

## To Study the Maternal and Foetal Prognosis in Thyroid Disordered Pregnant Mothers by Evaluating TSH in Pregnant Women

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### Abstract:

**Background:** After diabetes mellitus, thyroid disorders are the next most common etiology of endocrine dysfunction in females of fertile age group. Thyroid hormone(T3,T4,TSH) imbalances can have an impact on fertility, maternal health, and foetal growth and development. Aim: To study the maternal and foetal prognosis in thyroid disordered pregnant mothers by evaluating TSH levels in pregnant women screened during antenatal period who came during study period of one year in Government general hospital, Ananthapuramu.

**Materials and Methods:** A Prospective randomised Study.

**Study Period:** 12 months (August 2021-August 2022)

**Results:** This is a prospective study of 101 pregnant women with thyroid problems who attended the prenatal clinic at the Government Medical College and Hospital in Ananthapuram for one year with prior informed permission. TSH levels were high in 95 of the 101 women (indicating hypothyroidism) and reduced in six (hyperthyroidism).

**Keywords:** TSH, Thyroid, Pregnant, Ananthapuramu.

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### Introduction

After diabetes mellitus, thyroid disorders are the next most common etiology of endocrine dysfunction in females of fertile age group. Thyroid hormone(T3,T4,TSH) imbalances can have an impact on fertility, maternal health, and foetal growth and development [1,2].

Maternal thyroid disorders that manifest during early pregnancy can have an impact on pregnancy's outcome and foetal development. It is now established that both overt and subclinical thyroid dysfunction have serious consequences for pregnancy and foetal development [3,4,5]. Miscarriage, pregnancy-induced hypertension, and its more severe form, pre-eclampsia, are among the negative pregnancy outcomes, as are placental abruption, anaemia, post-partum haemorrhage and increased foetal morbidity and mortality [6,7].

Contrary to hypothyroidism, hyperthyroidism during pregnancy is uncommon. During pregnancy, hyperthyroidism with no due treatment is linked mortality of foetus and mother.

### Aim:

To study the maternal and foetal prognosis in thyroid disordered pregnant mothers by evaluating TSH

levels in pregnant women screened during antenatal period who came during study period of one year in Government general hospital, Ananthapuramu..

### Material and Method:

1. **Type of study:** Prospective randomised Study.
2. **Study centre:** Government Medical College, Ananthapuramu, Andhra Pradesh
3. **Study population:** All the patients attending as Out patients and In patients at Government Medical College, Ananthapuramu. Minimum 100 during the period August 2021 to December 2022.
4. **Study sample:** All pregnant women, who booked for antenatal care at the hospital during the study period with abnormal TSH levels.

### Exclusion Criteria:

1. Women with past h/o significant elevated BP diagnosed prior to pregnancy, pre-gestational Diabetes.
2. Patients who were lost for follow-up.

### Details of Study

101 pregnant women attending antenatal OP were included in the

Study and detailed history regarding thyroid status was obtained. A sample of blood drawn for TSH and estimated by sensitive chemiluminescent method.<sup>28</sup>

Abnormal TSH values were defined as mentioned below

The normal cutoff value for TSH was defined as 0.1-2.5mIU/mL. Lower limit range for diagnosis of hyperactivity of Thyroid:0.1mIU/mL. Upper limit range for diagnosis of hypoactivity of thyroid :2.5mIU/ml. Abnormal values were further followed up with freeT4 and freeT3.

Patients with abnormal TSH were investigated and treated accordingly. They were Followed till term to

note the maternal and fetal outcome. Pregnant women with abnormal TSH were further divided into those with TSH>2.5mIU/mL (suggestive of hypothyroidism) and those with TSH<0.1mIU/mL (suggestive of hyperthyroidism).

### Results

This is a prospective study of 101 pregnant women with thyroid problems who attended the prenatal clinic at the Government Medical College and Hospital in Ananthapuram for one year with prior informed permission. TSH levels were high in 95 of the 101 women (indicating hypothyroidism) and reduced in six (hyperthyroidism).

**Table 1: Maternal age distribution:**

Age	No. of Patients	%
< 20 Years	7	6.9
21 - 25 Years	50	49.5
26 - 30 Years	29	28.7
31 - 35 Years	13	12.9
> 36 Years	2	2.0
Total	101	100.0
Age	25.89 ± 4.66	

Majority of the study subjects were of 21-25 year age group.

