e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2023; 15(9); 387-397

Original Research Article

Thyroid Dysfunction in Pregnancy: Impact on Maternal and Foetal Outcome

Laxmi M, S Swetha Reddy, Badugu Vijetha, Srujana Nandyala

[1]Assistant professor, Department of Gynecology and obstetrics, Kakatiya medical College: Nizampura, Rangampet Street, Warangal, Telangana, India-506007

[2]Assistant professor, Department of Gynecology and obstetrics, Kakatiya medical College: Nizampura, Rangampet Street, Warangal, Telangana, India-506007

[3]Assistant professor, Department of Gynecology and obstetrics, Kakatiya medical College: Nizampura, Rangampet Street, Warangal, Telangana, India-506007

[4]Consultant and Center head, Department of Gynecology and obstetrics, Indira IVF Center, Warangal, Telangana, India-506007

Received: 10/08/2023. Revised: 15/08/2023 / Accepted: 27-08-2023

Corresponding author: Dr Srujana Nandyala

Conflict of interest: Nil

Abstract

Aims To know the prevalence of Thyroid Disorders in antenatal women and abnormal Thyroid function on the maternal and foetal Outcome.

Materials and methods: The present study was conducted in Prathima institute of medical sciences, Karimnagar from November 2014 to October 2016. It is a prospective study included screening of 1000 pregnant women coming to routine antenatal check-up in first trimester. TSH level was estimated, If it is deranged, then FT3 & FT4 levels estimated. Patients were managed accordingly and followed till delivery. Their obstetric and perinatal outcomes were noted.

Results: The prevalence of thyroid disorders in our study was 13% with a CI of 11.05- 15.23%.The prevalence of subclinical hypothyroidism in our study was 7.1%. The prevalence of overt hypothyroidism in our study was 3.6%. The prevalence of subclinical and overt hyperthyroidism in our study was 1.9% & 0.4% respectively. In our study, subclinical hypothyroidism was associated with complications like Pre-eclampsia (14.1%), Abruptio placenta (4.2%), Preterm delivery (11.2%), Abortions (4.2%), Anaemia (35.2%), OLIGO (14.1%) IUGR (7%), Low birth weight (5.6%), still born (1.4%). Overt hypothyroidism was associated with complications like Pre-eclampsia (19.4%), Abruptio placenta (2.8%), Preterm delivery (13.9%), Abortions (11.1%), Anaemia (33.3%), OLIGO (16.7%), IUGR (11.1%), Low birth weight (11.1%), Still born (2.8%). Subclinical hyperthyroidism was associated with complications like Pre-eclampsia (10.5%), Preterm delivery (10.5%), Abortions (5.2%), Anaemia (31.6), OLIGO (21.05%), IUGR (10.5%), and Low birth weight (5.2%). Overt hyperthyroidism was associated with complications like Abortions (50%), Pre-eclampsia (25%), Anaemia (25%), Preterm delivery (25%), OLIGO (25%), IUGR (25%). The incidence of Anaemia was significantly high in subclinical hypo, overt hypo, and subclinical hyper and overt hyper groups. Prevalence of thyroid dysfunction was high in this study, with subclinical hypothyroidism in (7.1%) and overt hypothyroidism in (3.6%) women. Overt hyperthyroid were prone to have miscarriage (50%) which was significantly high.

Conclusion: All women with thyroid disorders should be counselled about the importance of achieving euthyroidism before conception to avoid poor outcomes. In patients with ↑TSH and normal FT3, FT4 antibody testing for thyroid peroxidise (TPO) should be offered routinely. Early universal screening in first trimester will optimise fetal outcome.

Keywords: Thyroid Disorders, Antenatal women, Thyroid function, Maternal outcome, foetal Outcome.

