



## PREVALENCE OF THYROID DYSFUNCTION AMONG PREGNANT WOMEN ATTENDING MEDICINE OPD IN TERTIARY CARE HOSPITAL OF MAHARASHTRA

### General Medicine

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### KEYWORDS:

#### INTRODUCTION

Thyroid disease commonly affects women of childbearing age and is the second most common endocrinological disorder diagnosed in pregnancy after gestational diabetes. Available epidemiological data report widely varying prevalence rates of thyroid disorders during the antenatal period.[1]

Normally The developing fetus synthesizes thyroid hormones only by the end of the first trimester and, hence, depends on the maternal thyroid hormone for organogenesis, general growth, and development of the central nervous system.[2] Moreover, thyroid hormones are essential for the maintenance and successful completion of normal pregnancy.[3]

During pregnancy, the thyroid gland increases in size by 10% in iodine sufficient countries and to a greater extent in iodine deficiency countries.[4] Production of thyroid hormones and iodine requirement both increases by approximately 50% during pregnancy as part of physiology.[5] Inadequate maternal thyroid hormone production, particularly during the first stages of gestation when the foetus is reliant on maternal thyroxine, has been associated with multiple obstetric and neonatal adverse outcomes,[1] including inadequate neuropsychological development in the offspring.[1] The maternal thyroid dysfunction associated with adverse outcomes such as miscarriage, preterm delivery, eclampsia, preeclampsia and placental abruption in mother.[6] Even in the absence of thyroid dysfunction (TD), the presence of maternal antithyroid peroxidase antibodies (TPO Ab) increases the risk of miscarriage and preterm delivery.[7] Despite this, universal screening of TD in pregnancy is not well established and targeted TSH testing for high-risk groups is recommended by international scientific society guidelines.[8] During the first trimester, approximately 1 in 10 pregnant women develop antibodies to TPO or thyroglobulin and hypothyroidism develops in roughly 16% of these women. The prevalence of hypothyroidism in pregnancy is around 2.5% and hyperthyroidism is 0.1 to 0.4 % according to the Western literature. There are a few reports of prevalence of hypothyroidism during pregnancy from India with prevalence rates ranging from 4.8% to 11%.[9] Therefore, this study was carried out in a pregnant women during their follow up from a tertiary care hospital of Maharashtra to find out prevalence of thyroid dysfunction.

#### MATERIAL AND METHODS

This prospective study was done in the Medicine Department at tertiary care hospital of Maharashtra. 400 pregnant women referred from obstetrics and gynaecology opd between January 2016 to December 2017 were included in study. Consent taken from study subjects All patients were subjected to the usual history taking, symptoms of thyroid disorder, menstrual history, obstetrics history ,past medical history, family history, personal and social history. History of previous miscarriage taken. clinical examination including height and weight to calculate BMI , ante-natal profile of investigations. In addition to these tests, serum T3,T4 & TSH were done.

The reference ranges of the test values used in this study were as per the 2011 Guidelines of American Thyroid Association for the Diagnosis

and Management of Thyroid Disease during Pregnancy and Postpartum [10]. As per Regulation 14.2 of ATA Guidelines normal reference range are

1<sup>st</sup> trimester – 0.1 to 2.5 m IU/L,  
2<sup>nd</sup> trimester – 0.2 to 3.0m IU/L &  
3<sup>rd</sup> trimester – 0.3 to 3.0 m IU/L.

In pregnancy, serum Total T4 measurement is recommended over direct immunoassay of FreeT4. Because of alterations in serum proteins in pregnancy (raised TBG, TBA, and Prealbumin) FreeT4 assay may yield lower values based on reference ranges established with normal nonpregnant sera [11]. Also method-specific and trimester-specific reference ranges for direct immunoassays of FreeT4 have not been generally established. By contrast, Total T4 increase during the 1st trimester and the reference range throughout pregnancy is 1.5 fold that of the nonpregnant range [12]. Depending on thyroid hormonal values , patients were classified into :

**Subclinical hypothyroidism:** increase in serum TSH with normal T3 & T4.

**Overt hypothyroidism :** increase in serum TSH with decrease in T3 & T4.

**Subclinical hyperthyroidism :** decrease in serum TSH with normal T3 & T4.

**Overt hyperthyroidism :** decrease in serum TSH with increase T3 & T4.

#### RESULTS

In the present study , out of 400 pregnant women had thyroid disorder.

**Table no 1 :** prevalence of types of thyroid disorder among 400 pregnant women

thyroid disorder	No of patients	Percentage(%)
Euthyroid	272	68
Subclinical hypothyroidism	96	24
Overt hypothyroidism	24	6
Subclinical hyperthyroidism	3	0.75
Overt hyperthyroidism	5	1.25

**Table 2:** Distribution of cases as per Gravidity (n=400)

gravidity	No of pregnant women	Percentage(%)
G1	183	45.75
G2	156	39
G3 and above	61	15.25

**Table 3:** Distribution of cases according to Age (n= 400)

Age groups	No of pregnant women	Percentage(%)
< 20 yrs	104	26
20 – 25 yrs	136	34
26 - 30 yrs	88	22
>30 yrs	72	18

**Relation of BMI in patients with thyroid dysfunction :** Out of 96 pregnant women of subclinical hypothyroidism , 58 falls in overweight category i.e. BMI of 25 to 30 and 30 patients were obese i.e. BMI 30 to 35.