**Table 2: Age and TSH status:**

Age	TSH					
	hyperthyroid		Hypothyroid		Total	
	No. of Patients	%	No. of Patients	%	No. of Patients	%
< 20 Years	0	0.0	6	6.4	6	6.0
21 - 25 Years	3	50.0	47	50.0	50	50.0
26 - 30 Years	3	50.0	26	27.7	29	29.0
31 - 35 Years	0	0.0	13	13.8	13	13.0
> 36 Years	0	0.0	2	2.1	2	2.0
Total	6	100.0	94	100.0	100	100.0
Chi-square	$\chi^2 = 2.311@$ ; (p = 0.679); df= 4; Not significant;					

Among the study subjects 94 were hyper thyroid. There is no significant association between the two groups. Among the 101 pregnant women in our study 43% are primi gravida and 57 % are multigravida with a p value 0.657 which is statistically not significant. 42.6% of hypothyroid women are primi gravida and 57.4 % are multi gravida. Among hyperthyroidism 33% are primi gravida and 66% are multi gravida.

**Table 3: Parity distribution**

Parity	No. of Patients	%
Primigravida	43	42.6
Multigravida	58	57.4
Total	101	100.0

**Table 4: Parity and TSH distribution**

Parity	TSH					
	Hyperthyroid		Hypothyroid		Total	
	No. of Patients	%	No. of Patients	%	No. of Patients	%
Primi	2	33.3	40	42.6	42	42.0
Multi	4	66.7	54	57.4	58	58.0
Total	6	100.0	94	100.0	100	100.0
Chi-square	$\chi^2 = 0.197@$ ; (p = 0.657); df= 1; Not significant;					

There is no significant association between the two groups.

**Table 5: BMI distribution**

BMI	No. of Patients	%
Under Weight	6	5.9
Normal	26	25.7
Overweight	61	60.4
Obese	8	7.9
Total	101	100.0
Mean BMI	26.12 ± 3.69	

There was a remarkable rise in hypothyroidism in overweight and obese women around 61% and 85 respectively (P value—0.661).

**Table 6: BMI and TSH distribution**

BMI	TSH					
	Hyperthyroid		Hypothyroid		Total	
	No. of Patients	%	No. of Patients	%	No. of Patients	%
Under Weight	0	.0	6	6.4	6	6.0
Normal	1	16.7	24	25.5	25	25.0
Overweight	5	83.3	56	59.6	61	61.0
Obese	0	.0	8	8.5	8	8.0
Total	6	100.0	94	100.0	100	100.0
Chi-square	$\chi^2 = 1.593^@$ ; (p = 0.661); df= 3; Not significant;					

There is no significant association between the two groups.

**Table 7: Maternal complications and TSH levels**

Maternal Complications	TSH						Sig.
	Hyperthyroid(n=6)		Hypothyroid (n=94)		Total (N =100)		
	No. of Patients	%	No. of Patients	%	No. of Patients	%	
PE	4	66.7	16	17.0	20	20.0	**P<0.001
GDM	0	0.0	6	6.4	6	6.0	@P>0.05
ABR	2	33.3	4	4.3	6	6.0	**P<0.001
Abortion	0	0.0	0	0.0	0	0.0	-
Oligo hydramnios	3	50.0	10	10.6	13	13.0	**P<0.001

There is a significant association between maternal complications and TSH levels.

#### Discussion:

**Maternal Age:** The mean maternal age is 25.89. Most of the women are between the age group 21 to 25 years followed by between 26 to 30 years of age.

**Parity:** Around 43 % were primi gravida and 57 % were multigravidas in our study. The parity showed a high incidence of multigravida Women especially hypothyroid group.

**BMI:** About 64% of hypothyroid pregnant women are overweight and obese in my study indicates that incidence of hypothyroid is more in obese and overweight women.

**Previous History of Thyroid Disorders:** Out of 101 women 52 have previous history of thyroid imbalance in our study with a P VALUE OF 0.345.

**Gestational Age at Delivery:** The average gestational age at birth is 37.5 weeks in our study. About 47% of the deliveries were preterm (<37 weeks).

**Low Birth Weight:** The growth and development of the fetus depends on thyroid hormone. Research by Leung et al compared to 6.8% of controls, 22% of mothers with hypothyroidism had low birthweight. In our study, 37% of babies with low birthweights (less than 2.5 kg) were born [8].

Unlike in western world the incidence of hypothyroidism is higher in India. Various studies in India Sahu et al [9], Vimal Nambiar et al [10] confirm the higher incidence of hypothyroidism in India. Further there was no increase in adverse pregnancy outcomes in adequately treated hypothyroidism whereas 63 untreated/inadequately treated hypothyroidism was associated with statistically significant increase in adverse pregnancy outcomes. Studies by Bijay Vaidya, Lazarus [11] and Negro et al [12] further eiterate the point.

#### Summary and Conclusion

In our study, the mean mother age is 25.8 years, with a P value of 0.679 that is statistically insignificant. With a p value of 0.657, which is statistically insignificant, 43% of the 101 pregnant women in our research are primigravida and 57% are multigravida.

There was a significant increase in hypothyroidism in overweight and obese women around 61% and 85 respectively.

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