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STUDY ON PREVALENCE AND FETOMATERNAL OUTCOME IN HYPOTHYROIDISM IN PREGNANCY

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ABSTRACT

Background: Both the mother and the foetus experience significant physiological stress throughout pregnancy. Endocrine conditions like hypothyroidism during pregnancy can have serious consequences for both the mother and the foetus. While the negative effects of hypothyroidism on foetuses have received a lot of attention, the disorder's negative effects on mothers are extensively investigated. **Aim:** In this study, screening of all pregnant women at their 1st antenatal visit by estimate serum TSH and look for maternal hypothyroidism and the hypothyroid pregnant women were observed for the development of any maternal and perinatal complications. **Materials and Methods:** This is a prospective observational study which was conducted in Government General Hospital, Nizamabad during the period of January 2021 to June 2021. 1000 pregnant women were screened with serum TSH at their first antenatal visit. 852 cases (85%) were selected in the control group, 110 cases (11%) were selected in the neo hypothyroid group and 38 cases (4%) were selected in the known hypothyroid group. **Results:** Pre-eclampsia, GDM, Anaemia, IUGR, oligohydramnias, term delivery, induction of labour, caesarean section, PPH, small for gestational age, neonatal

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admissions among hypothyroid pregnant women was high, with statistically significant difference. Among three groups, high frequency of birth weight were between 2.6-3 kg.

Conclusion: This study concluded that early gestation thyroid screening and treatment for all pregnant women is useful in preventing or minimising the large amount of obstetrical and perinatal problems. This study's overall prevalence of hypothyroidism in pregnancy is high enough to warrant widespread monitoring.

Keywords: Post partum haemorrhage, obstetric and perinatal outcomes.

Introduction: Thyroid disease is the second most common endocrine disorder complicating pregnancy. Most common cause for hypothyroidism in pregnancy is autoimmune disorder (Hasimotos thyroiditis). Pregnancy is associated with significant but reversible changes in maternal thyroid physiology that can lead to difficulties in the diagnosis of thyroid abnormalities. Changes in thyroid function tests during pregnancy, are related to and estrogen-mediated increase in circulating levels of thyroid binding globulin, thyroid stimulation due to a "spill-over" effect, especially in the first trimester, by human chorionic gonadotropin, which shares some structural homology with TSH, decline in availability of iodide related to increased renal clearance and overall losses to fetus and placenta[1,2,3]. Many endocrine systems were affected in pregnancy and hypothalamo-pitutary axis is no exception. Attention to thyroid dysfunction during pregnancy has certainly increased in the past decade. The aim of screening pregnant women for hypothyroidism is to improve the health outcome by early diagnosis, followed by treatment or monitoring. In a study conducted by Casey et al[4], it was reported that overall incidence of hypothyroidism in pregnancy was 2.5% overt hypothyroidism was 1.3/1000 pregnant women, sub clinical hypothyroidism-23/1000 pregnant women[1]. Canaris et al[5] reported the incidence of sub clinical hypothyroidism in pregnant women between age 18-45 years was 5%, of them 2-5% progressed to overt hypothyroidism. The presence and distinction between types of hypothyroidism can be made by laboratory assessment. The normal TSH was observed to be 0.1 to 2.5 µLU/L in the first trimester of pregnancy, 0.2 to 3 µLU/L in second trimester of pregnancy and 0.3 to 3 µLU/L in third trimester of pregnancy. Hypothyroidism is a condition in which your thyroid gland doesn’t produce enough of certain crucial hormones. Hyperthyroidism is a condition that occurs when the thyroid gland makes more thyroid hormones than the body needs. In hypothyroid pregnant women, free T4 should be tested to differentiate subclinical and clinical hypothyroidism. Normal range of free T4 is 10-35 pmol/L. Sub clinical hypothyroidism is defined as TSH greater than normal range and free T4 within normal limit or high. Overt

