

## Prevalence of Hypothyroidism in Pregnancy with TSH Estimation

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### Abstract

The commonest endocrinological problem in pregnancy is hypothyroidism and affects both maternal and fetal outcome. The aim of the study was to determine the prevalence of hypothyroidism in asymptomatic females presenting for antenatal care and delivery at PMCH situated in Udaipur, Rajasthan, India. This study was conducted from January 2017 to April 2018. A total of 765 patients were included in the study. 651 patients (85.10%) had normal TSH values and 114 (14.90%) had increased TSH values.

**Keywords:** Pregnancy; Delivery; Hypothyroidism.

### Introduction

Thyroid dysfunction, specially hypothyroidism is one of the commonest epidemiological problems in pregnancy and this can have effects on pregnancy and the fetus. Thyroid disorders are the second most common endocrine disorders seen in pregnancy. Pregnancy is associated with many physiological changes leading to hypothyroidism. Increased iodine requirement, increased thyroid binding globulin as a result of increased estrogen, rise

in HCG in the first trimester of pregnancy leads to increased FT<sub>4</sub> and decreased TSH levels.

Maternal thyroid hormone transferred through the placenta is the main source for fetal growth and development, and also for neuronal multiplication, thus influencing the future intellectual development of the baby.

In pregnancy, the incidence of hypothyroidism is 0.3% to 0.5%.

The current study was planned to determine prevalence of hypothyroidism in women presenting for ANC and delivery at PMCH, Udaipur to identify and evaluate thyroid dysfunction by doing a simple test like TSH estimation.

### Aim

This study aims to detect hypothyroidism in asymptomatic pregnancy using TSH values as screening test and to evaluate the fetal outcome in hypothyroid patients compared to euthyroid patients.

### Materials & Methods

Study done at OBG department at PMCH, Udaipur, with sample size of 765 pregnant

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females during the period of study from January 2017 to April 2018.

Inclusion criteria were all women who had singleton pregnancy irrespective of age, parity and socioeconomic status. All patients were subjected to the usual history taking, clinical examination and routine A.N.C profile of investigations. In addition to these tests, S. TSH was done. Samples were collected at the same time as other investigations. Reference range of test values used in this study were as per 2011 Guidelines of American Thyroid Association (ATA) for diagnosis and management of thyroid diseases during pregnancy.

Ata Guidelines	
Trimester	Level (mIU/L)
1	0.1 - 2.5
2	0.2 - 3.0
3	0.3 - 3.0

**Table 1:** Distribution of women having hypothyroidism according to age

Age (years)	Age Distribution	
	Number	Percentage
<20	3	2.6%
20-25	43	37.7%
26-30	41	36.0%
>30	27	23.7%
Total	114	100%

**Table 2:** Distribution of women having hypothyroidism according to parity

Parity Distribution		
Parity	Number	Percentage
Primi	42	36.84%
Multi	72	63.16%

**Table 4:** Distribution of women according to maternal and fetal complications

Euthyroid (651 Patients)		Maternal Complications	Hypothyroid (114 Patients)	
Percentage	Number		Number	Percentage
3.07%	20	Abortion	10	8.77%
5.4%	35	PIH/PET	20	17.5%
2.1%	14	Anaemia	10	8.77%
0.61%	4	Placenta abruption	2	1.75%
	0	GDM	6	5.26%
3.84%	25	PROM	8	7.01%
3.68%	24	Oligo	10	8.77%
3.84%	25	BOH	15	13.16%
3.07%	20	Postdatism	10	8.77%
		Fetal Complications		
4.76%	31	Preterm	15	13.15%
2.1%	14	IUGR	10	8.77%
2.45%	16	SB	6	5.26%

Hypothyroid cases LSCS 78 patients (68.42%)

VD 36 patients (31.58%)

**Table 3:** Distribution of women having hypothyroidism according to trimester of Pregnancy

Trimester of Study Population		
Trimester	Number	Percentage
Before pregnancy	4	3.50%
I	22	19.3%
II	50	43.9%
III	38	33.30%
Total	114	

Majority were of 2<sup>nd</sup> trimester

Out of 765 patients screened 114 patients presented hypothyroidism and 651 euthyroidism.

The incidence of hypothyroidism was 14.9%

## Discussion

The recent guidelines by American Thyroid Association (ATA) and the National Association of Clinical Biochemists recommended the upper limit of normal TSH during pregnancy to have reduced to 2.5 mIU/L in 1<sup>st</sup> trimester and 3.0 m IU/L in 2<sup>nd</sup> / 3<sup>rd</sup> trimesters. In our study we found out amongst 765 patients which were screened, 114 patients presented with hypothyroidism and 651 women had euthyroidism. The incidence of hypothyroidism was 14.9%. Baloch et al. studied that the normal range was from 0.4 to 2.5 m IU/L [1] There is a wide variation in the prevalence of hypothyroidism in pregnancy 2.5% in the West to 11% in India [2]. It is more in Asian countries as compared to the West [3]. Dhanwal et al. [4] from Delhi in 2013 reported a hypothyroidism prevalence of 14.3%, with a cut off of 4.5 m IU/L as upper limit of normal in a cohort of 1000 pregnant women [5]. Murty N et

al. showed a prevalence of 26% at a cut off of 3.0m IU/L as per ATA Guidelines. Kalra et al. [6] in their study reveal a prevalence of 12.3% of diagnosed and treated hypothyroidism in pregnant women at term. The present study, however, differs from all earlier research and adds value to existing knowledge on the subject. Iodine intake in the daily diet at a higher side [7], intake of goitrogenic food in diet [8], decreased amount of micronutrients like selenium and iron in the diet [9] are some of the various reasons which have been proposed for increased prevalence of hypothyroidism in pregnancy. In our study (Table 1) maximum women who presented with hypothyroidism in pregnancy were from 20-25 years age group, they were 43 (37.7%) and 72 (63.16%) were multigravida (Table 2). Table 3 in our study shows distribution of women having hypothyroidism according to trimester of pregnancy Majority belonged to 2<sup>nd</sup> trimester 50 (43.9%). In our study Table 4 shows distribution of women according to maternal and fetal complications. Women having hypothyroidism had various maternal complications abortion (8.77%), PIH/PET (17.5%), anaemia (8.77%), placenta abruption (1.75%), GDM (5.26%), PROM (7.01%), oligohydramnios (8.77%), BOH (13.16%), postdatism (8.77%). Fetal complications amongst this group were preterm babies (13.15%), IUGR (8.77%) and still birth 5.26%. Our study is conducted at a peripheral center, in women presenting for delivery after having received regular antenatal care, in an iodine replete area. The high prevalence of hypothyroidism also suggests that universal screening must be offered to all expectant mothers.

### Conclusion

Although it is not known what severity of maternal thyroid deficiency is necessary to cause fetal brain damage, the present data indicates a sufficiently high prevalence of thyroid dysfunction (14.9%) to demand investigations of the mental development of the offspring of women with hypothyroid females and of the effect of replacement therapy.

Hypothyroidism is common in term pregnancies, and should be treated adequately to achieve healthy

feto-maternal outcomes.

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