Introduction

Thyroid disease is second only to diabetes mellitus as the most common endocrinopathy that occurs in women during their reproductive years. Symptoms of thyroid disease often mimic common symptoms of pregnancy, making it challenging to identify. Poorly controlled thyroid disease is associated with adverse outcomes during pregnancy, and treatment is an essential part of prenatal care to ensure maternal and fetal well-being. [1] Western literature shows a prevalence of hypothyroidism in pregnancy of 2.5% and hyperthyroidism in pregnancy has prevalence of 0.1 to 0.4% there is

paucity of data on prevalence of thyroid disorders in Indian pregnant women, few reports show a prevalence of 4.8% to 11% amongst Indian pregnant population. [2]

There has been a wide geographic variation in prevalence of hypothyroidism during pregnancy. It varies from 2.5% from the West to 11% from India. It seems that prevalence of hypothyroidism is more in Asian countries compared to the West. In a recent study showed high prevalence of hypothyroidism (13.3%) was noted. [3]

Several changes are observed in maternal thyroid function during pregnancy and failure to adapt to these physiological changes results in thyroid dysfunction. Thyroid disorder during early pregnancy has been associated with adverse obstetric and fetal outcome. The main obstetric complications are abortion, preeclampsia, abruptio placenta and preterm labour and the fetal complications are prematurity, low birth weight, still birth and perinatal death. There is an increase in the incidence of NICU admissions and respiratory distress syndrome. Maternal hypothyroidism in the 1st trimester may be harmful for fetal brain development and leads to mental retardation and cretinism which includes impairment of mental and physical growth and development and has a negative impact on most organ systems. Thyroid disorders are widely prevalent in pregnant women .rate of detection, especially in a developing country like India has not kept pace with the magnitude of the problem .It is now well established that not only overt, but also subclinical thyroid dysfunction has adverse effects on maternal and foetal outcome. Timely detection and treatment of the disorder can reduce the burden of adverse maternal and foetal outcome. There is no consensus regarding screening for thyroid disorders in the antenatal women in our country. Every hospital has to evolve their own protocol for the screening of thyroid disorders in antenatal period. Maternal hypothyroidism in the first trimester may be harmful for the fetal brain development and lead to mental retardation. In view of potential adverse outcomes associated with maternal thyroid disorders and obvious benefits of treatment, some expert panels have suggested universal thyroid function screening in all antenatal women. The present study has been undertaken to know the prevalence of thyroid disorders in antenatal women attending our hospital and to study the maternal and fetal outcome of those pregnant women suffering from thyroid disorders.

Materials and Methods:

The main source of data for the study are antenatal women attending to outpatient department prathima institute of medical sciences between November 2014 to 2016 This study was a prospective study done in 1000 cases. Inclusion Criteria: < 12 Weeks Gestation, Singleton Pregnancy, Primigravida / Multigravida. Exclusion Criteria: Multifetal gestation, Known chronic disorders, Diabetes and HTN had previous bad obstetric history with known cause.

Procedure: All the women coming to antenatal outpatient Department of Gynaecology medical OP in 1st trimester for regular antenatal visits were selected. After obtaining the gestational age and informed consent, 1000 patients in 1st trimester were randomly selected from the study. These patients fulfilled all the inclusion criteria. A detailed history was taken regarding the symptoms, and signs of thyroid disorders. Menstrual history, obstetric history, past history medical history, family history and personal history. A thorough general physical examination with reference to pulse , BP, Temperature, respiratory rate were noted followed by CVS, CNS , RS, Local thyroid examination . Pregnancy confirmed by urine pregnancy test (UPT) and 1st Trimester ultrasound. Per abdomen examination done and bimanual examination of uterus done if indicated. Patients are sent for TSH testing. If TSH comes deranged then FT3 and FT4 levels are checked. Depending upon the FT3 and FT4 values they are grouped as subclinical/overt hypothyroidism or hyperthyroidism. If they are subclinical / overt hypothyroid, levo Thyroxine is started. If they are subclinical / overt hyperthyroidism, Propylthiouracil is started. Every 8 weeks TSH level will be estimated and the dose of the drug adjusted. At the end, the pregnancy outcome noted.