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hypothyroidism is defined as TSH greater than normal range and freeT4 less than normal limit. Presence of Anti TPO anti bodies (>5O IU/ml), indicates auto immune etiology of hypothyroidism. Pregnancy is associated with increased thyroxine requirement by about 30%. Foetus depends completely on maternal thyroxine in 1st trimester. In 2nd & 3rd trimesters foetus partially depends on maternal thyroxine. Placenta actively concentrates iodide on foetal side from 12 weeks and throughout the pregnancy. Foetal thyroid concentrates more iodide avidly than maternal thyroid. By 36 weeks of gestation adult levels of serum TSH is less than foetal serum TSH. Foetal thyroid hormone plays a role in normal development of all tissues especially the brain. Maternal complications observed in hypothyroidism were preeclampsia, anaemia, abruptio placenta, gestational diabetes mellitus, cardiac dysfunction, dyslipidemia, intra uterine growth retardation, abortions, oligoamnios, preterm delivery, post partum haemorrhage, post partum thyroiditis. Foetal complications observed in hypothyroidism were birth weight less than 2000 gms, perinatal death, perinatal mortality, incidence of congenital anomalies, still birth, neonatal death and impaired foetal neuropsychological development. Replacement therapy for hypothyroidism is with levothyroxine in doses of 1 to 2 mcg/kg/day or approximately 100 mcg daily. Serum thyrotropin levels are measured at 4 to 6 week intervals, and the thyroxine dose is adjusted by 25 to 50 mcg increments until normal TSH values between 0.3 and 2.5 mU/L are reached. This study aims to assess prevalence of hypothyroidism in pregnancy and incidence of obstetric and perinatal outcomes in them. In this study, screening of all pregnant women at their 1st antenatal visit by estimate serum TSH and look for maternal hypothyroidism and the hypothyroid pregnant women were observed for the development of any maternal and perinatal complications. In most patient it is difficult to diagnose hypothyroidism clinically.

Materials and methods:

This is a prospective observational study which was conducted in Government General Hospital, Nizamabad during the period of January 2021 to June 2021. All pregnant women attending antenatal OPD at their first antenatal visit were included in the study. Non pregnant women and those patients who were having hyperthyroidism on treatment were excluded from the study. Ethical clearance was obtained from the institutional ethical committee. Informed consent was taken from all pregnant women to subject them to serum TSH test along with all basic investigations at their first antenatal visit. They were informed about the need to screen the thyroid status and explained about maternal and fetal complications associated with hypothyroidism in pregnancy. Also, the need for physician involvement was explained if TSH levels were found to be deranged for initiation and adjustment of treatment.

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It was discussed with all hypothyroid pregnant women about the benefits associated with treatment. Also, it was discussed regarding the need to do OGTT at 24-28week to r/o GDM, other specific investigations according to complications that may occur later in pregnancy and serum TSH, T3, T4 of the new born after 72hours of birth. The aim of the study was to screen the thyroid status in 1000 pregnant women using serum TSH, to determine the prevalence of hypothyroidism in pregnancy and to observe maternal and neonatal outcomes in these women. Before screening, detailed medical and surgical history was obtained. Complete general and systemic examination was done. Serum TSH was advised in all pregnant women along with the pregnancy profile. Serum TSH was done by chemi lumino immuno assay method. The normal serum TSH was observed to be 0.1 to 2.5 µLU/L in the first trimester of pregnancy, 0.2 to 3 µLU/L in second trimester of pregnancy and 0.3 to 3 µLU/L in third trimester of pregnancy. Pregnant women with normal serum TSH value were grouped as controls. Those with raised serum TSH were grouped as neo hypothyroid cases, those who were already on levothyroxine with normal or deranged serum TSH were grouped as known hypothyroid cases. Newly detected hypothyroid pregnant women were further investigated for free T4 and anti TPO antibodies, to detect subclinical or clinical hypothyroidism and presence of antibodies, respectively. Free T4 and anti TPO antibodies detected by chemi lumino immune assay method. Normal range of free T4 was 10-35 p mol/L. Normal value of anti TPO antibodies was <50 IU/ml. Pregnant women with high serum TSH and normal freeT4 levels, were categorised into subclinical hypothyroidism. Pregnant women with high serum TSH and low free T4 levels were categorised into overt hypothyroidism. Detection of anti TPO antibodies among hypothyroid women implies auto immune etiology (Hashimotos thyroiditis). With the help of endocrinologist, levothyroxine therapy was initiated in newly detected hypothyroid pregnant women and dose was adjusted in known hypothyroid pregnant women. Serum TSH was repeated in new and known cases of hypothyroidism every 6-8 weeks and reviewed with Endocrinologist, for adjustment of levothyroxine dose. Based on complaints, clinical examination and specific investigations, these hypothyroid pregnant women were checked for development of maternal and fetal complications at each antenatal visit. All hypothyroid pregnant women were subjected to OGTT with 75mg glucose (FBS and 2hours post glucose values) by hexokinase enzymatic method at 24-28 weeks gestation to r/o GDM. (Normal value-FBS<100 mg/dI; 2hour post glucose-<140 mg/dl). All hypothyroid pregnant women Were followed through antenatal, intranatal and postnatal periods for the development of maternal and perinatal complications. Serum TSH, T3, T4 investigations were done for neonates of mothers with hypothyroidism

