in the age group of more than 30 years. Similar results were obtained in a study conducted by Sangita N et al among 400 antenatal pregnant women in the first trimester. They reported nearly similar results to the present study [12]. Similar results were obtained in a study conducted by Bijay V et al among 413 antenatal pregnant women in the first trimester. They reported nearly similar results to the present study [13].

## Conclusion

We concluded from the present study that the most common thyroid disorder was subclinical hypothyroidism which was followed by overt hypothyroidism there was no case of subclinical hyperthyroidism or overt hyperthyroidism in the present study. We recommend thyroid profile of all pregnant women to diagnose and treat the thyroid dysfunction early.

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