The objectively measurable outcomes in relation to thyroid disorders studied as Abortion, Preeclampsia, Abruptio placenta, Anaemia, preterm delivery, Oligohydramnios, Postpartum haemorrhage, DVT, Mode of delivery, Indication for LSCS, IUGR, Low birth weight and Stillborn

Results.

Figure 1: Prevalence of Thyroid Disorders(TD)

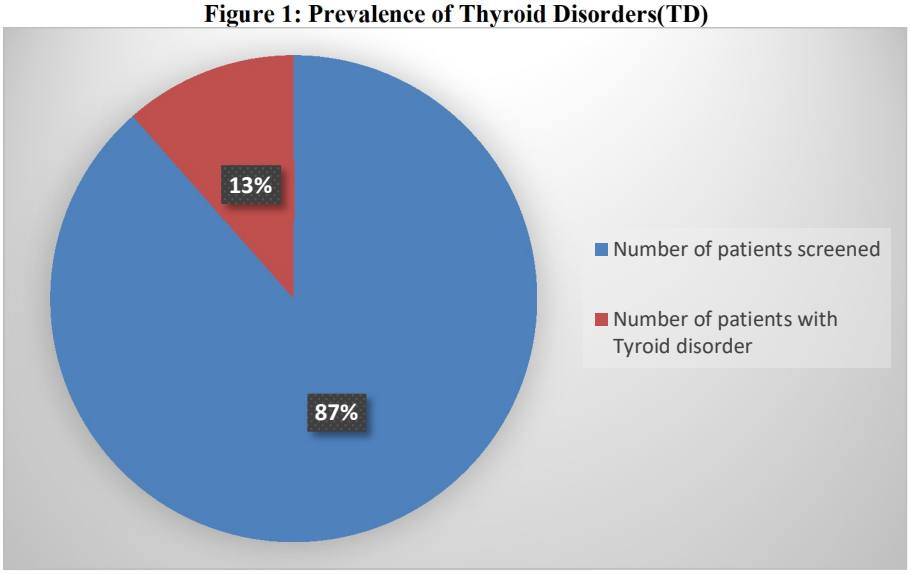

Table 1: Prevalence of Thyroidal disorders (TD) among 1000 women screened

Type of thyroidal disorders	Number of cases	Percentage	TSH level Mean ± SD
Subclinical hypo	71	7.1%	5.09±0.88
Overt hypo	36	3.6%	8.74±2.39
Subclinical hyper	19	1.9%	0.02±0.008
Overt hyper	4	0.4%	0.02±0.010

Table 2: Age Distribution in different types of Thyroid disorders

Age (Yrs)	Subclinical Hypo (71 Cases)	Overt Hypo (36 Cases)	Subclinical Hyper (19 Cases)	Overt Hyper (4 Cases)
< 20	4 (5.6%)	2 (5.5%)	1 (5.2%)	0
20 – 29	42 (59.1%)	18 (50%)	10 (52.6%)	1(25%)
30 - 39	25 (35.2%)	15 (41.7%)	8 (42.1%)	3 (75%)
>40	0	1 (2.8%)	0	0
Parity				
Primi	29(40.8%)	14(38.9%)	8(42.1%)	2(50%)
Multi	42(59.2%)	22(61.1%)	11(57.9%)	2(50%)

Table 3: Complications among 71 cases of Subclinical Hypo

Antenatal Complications	Number of cases	Percentage
Pre-Eclampsia	10	14%
Anaemia	25	35.2%
Abruptio Placenta	3	4.2%
Preterm Delivery	8	11.3%
Abortion	3	4.2%
Oligo	10	14%
Mode of Delivery		
Vaginal Delivery	19	27.9%
LSCS	49	72%