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after 72 hours of birth, to detect congenital hypothyroidism. Serum TSH, T3, T4 estimated by chemi lumino immuno assay method. Normal range of neonatal serum TSH was 1-39 uU/ml, T3 was 36-316 ng/dI, T4 was 6.6-15 ug/dI. Details of individual cases were recorded as per standard proforma. At the end of the study, the findings of clinical examination and investigations were analyzed and the results of the control group and hypothyroid group were compared for the development of obstetric and perinatal complications. Statistical analysis was done by using "proportion Z test" to see the difference of pregnancy outcomes between control and hypothyroid group. A p-value of <0.05 was considered as significant.

Results: 1000 pregnant women were screened with serum TSH at their first antenatal visit. 852 cases (85%) were selected in the control group, 110 cases (11%) were selected in the neo hypothyroid group and 38 cases (4%) were selected in the known hypothyroid group.

Table 1: Age distribution

Age	<20 years		21-25 years		26-30 years		31-36 years	
	Number	%	Number	%	Number	%	Number	%
Controls(n=852)	143	16.7	402	47.2	216	25.3	91	11
New hypothyroidism (n= 110)	11	10	30	27.3	52	47.3	17	15.4
Known hyperthyroidism (n= 38)	5	13	12	31.6	11	29	10	26

Table 1 shows that the majority of maternal age in control group were between 21-25 years (402women-47.2%), new hypothyroid were between 26-30 years (52women=47.3%) and known hypothyroid were between 21-25 years (12women=31.6%).

Table 2: Frequency and percentage of increase in Levothyroxine dose among newly detected hypothyroid pregnant women, known hypothyroid pregnant women,

	Newly detected hypothyroid patients		Known hypothyroid patients	
Increase in dose (in mcg)	Frequency (n=16)	Percentage	Levothyrox in dose	Frequency (%)

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12.5	2	12.5	Increased	23 (62%)
25	8	50	Same	12 (33%)
37.5	1	6.25	Decreased	21 (5%)
50	4	25		
75	1	6.25		

Table 2 shows that increase in dose (mcg) of 12.5 was observed in 2 (12.5%) and increase in dose of 75 mcg was observed in 1 (6.25%). Increased levothyroxine dose was observed in 23 (62%) and decreased levothyroxine dose was observed in 21 (5%) of patients.

Table 3: Frequency and percentage of outcomes in control group and hypothyroid group.

Outcome	Control group (n=852)		Hyperthyroid group (n=148)		P value
	Frequency	%	Frequency	%	
PE	72	8.45	29	19.6	<0.0001
GDM	28	3.3	21	14.2	<0.0001
A.PL	3	0.35	1	0.7	0.5344
AN	246	28.9	63	42.5	0.0022
IUGR	7	0.8	13	8.8	<0.0001)
OH	46	5.4	20	13.5	0.0002
IUD	32	3.75	1	0.7	0.0552
AB	7	0.8	1	0.7	0.8988
PRE.T	12	1.4	13	8.9	<0.0001
TERM	72	8.5	133	88.5	<0.0001
POST	6	0.7	3	2	0.1206
IOL	72	8.45	25	17	0.0012
CS	336	39.4	73	49.3	0.0237
PPH	41	4.8	19	13	0.0001
LBW	127	15	27	18.2	0.3204

SGA	12	1.4	9	6	0.0003
LGA	2	0.2	2	1.35	0.0335
N.ADM	100	11.7	36	24.3	<0.0001

Table 4: Frequency and percentage of pre-eclampsia, GDM, anaemia, abruptio placenta, IUGR, oligo hydramnios, IUD .

