



## Thyroid Dysfunction and Pregnancy Outcome in Indian Women

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### Abstract

**Objective:** Development of maternal thyroid disorder during early pregnancy can influence the pregnancy outcome and fetal development. There is lack of published reports regarding relation of thyroid dysfunction with pregnancy outcome. The purpose of this study is to estimate the prevalence of thyroid dysfunction during pregnancy and To study the effect of thyroid dysfunction on pregnancy outcome.

**Materials and Methods:** The study was a prospective study with a sample size of 400 antenatal patients attending OPD and emergency ward. After taking consent, these patients were randomly selected for the study.

**Results:** The prevalence of thyroid disorders in our study was 12.5%.with subclinical hypothyroidism (7%), overt hypothyroidism (4%),subclinical hyperthyroidism (1%),overt hyper(0.5%).In our study subclinical hypothyroidism was associated with complications like PE(10.7%), AP(3.57%), PTD(10.7%), Severe Anemia (25%), IUGR (3.75%), LBW(10.75%).Overt hypothyroidism was associated with PE(18.7%), AP (6.25%), PTD (12.5%), Severe Anemia (31.25%), IUGR (12.5%), LBW(18.7%).

**Conclusion:** Prevalence of thyroid disorders especially subclinical hypothyroidism and overt hypothyroidism was high. Significant adverse effect on maternal and fetal outcome were seen emphasizing the importance of routine antenatal thyroid screening.

**Key Words:** Pre eclampsia (PE),Abruptio placentae (AP),Pre Term Delivery(PTD),Intra Uterine Growth Retardation (IUGR),Low Birth Weight(LBW),Still Birth(SB),Confidence Interval(CI).

### Introduction

Thyroid disorder are among the most common endocrine disorder affecting pregnancy.via its interaction in several pathways, thyroid functions are important to maintain normal reproduction. several changes are observed in maternal thyroid function during pregnancy and failure to adapt to these changes leads to thyroid dysfunction. pregnancy can be viewed as a state in which a combination of events occur to modify the thyroid economy. there is change in the level of thyroxine

binding globulin, total thyroid hormone levels and change in levels of TSH during normal pregnancy. Development of maternal thyroid disorder during early pregnancy can influence the pregnancy outcome and fetal development. Thyroid dysfunction can lead to abortion, hyperemesis, premature birth, pregnancy induced hypertension, severe anemia, low birth weight infants, IUGR, abruptio placentia.

**Materials and Methods**

This study is a prospective study done in MLB medical college, Jhansi from January 2013 to January 2014. Four Hundred antenatal patients attending OPD and emergency ward were taken randomly.

**Inclusion Criteria**

- Singleton pregnancy
- Gestation age 8-23 wks
- Primi/Multi gravid

**Exclusion Criteria**

- Multiple gestation

Known case of chronic disorder- diabetes or hypertension

Previous bad obstetric history with known cases.

**Refusal of Consent**

After taking consent, these patients were randomly selected for the study. Detailed history and general examination was done. patient were sent for TSH screening .if TSH comes deranged, free T3 and free T4 level were done. depending upon the FT3 and FT4 level ,patient were grouped as subclinical/overt hypothyroidism or subclinical/overt hyperthyroidism.

**Intrepretation of tests**

	TSH NORMAL	TSH INCREASED	TSH DECREASED
FT4 NORMAL	Normal , Euthyroid Sick Syndrome	Subclinical hypothyroidism	Subclinical Hyperthyroidism
FT4 INCREASED	Consider TSH high	Hyperthyroidism (TSH producing pituitary adenoma)	Hyperthyroidism (Grave’s, toxic nodule)
FT4 DECREASED	Consider TSH low	Hypothyroidism (primary thyroid failure)	Hypothyroidism (primary pituitary failure), T3 toxicosis

If they are subclinical / Overt Hypothyroidism, Methimazole started.

At the end of pregnancy, Following outcome were noted:

**Maternal Outcome**

- Preeclampsia
- Abruptio placenta
- Preterm delivery
- Severe anemia

**Fetal Outcome**

- Low birth weight
- IUGR
- Still born

**American Thyroid society in 2007 Recommends cut off value for TSH as**

- First trimester < 2.5mIU/ml
- Second and third trimester < 3.0mIU/ml
- Lower limit <0.04

**Trimester specific values for thyroid function tests**

SERUM	UNITS	<sup>st</sup>	<sup>nd</sup>	<sup>rd</sup>
		1 trimester	2	3
TSH	mU/L	0.03-2.3	0.03-3.7	0.13-3.4
FT4	Ng/dl	0.86-1.77	0.63-1.29	0.66-1.12
	pmol/L	11.1-22.9	8.1-16.7	8.5-14.4
FT3	pmol/L	3-5.7	2.8-4.2	2.4-4.1

**Aims and Objectives**

1. To estimate the prevalence of thyroid dysfunction during pregnancy
2. To study the effect of thyroid dysfunction on pregnancy outcome.