Indication for LSCS			
Fetal Distress		18	36.7%
CPD		6	12.2%
Failed Induction		3	6.12%
Previous LSCS With Risk of Scar Dehiscence		12	24.4%
Malpresentation		2	4.1%
Non Progression of Labour		8	16.3%
Postpartum Complications			
PPH		5	7%
Anaemia		18	25.3%
DVT		1	1.4%
Fetal complications			
IUGR	5	7%	7±5.93%
Low Birth Weight	4	5.6%	5.6±5.35%
Still Born	1	1.4%	1.4±2.73%

Table 4: Antenatal Complications among 36 cases of overt hypo

Antenatal Complications	**Number of cases**	**Percentage**
Pre-Eclampsia	7	19.4%
Anaemia	12	33.3%
Abruptio Placenta	1	2.8%
Preterm Delivery	5	13.9%
Abortion	4	11.1%
Oligo	6	16.7%
Mode of delivery		
Vaginal delivery	9	28.1%
LSCS	23	71.9%
Indication for LSCS		
Fetal Distress	10	43.5%
CPD	2	8.7%
Failed Induction	1	4.3%
Previous LSCS with risk of scar dehiscence	8	34.8%
Non progression of labour	2	8.6%
Postpartum Complications		
PPH	2	5.5%
Anaemia	12	33.3%
Fetal complications		
IUGR	4	11.1%
Low Birth Weight	4	11.1%
Still Born	1	2.8%

Table 5: Complications among 19 cases of Subclinical hyper

Antenatal Complications	**Number of cases**	**Percentage**
Pre-Eclampsia	2	10.5%
Anaemia	6	31.6%
Preterm Delivery	2	10.5%
Abortion	1	5.2%
Oligo	4	21%
Mode of Delivery		

Vaginal Delivery	5	27.8%
LSCS	13	72.2%
Indication for LSCS		
Fetal Distress	6	46.1%
CPD	2	15.4%
Previous LSCS with risk of scar dehiscence	3	23.1%
Non progression of labour	2	15.4%
Postpartum Complications		
PPH	1	5.2%
Anaemia	4	21%
Fetal complications		
IUGR	2	10.5%
LBW	1	5.2%

Table 6: Complications among 4 cases of Overt hyper

Complications	Number of cases	Percentage
Pre-Eclampsia	1	25%
Anaemia	1	25%
Preterm Delivery	1	25%
Abortion	2	50%
Oligo	1	25%
Mode of Delivery		
VD	1	50%
LSCS	1	50%
Indication for LSCS		
Fetal Distress	1	100%
Fetal Complications		
IUGR	1	25%

DISCUSSION

The prevalence of thyroid disorders in our study was 13% with a CI of 10.5- 14.9%.Our findings are consistent with the reports from the study of Sahu MT et al [4], who studied 633 women in second trimester. In their study the prevalence of thyroid disorders was also 12.7%, which is comparable to our study. In a study done by Dhanwal et al[3] there is high prevalence of hypothyroidism (13.13%), majority being subclinical in pregnant women during the first trimester from India. in this study prevalence of hypothyroidism is higher compared to our study. The prevalence of subclinical hypothyroidism in our study was 7.1%. In the study of Sahu MT et al [4] the prevalence was 6.47%, which is comparable to our study. In a study done by Casey BM et al [5], the prevalence was 2.3% which is low and not consistent with our study. The prevalence of thyroid disorders in our study is 13% and subclinical hypothyroidism 7.1%.In a study done by Rama saraladevi et al [6]. Prevalence of thyroid disorder was 11.6% with 95% CI of 9.64 to 13.54 which is comparable to our study and Subclinical hypothyroidism was 6.4% which is comparable to our study. In a study done by vimal nambiar et al [2] prevalence of hypothyroidism was 4.8% which is low and not consistent with our study. In a study done by saki F et al [7] the prevalence of subclinical hypothyroidism was 11.3% which is high and not consistent with our study. In a study done by Ajmani et al [8] Prevalence of subclinical hypothyroidism was 9 % which is high compared to our study. In a study done by Taghavi et al [9] Prevalence of subclinical hypothyroidism was 7.4% which is consistent with our study.