Pre-eclampsia	Frequency	Percentage
Control group (852)	72	8.45
New hypothyroid (n=110)	21	19
Known hypothyroid (n=38)	9	24
GDM	Frequency	Percentage
Control group (852)	28	3.3
New hypothyroid (n=110)	13	12
Known hypothyroid (n=38)	8	21
Anaemia	Frequency	Percentage
Control group (852)	240	28
New hypothyroid (n=110)	46	40
Known hypothyroid (n=38)	15	39
Abruptio Placenta	Frequency	Percentage
Control group (852)	3	0.35
New hypothyroid (n=110)	1	0.9
Known hypothyroid (n=38)	0	0
IUGR	Frequency	Percentage
Control group (852)	46	5.4
New hypothyroid (n=110)	9	8.2
Known hypothyroid (n=38)	4	10.5
Oligo hydramnios	Frequency	Percentage
Control group (852)	32	3.75
New hypothyroid (n=110)	12	11
Known hypothyroid (n=38)	8	21.5
IUD	Frequency	Percentage
Control group (852)	7	0.8

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New hypothyroid (n=110)	0	0
Known hypothyroid (n=38)	1	2.6

Table 5: Frequency and percentage of abortion, preterm delivery, term delivery, post term delivery, induction of labour, caesarean section, PPH, low birth weight,

Abortion	Frequency	Percentage
Control group (852)	12	1.4
New hypothyroid (n=110)	1	0.9
Known hypothyroid (n=38)	0	0
Preterm delivery	Frequency	Percentage
Control group (852)	72	8.5
New hypothyroid (n=110)	11	10
Known hypothyroid (n=38)	2	5.3
Term delivery	Frequency	Percentage
Control group (852)	762	89.4
New hypothyroid (n=110)	96	87.3
Known hypothyroid (n=38)	35	92
Post term delivery	Frequency	Percentage
Control group (852)	6	0.7
New hypothyroid (n=110)	2	1.8
Known hypothyroid (n=38)	1	2.6
Induction of labour	Frequency	Percentage
Control group (852)	72	8.45
New hypothyroid (n=110)	12	15.4
Known hypothyroid (n=38)	8	2
Caesarean section	Frequency	Percentage
Control group (852)	336	39.4
New hypothyroid (n=110)	55	50
Known hypothyroid (n=38)	18	47.4
PPH	Frequency	Percentage
Control group (852)	41	4.8
New hypothyroid (n=110)	11	10

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Known hypothyroid (n=38)	21	18.4
Low birth weight	Frequency	Percentage
Control group (852)	127	15
New hypothyroid (n=110)	7	18
Known hypothyroid (n=38)	20	18.4
Small for gestational age	Frequency	Percentage
Control group (852)	12	1.4
New hypothyroid (n=110)	8	7.3
Known hypothyroid (n=38)	1	2.6
Large for gestational age	Frequency	Percentage
Control group (852)	2	0.2
New hypothyroid (n=110)	1	0.9
Known hypothyroid (n=38)	1	2.6