**Results****Table -1** Prevalence of Thyroid dysfunction

No. of patients screened	No. with thyroid dysfunction	Prevalence(%)	95(% CI)
400	50	12.5%	10.5-14.9

The prevalence of thyroid disorders in our study was 12.5%

**Table-2** Prevalence of Thyroid disorders among 400 women screened

Type of thyroid disorder	No. of cases	Percentage
S.hypo	28	7.0
O.hypo	16	4.0
S.hyper	4	1.0
O.hyper	2	0.5

Prevalence of Thyroid disorders among four hundred women screened were Subclinical hypothyroidism(7%),Overt hypothyroidism (4%),Subclinical hyperthyroidism(1%),Overt hyper(0.5%).

**Table -3** Maternal complications among 28 cases of Subclinical hypothyroidism

Complication	No. of cases	Percentage
PE	3	10.7
AP	1	3.57
PTD	3	10.7
SEVERE ANEMIA	7	25.0

In our study subclinical hypothyroidism was associated with complications like PE(10.7%), AP(3.57%), PTD(10.7%), Severe Anemia (25%).

**Table 4** Fetal complications among 28 cases of Subclinical Hypothyroidism

Complication	No. of cases	Percentage
IUGR	1	3.57
LBW	3	10.7
SB	1	3.57

Fetal complications among 28 cases of Subclinical Hypothyroidism IUGR(3.75%),LBW(10.75%).

**Table-5** Maternal complication among 16 cases of overt Hypothyroidism

complication	No of cases	percentage
PE	3	18.75
AP	1	6.25
PTD	2	12.5
S.ANEMIA	5	31.25

Maternal complication among 16 cases of overt Hypothyroidism. Overt hypothyroidism was associated with PE (18.7%), AP (6.25%), PTD(12.5%),SevereAnemia(31.25%).

**Table -6** Fetal complications among 16 cases of Overt Hypothyroidism

complication	No of cases	percentage
IUGR	2	12.5
LBW	3	18.75
SB	1	6.25

Fetal complications among 16 cases of Overt Hypothyroidism. IUGR(12.5%),LBW(18.7%).

**Table-7** Maternal complications among 6 cases of Hyperthyroidism

Complication	No of cases	percentage
PE	1	16.6
PTD	1	16.6
AP	-	-

Maternal complications among 6 cases of Hyperthyroidism were PE(16.6%),PTD(16.6%).

**Table -8** Fetal complication among 6 cases of Hyperthyroidism

Complication	No.of cases	Percentage
IUGR	1	16.6
LBW	1	16.6

Fetal complications among 6 cases of Hyperthyroidism were IUGR(16.6%),LBW(16.6%).

**Table -9** Significance of Maternal Complications among Hypothyroidism

Complication s	Cases(%)	P value	Significance
Severe Anemia	56.25	0.001	Significant
PE	29.45	0.028	Significant
PTD	23.2	0.46	Not significant
AP	9.82	0.24	Not significant

Significant Maternal Complications among Hypothyroidism were Severe Anemia (Significant), PE (Significant).

**Table-10** Significance of Fetal Complications among Hypothyroidism

Complication	Cases(%)	P value	significance
LBW	29.45	0.136	Not significant
IUGR	16.07	0.001	significant
SB	9.82	0.23	Not significant

Significant Fetal Complications among Hypothyroidism were IUGR (Significant), LBW (Not Significant), SB (Not Significant).

**Discussion**

The prevalence of thyroid disorder in our study was 12.5% with a CI of 10.5-14.9%.Our findings are consistent with the reports from the study of Sahu MT et al ,who studied 633 women .in their study, Prevalence was 12.7%. Subclinical

hypothyroidism prevalence is also comparable to Sahu MT et al, who report it to be 6.47%.The prevalence of overt hypothyroidism in our study was 4%, which is partly consistent with Sahu MT et al, in which the prevalence is 4.56%.

**Incidence of complications in subclinical hypothyroidism**

Study	PE	AP	PTD	IUGR	LBW	SB
Our study	10.7	3.57	10.7	3.57	10.7	3.57
Leung	15	-	9	-	-	-
Sahu MT	9.8	-	10.3	2.4	-	2.5

Our results are comparable to other studies, in term of incidence of complication of overt hypothyroidism.

**Incidence of complication in Overt Hypothyroidism**

study	PE	AP	PTD	IUGR	LBW	SB
Our study	18.75	6.25	12.5	12.5	18.75	6.25
Leung	22.0	-	-	-	22.0	4.0
Sahu MT	20.7	-	4.7	13.8	-	2.9

**Conclusion**

Our study shows high prevalence of thyroid dysfunction, especially subclinical and overt hypothyroidism among Indian pregnant women, and it is associated with adverse pregnancy outcome. Based on the results of the present study, we therefore suggest for a decrease threshold for screening and detection of thyroid dysfunction among Indian pregnant women attending antenatal clinics.

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**Conflict of Interest:** None

**Ethical approval:** The study was approved by the institutional ethics committee.

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