Table 7: Prevalence of Subclinical Hypothyroidism in different studies

Subclinical Hypothyroidism	Prevalence
Our Study	7.1%
Sahu M et al [4]	6.47%
Casey BM et al [5]	2.3%

Saki F et al [7]	11.3%
Ajmani et al [8]	9%
Nirmala sarala devi et al [6]	6.4%
Taghavi et al [9]	7.4%
Overt Hypothyroidism	
Our study	3.6%
Sahu M et al [4]	4.58%
Ajmani et al [8]	3%
Rama sarala devi et al [6]	2.8%
Taghavi et al [9]	2.4%
Subclinical Hyperthyroidism	
Our study	1.9%
Sahu M et al [4]	0.9%
Tujia Mannisto et al [10]	3.5%
Stagnaro Green A [11]	0.5%
Rama sarala devi et al [6]	1.8%
Saki F et al [7]	0.3%
Ajmani et al [8]	0.75%
Taghavi et al [9]	4.2%
Overt Hyperthyroidism	
Our study	0.4%
Sahu M et al [4]	0.7%
Tujia Mannisto et al [10]	1.3%
Stagnaro Green A [11]	0.4%
Rama sarala devi et al [6]	0.6%
Saki F et al [7]	1.2%
Ajmani et al [8]	0.5%
Taghavi et al [9]	0.6%

The prevalence of overt hypothyroidism in our study was 3.6%, which is partly consistent with a study done by Sahu M et al [4], in which the prevalence is 4.58%. In a study done by Ajmani et al [8] the prevalence of overt hypothyroidism was 3% which is comparable to our study. In a study done by rama sarala devi et al [6] the prevalence of overt hypothyroidism was 2.8% which is low compared to our study. In a study done by Taghavi et al [9] the prevalence of overt hypothyroidism was 2.4% which is low compared to our study.

The prevalence of subclinical and overt hyperthyroidism in our study was 1.9% & 0.4% respectively. In a study done by Sahu M et al [4], the prevalence was 0.9% & 0.7% for subclinical and overt hyperthyroidism. In a study done by Tuija mannisto et al [10], the prevalence was 3.5% & 1.3% for subclinical and overt hyperthyroidism. The prevalence of Subclinical and Overt Hyperthyroidism was 0.5 and 0.4% respectively in a study done by Stagnaro Green A [11] study. In a study done by Rama sarala devi et al [6] the prevalence of Subclinical and Overt Hyperthyroidism was 1.8% and 0.6% respectively which is comparable to our study. In a study done by Saki F et al [7] the prevalence of the prevalence of Subclinical and Overt Hyperthyroidism was 0.3% and 1.2% respectively. In a study done by Ajmani et al [8] the prevalence of the prevalence of Subclinical and Overt Hyperthyroidism was 0.75% and 0.5% respectively. In a study done by Taghavi et al [9] the prevalence of the prevalence of Subclinical and Overt Hyperthyroidism was 4.2% and 0.6% respectively.

In our study 5.6% of hypothyroid are <20yrs, 56.1% are between 20-29yrs, 37.4% are between 30-39 yrs and 0.93% are > 40yrs respectively. 4.3% of hyperthyroid are <20yrs, 47.8% are between 20-29yrs, 39.1% are between 30-39yrs and 8.6% are >40yrs age. In a study done by Sapana.C.shah[12] 55.6% of the hypothyroid, 50% of hyperthyroid were between 25 -29yrs. 7.4% of the hypothyroid, 16.7% of hyperthyroid women are between 25 -29yrs. 37% of the hypothyroid, 33.3% of hyperthyroid women are between 30-34yrs which is comparable to our study. In a study done by

ruchi Kishore[13] 8% of hypothyroid women are < 20yrs, 68% are between 20-29 yrs , 16% are between 30-39 yrs , 8% are > 40yrs which is not comparable to our study. In our study 40.2% of hypothyroid and 43.5% of hyperthyroid women are primigravida. 59.8% of hypothyroid and 56.5% of hyperthyroid women are multigravida. This shows majority of hypothyroid and hyperthyroid women are multigravida.