Table 3,4 & 5 shows that pre-eclampsia among hypothyroid pregnant women was high, with statistically significant difference. (8.45% Vs. 20.3% p value <0.0001). GDM among hypothyroid pregnant women was high, with statistically significant difference. (3.3% Vs. 14.2% p value <0.0001) Anaemia among hypothyroid pregnant women was high with statistically significant difference. (28% Vs. 41.2% p value =0.0022). IUGR among hypothyroid pregnant women was high, with statistically significant difference. (5.4% Vs. 8.8% p value <0.0001). Oligohydramnias among hypothyroid pregnant women was high, with statistically significant difference. (3.75% Vs. 13.5% p value =0.0002). Induction of labour among hypothyroid pregnant women was high, with statistically significant difference. (8.45% Vs. 16.9% p value =0.0012). Caesarian section among hypothyroid pregnant women was high, with statistically significant difference. (39.4% Vs. 49.3% p value =0.0237). Post partum haemorrage among hypothyroid pregnant women was high, with statistically significant difference. (4.8% Vs. 21.6% p value =0.0001). Small for gestational age among hypothyroid pregnant women was high, with statistically significant difference. (1.4% Vs. 6.1% p value =0.0003). Neonatal admissions among hypothyroid pregnant women was high, with statistically significant difference. (11.7% Vs. 24.3% p value <0.0001). No statistical significance was observed among hypothyroid and control groups, in the incidence of Abruptio placenta, Intrauterine death, Abortion, Post term delivery, low birth weight with p>0.05

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Table 6: Frequency and group percentage of outcomes in corrected and uncorrected new hypothyroid

Outcome	Corrected cases (n=68)		Uncorrected cases (n=42)	
	Frequency	%	Frequency	%
PE	9	13.2	11	26.2
GDM	10	14.7	3	2.4
A.PL	0	0	1	2.6
AN	30	44.1	17	40.5
IUGR	3	4.4	6	14.3
OH	6	8.8	7	16.7
IUD	0	0	0	0
AB	1	1.5	0	0
PRE.T	6	8.8	5	12
TERM	60	88.2	36	0
POST.T	1	1.5	1	2.6
IOL	11	16.2	6	14.3
CS	36	54	25	59.5
PPH	3	4.4	4	9.5
LBW	12	17.6	7	16.7
SGA	3	4.4	3	7.1
LGA	1	1.5	0	0
N.ADM	18	26.5	9	21.4

Table 6 shows that statistical significant difference in GDM (14.7% Vs. 2.4% p value=0.036), IUGR (4.4% Vs. 14.3% p value=0.0013), OH (8.8% Vs. 16.7% p value 0.0001)were observed between corrected and uncorrected new hypothyroid pregnant women, who were on treatment

Table 7: Frequency and percentage of outcomes in corrected and uncorrected known hypothyroid group.

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Outcome	Corrected cases (n=29)		Uncorrected cases(n=8)	
	Frequency	Percentage	Frequency	Percentage
PE	7	24	2	25
GDM	5	17.2	3	37.5
A PL	0	0	0	0
AN	10	34.5	4	50
IUGR	3	10.3	1	12.5
OH	6	20.7	2	25
IUD	1	3.4	0	0
AB	0	0	0	0
PRE.T	0	0	2	25
TERM	28	96.5	6	75
POST T	1	3.4	0	0
IOL	8	27.6	0	0
CS	11	38	7	87.5
PPH	6	20.7	2	25
LBW	5	17.2	2	25
SGA	0	0	1	12.5
LGA	0	0	1	12.5
N.ADM	6	20.7	4	50

Table 7 shows that no statistical significant difference of Obstetric and perinatal outcomes observed between corrected and uncorrected known pregnant women who were on treatment. Anti TPO antibodies were detected in 86 women (78.3%) of new hypothyroid, 7 women (6.3%) were antibody negative, 17 women (15.4%) did not undergo investigation. Out of 110 newly detected hypothyroid 25(22.7%) women registered in first trimester, 56(60%) registered in second trimester and 29(26.4%) registered in third trimester. Out of 25 women in first trimester, 22 (88%) were detected to have subclinical hypothyroidism and 3 (12%) women have overt hypothyroidism. Among 56 women in second trimester, 52 (93%) were detected to have subclinical hypothyroidism and 4 (7%) women have overt hypothyroidism.