Out of 24 overt hypothyroid pregnant women , 20 were overweight and 4 were obese.

Out of 128 pregnant women with thyroid dysfunction 38 patients (29.68%) were having history of miscarriage.

#### DISCUSSION:

The main aim of the study was to know the prevalence of thyroid disorders in pregnancy. The prevalence of thyroid disorders in our study was 32% . out of this subclinical hypothyroidism constitute 24% which is consistent with the finding of study done by Casey BM et al [13] showing prevalence of 23%. Another Study done by Sahu MT et al who studied 633 women in second trimester showed prevalence of overt hypothyroidism of 4.58%, [14] is also partly consistent with our study having prevalence of overt hypothyroidism of 6%. The prevalence of subclinical and overt hyperthyroidism in our study was 0.75% & 1.25% respectively. In a study done by Sahu MT et al [14], the prevalence was 0.9% & 0.7% for subclinical and overt hyperthyroidism . In a study done by Tuija mannisto et al [15], the prevalence was 3.5% & 1.3% for subclinical and overt hyperthyroidism. Also in our study it was found that among 128 pregnant women with thyroid dysfunction 29.68 % patient had miscarriage.

#### CONCLUSION

This study showed a high prevalence of thyroid disorder 32% , especially hypothyroidism in pregnant women with the prevalence of subclinical hypothyroidism being 24% and overt hyperthyroidism being 6%. Also increase chances of miscarriage 29.68 % with thyroid dysfunction. As maternal thyroid disorder has adverse effects on maternal and fetal outcome , prompt identification and early initiation of treatment especially in first trimester is essential. Thus universal screening of pregnant women for thyroid disorder should be considered in India where prevalence of undiagnosed thyroid disorder is high.

#### References

- 1) Diéguez Marta; Herrero Ana; et al Prevalence of Thyroid Dysfunction in Women in Early Pregnancy . *Clin Endocrinol.* 2016;84(1):121-126.
- 2) Singh Alpana , Reddy Mary Jayasheela et al Prevalence of thyroid dysfunction in pregnancy and its implications, *International Journal of Medical Science and Public Health* |2015| Vol 4| Issue 9 1247.
- 3) Choksi NY, Jahnke GD, St Hilaire C, Shelby M. Role of thyroid hormones in human and laboratory animal reproductive health. *Birth Defects Res B Dev Reprod Toxicol* 2003;68(6):479-91.
- 4) Cunningham, Thyroid and other endocrine disorders. *Williams Obstetrics*, 23rd edition ,2010; 1126-1144.
- 5) John Studd, Thyroid Hormones in pregnancy and foetus, 15th edition, 75-102.
- 6) Krishnamma B et al. Prevalence of thyroid dysfunction in pregnant women and the need for universal screening: an observational study in Northern Andhra Pradesh population. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 2017 Jun;6(6):2536-2540.
- 7) Thangaratnam, S., Tan, A., Knox, E. et al. (2011) Association between thyroid autoantibodies and miscarriage and preterm birth: meta-analysis of evidence. *BMJ*, 342, d2616.
- 8) Stagnaro-Green, A., Abalovich, M., Alexander, E. et al. (2011) Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. *Thyroid*, 21, 1081-1125
- 9) Saraladevi R, Nirmala Kumari T et al, Prevalence of thyroid disorder in pregnancy and pregnancy outcome. *IAIM*, 2016;3(3):1-11.
- 10) Stagnaro-Green A, Abalovich M, Alexander E, et al.; Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and Postpartum. *Thyroid*, 2011; 21:1081-125.
- 11) Lee RH, Miller EA, Petrovc I, Braverman LE, Goodwin TM; FreeT4 immunoassays are flawed during pregnancy. *Am J Obstet Gynecol.*, 2009; 200: 261-266.
- 12) Mandel ST, Spencer CA, Hollowell JG; Are detection and treatment of thyroid insufficiency in pregnancy feasible? *Thyroid*, 2005; 15: 44-53.
- 13) Casey BM, Dashe JS, Well CE et al. Subclinical hypothyroidism and pregnancy outcomes. *Obstet. Gynecol* 2005; 10(5):239-245.
- 14) Sahu MT et al. Overt and subclinical thyroid dysfunction among Indian pregnant women and its effect on maternal and fetal outcome. *Archives of gynecology and obstetrics*. 2010;281(2):215-220.
- 15) Thobbi Vidya , Majeed S et al , Prevalence of thyroid disorder in pregnancy. *International Journal of Technical Research and Applications* e-ISSN: 2320-8163, www.ijtra.com Volume 4, Issue 2 (March-April, 2016), PP. 12-16.