Among 29 women in third trimester, 24 (82.7%) were detected to have subclinical hypothyroidism and 5 (17.3%) women have overt hypothyroidism. Out of 110 newly detected hypothyroid pregnant women, 16 women (14%) required increase in dose of levothyroxine, 64 Women (60%) required no change in dose of levothyroxine, 1 women (1%) required decrease in dose of Levothroxine, 26 women (23%) did not undergo repeat serum TSH and continued same dose of levothyroxine, 3 women (2%) did not undergo initial serum TSH. Among 16 women of Newly detected hypothyroidism who required increase in dose of levothroxine, 2 women (12.5%) required increase in dose by 12.5 mcg, 8 women (50%) required increase in dose by 25 mcg, 1 woman (6.25%) required increase in dose by 37.5 meg, 4 women (25%) required increase in dose by 50 mcg, 1 woman (6.25%) required increase in dose by 75 mcg. Out of 110 new cases of hypothyroidism 68 (61.8 %) women were with corrected serum TSH levels and 42(38.2 %) women were with uncorrected serum TSH levels. Out of 38 known hypothyroid cases: 6 (15.8 %) women registered in first trimester, 21 (55.3 %) registered in second trimester and 11 (29 %) registered in third trimester. Out of 38 known hypothyroid pregnant women, 23 women (62%) required increase in dose of levothyroxine, 12 women (31.6%) required no change in dose of levothyroxine, 2 women (5%) required decrease in dose of Levothroxine. Among 23 women of known hypothyroidism who required increase in levothyroxine dose, 1 woman (4.3%) required increase in dose by 12.5 mcg, 5 women (21.7%) required increase in dose by 25 mcg, 3 women (13%) required increase in dose by 37.5 mcg, 10women (43.5%) required increase in dose by 50mcg, 5 women (21.7%) required increase in dose by 100mcg.

Out of 38 known cases of hypothyroidism, 29(76.3%) women were with corrected serum TSH levels and 8(23.7%) women were with uncorrected serum TSH levels. Among these three groups, high frequency of birth weight were between 2.6-3 kg. Serum TSH, T3, T4 values of the neonates born to hypothyroid pregnant women after 72 hours of birth was found to be in normal range of laboratory values.

Discussion:

In the present study, 1000 pregnant women screened for thyroid disorder and the prevalence of hypothyroidism was found to be 14.8%, of which 11% were newly detected hypothyroid and 3.8% were known hypothyroid. Subclinical hypothyroidism was found in 89% overt hypothyroidism was found in 11%. In studies conducted by Casey et al[4] and Cleary-Goldman et al[6], each with more then 25,000 pregnant were screened in first half of pregnancy, subclinical hypothyroidism was identified in 1.7% and 2.3% of the women. Mandel SJ et al[7] analyzed retrospectively thyroid function in 12 pregnant women who received thyroxine

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treatment for primary hypothyroidism. Because of elevated serum TSH levels, the thyroxine dosage had to be increased in nine of 12 patients. The mean thyroxine dosage was 100 _g/d before pregnancy and was increased to 150 g/d during pregnancy (P_ 0.01). Among the three patients who did not require an increase in thyroxine dosage, two had a low serum TSH before pregnancy, suggesting excessive replacement. During postpartum, the mean thyroxine dose was decreased to 117 (P _ 0.01, compared with pregnancy dosage). These results indicate the need to increase the thyroxine dosage in the majority of with primary hypothyroidism during pregnancy. In the present study, increase in thyroxine dose was required in 14% of newly detected hypothyroid pregnant women and 62% of known hypothyroid cases. Panesar NS et al[8] concluded that the gestation-related reference intervals for thyroid hormones should alleviate the misinterpretation of thyroid function in pregnancy. Dashe JS et al[9] studied Serum TSH reference range evaluated in 13.599 singleton and 132 twin pregnancies, with individual values converted into a "nomogram" based on multiples of the median TSH at each week of pregnancy. Serum TSH decreased significantly during first trimester, with an even greater decrease (by 0.4 ml/liter) in twin, compared with singleton pregnancies. Had a "classical" (nonpregnant, 0.4-4.0 mlU/liter) range been used rather than the nomogram, 28% of 342 singletons with TSH greater 2 sd scores above the mean would not have been identified. The upper TSH limit (97.5^{th} percentile based on the nomogram) was approximately 3.0 to approximately 3.5 mlU/liter between week 10 and 30. The TSH was prolonged until late into the second trimester. Soldin OP et al[10] describe the interrelationships of thyroid tests based on trimester-specific concentrations in healthy, iodine sufficient pregnant women across trimesters and postpartum. Trimester-specific total T3, free T4, TSH, and TG concentrations were significantly different between first and third trimesters (all P 0.05). Second and third trimester values were not significantly different for free T4, TSH and TG, although total T3 was significantly higher in the third, relative to the second trimester. Total T4 was not significantly different at any trimester. These results show that in iodine sufficient women serum total T3, free T4, TSH, and TG tend to change throughout the course of pregnancy, whereas total T4 after the first trimester does not. Range of TSH preferred in this study was: in first-0.3 to2.5ulU/ml;in second and third trimesters -0.3 to 3ulU/ml. serum TSH was Repeated after 6 to 8 weeks. Another study conducted by Glinoer et al[11] showed that 120 euthyroid pregnant women with a history of thyroid disease, or with some form of thyroid abnormality; one group (n_45) was positive for thyroid autoantibodies. This group had an increased risk of spontaneous abortion (13.3% vs. 3%, $p<0.001$). The study conducted by

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Bagis etal[12] reported on the risk of miscarriage and the prevalence of autoimmune thyroid antibody-positive women. Of almost 900 women completing the study, 12.3% were thyroid antibody (TPO, TG autoantibody) positive; this group was 3.5 times more likely to report a history of miscarriage than was the thyroid antibody-negative group. In conclusion, an association exists between thyroid antibodies and miscarriage in an unselected population. In the present study, no statistical significant miscarriage rate was found between control group and hypothyroid group on treatment. Pratt et al[13] examined 42 nonpregnant women with a history of recurrent miscarriage, and followed their outcome in the subsequent pregnancy. Of the 42 women, 31% (n-13) were positive for antithyroid antibodies. Twelve of the 42 women experienced an abortion with the next pregnancy. Sixty-seven percent (8/12) of the women who aborted were thyroid antibody positive vs. an antibody positivity rate of only 17% (5/30) in the women who carried to term. The study is limited by lack of attention to other causes of recurrent miscarriage. (67% vs. 17%). In the present study, no statistical significance of abortion was observed between control and hypothyroid pregnant women. Rushworth et al.[14] examined the prevalence of thyroid autoantibodies in 870 patients with the diagnosis of recurrent miscarriage in whom normal parental karyotypes were established. In the euthyroid, antibody-positive group, the subsequent pregnancy success rate was 58%, as it was for the antibody-negative group. The author concluded that the risk of subsequent pregnancy loss in women with recurrent miscarriage was unaffected by their thyroid antibody status. In the present study, Anti TPO antibodies were detected in 86 women (78.3%) of new hypothyroid, 7 women (6.3%) were antibody negative, 17 women (15.4%) did not undergo investigation. Klein RZ et al[15] conducted a retrospective study of sera of 2000 pregnant women in Maine (U.S.) with the aim to determine the prevalence of undisclosed gestational hypothyroidism. Results showed that 49 women had a serum TSH value above 6 mU/liter at 15-18 wk gestation, corresponding to an overall 2.5% prevalence of hypothyroidism. Among these women, the majority (43 of 49) presented SCH, with 55% of them having positive thyroid autoantibodies (compared with 11% in the controls). Hitherto undiagnosed overt thyroid deficiency was present in six of 49 of the women and in this more severely affected subgroup the frequency of positive thyroid autoantibodies reached 90%. In the present study 90% of hypothyroid pregnant women were observed to have antiTPO antibodies. Abbassi Ghanavathi M et al[16] conducted a study in which 17,298 women screened before mid pregnancy, the investigators showed 31% with antiTPO Ab compared with 4% euthyroid controls. Those with TPO Ab had 3 Fold risk of placental abruption. Allan WC et al[17]

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conducted a prospective population study of 9,471 pregnant women in whom serum TSH was measured during the second trimester: hypothyroidism was diagnosed in 2.2% of them. Autoimmunity features corresponding to chronic thyroiditis were associated with thyroid dysfunction in 55% of women with SCH (serum TSH, 6-10 mU/liter) and more than 80% of women with OH (serum TSH, 11-200 mU/liter). Furthermore, the rate of fetal death was increased 4-fold (3.8% vs. 0.9%) in mothers with hypothyroidism compared with the control population with a normal serum TSH. Concluded that from the second trimester onward, the major adverse obstetrical outcome associated with raised TSH in the general population was an increased rate of fetal death. If thyroid replacement treatment avoided this problem, this would be another reason to consider population screening for thyroid dysfunction and autoimmunity. In the present study, foetal deaths were not observed in hypothyroid group. Abalovich M, et al[3] conducted a study in which 150 pregnancies, corresponding to 114 women with primary hypothyroidism. Fifty-one pregnancies (34%) were conceived under hypothyroidism (16 with overt and 35 with SCHN) and 99 pregnancies under euthyroidism with thyroxine therapy. When thyroxine treatment was not adequately adapted, spontaneous miscarriage occurred in 60% of women with OH and 71% of women with SCH. Furthermore, premature delivery was observed in 20% of women with OH and 7% with SCH. Conversely, when thyroxine treatment was adequate and thyroid function remained normal, 100% of women with OH and 91% of women with SCH carried pregnancies to term and no abortion was observed in any of the groups. The authors concluded that the outcome of pregnancy did not depend on whether hypothyroidism was initially overt or subclinical, but primarily on the adequacy of the thyroxine treatment. In the present study, percentage of corrected TSH levels in new hypothyroid group was 62% and in known hypothyroid group was 63%. In the present study, the incidence of small for gestational age, neonatal ICU admissions was high in hypothyroid group. Casey et al in 2005 In their analysis of 17,298 women from UT southwestern, identified 404 (2.3%) with subclinical hypothyroidism. They identified a 3-fold increased risk of placental abruption in the sub clinically hypothyroid group (1% vs 0.3%, P= 0.026). In addition, they identified a trend toward decreased gestational age at delivery, and a increased odds of NICU admission and neonatal respiratory distress syndrome among the newborns of women with sub-clinical hypothyroidism. In this study pre eclampsia was significantly common in pregnant women with overt hypothyroidism (24%), Sub clinical hypothyroidism (19%), control group (8.45%). Incidence of IUGR, LBW, oligohydromnias in hypothyroid group on treatment was low compared to incidence of preeclampia. Statistical difference in incidence

of GDM (p=0.036), IUGR (p=0.0013) and oligohydramnios (p=0.0001) was observed between corrected and uncorrected TSH levels of new hypothyroid on treatment, and other obstetric out comes were of insignificant difference. Leung AS et al[18] conducted a study in which the perinatal outcome in 68 hypothyroid patients, 23 with OH and 45 with SCH. Gestational hypertension (namely eclampsia, preeclampsia, and pregnancy- induced hypertension) was significantly more common in women with OH (22%) and SCH (15%) than in the control population (8%). In addition, 36% of the overt and 25% of the subclinical hypothyroid patients who had remained hypothyroid until delivery developed gestational hypertension. The low birth weights observed in both women with OH and SCH was secondary to premature delivery due to gestational hypertension. The authors concluded that normalization of thyroid function tests may prevent gestational hypertension and its consequent complications in hypothyroid pregnant women.

Conclusion: Ideally, thyroid function should be normalised prior to conception. Pregnancy with hypothyroidism is associated with adverse obstetric, perinatal and child hood outcomes. So early treatment may prevent or minimise these risks. Euthyroidism throughout gestation remains the corner stone of hypothyroidism. It can be achieved during preconception by thyroxine replacement, increase in dose at confirmation of conception and regular thyroid function monitoring in pregnancy using gestation specific ranges. This study concluded that screening every pregnant woman at their early gestation for thyroid disorder and treating them, is helpful in preventing or reducing Obstetrical and Perinatal complications which are significantly high. Over all prevalence of hypothyroidism in pregnancy in this study is sufficiently high to strongly consider universal screening. So, universal screening is mandatory for all pregnant women.

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