In a study done by Alpana singh[14] 50% of hypothyroid and 66.7% of hyperthyroid women are primigravida. 50% of hypothyroid and 33.3% of hyperthyroid women are multigravida. Here majority of hyperthyroid are primigravida which is not comparable to our study. In a study done by sapana shah [12] 40.7% of hypothyroid and 50% of hyperthyroid women are primigravida . 59.3% of hypothyroid and 50% of hyperthyroid women are multigravida. Here results are comparable to our study. In our study, subclinical hypothyroidism was associated with complications like Pre-eclampsia(14.1%) , Abruptio placenta (4.2%), Preterm delivery (11.2%), Abortions (4.2%), Anaemia (35.2%), OLIGO(14.1%), PPH(7%), DVT(1.4%) , IUGR (7%) , Low birth weight (5.6%), Still born (1.4%). The incidence of Anaemia was high followed by Pre-eclampsia, OLIGO, and Preterm delivery respectively. In a study done by Casey et al [5] the complications like Preterm delivery (2 times increased risk), AP (3 times increased risk) were seen in cases of subclinical hypothyroidism. In a study done by Sahu M et al [4], the complications like Pre-eclampsia (9.8%) , Preterm delivery (10.3%), IUGR (2.4%) , Still born (2.5%) were seen in cases of subclinical hypothyroidism. The incidence of Pre-eclampsia and IUGR in our study is high compared to this study. The incidence of Preterm delivery is comparable to our study. In a study done by Ajmani et al [8], the complications like Pre-eclampsia (22.3%), Abortion (5.5%), Preterm delivery (11.2%), Low birth weight (25%), IUGR (8.4%) were seen in cases of subclinical hypothyroidism. Incidence of pre-eclampsia, low birth weight is higher in this study compared to our study. In a study done by sarala devi et al [6], the complications like Pre- eclampsia(9.37%) , Abortions(4.68%) , Preterm delivery(7.81%), Abruptio placenta(1.56%) , Still born(1.56%) , Low birth weight(4.68%) , IUGR (6.25%) were seen in cases of subclinical hypothyroidism. Incidence of pre-eclampsia and preterm delivery is higher in our study compared to this study. In a study done by Ruchi Kishore[13] , the complications like Abortions(12.5%) , Pre-eclampsia(18.75) , Abruptio placenta(12.5%) , OLIGO(6.25%) , Anaemia(18.75%) , Preterm delivery(37.5%) , PPH(6.25%), IUGR(18.75%) , Low birth weight(31.25%) , Still born(6.25%) were seen in cases of subclinical hypothyroidism. In this study incidence of abortions, pre-eclampsia, abruptio placenta are higher compared to our study. In a study done by Cleary Goldman et al [15] no adverse outcomes were noted in cases of subclinical hypothyroidism. In a study done by Wilson et al [16] Pre-eclampsia is noted in 10.9% cases of subclinical hypothyroidism. Incidence of pre-eclampsia in our study is slightly higher compared to this study

Table 8: Maternal complications of subclinical hypothyroidism in different studies

STUDY	Pre-eclampsia	Abruption placenta	Preterm delivery	Abortions	Anaemia	OLIGO	PPH	DVT
Our study	14.1%	4.2%	11.2%	4.2%	35.2%	14.1%	7%	1.4%
Casey et al	-	3 times ↑ risk	2 times ↑ risk	-	-	-	-	-
Sahu M et al [4]	9.8%	-	10.3%	-	-	-	-	-
Ajmani et al [8]	22.3%	-	11.2%	5.5%	-	-	-	-
Sarala devi et al [6]	9.37%	1.56%	7.81%	4.68%	-	-	-	-
Ruchi Kishore[13]	18.75%	12.5%	37.5%	12.5%	18.75%	6.25%	6.25%	-
Wilson et al[16]	10.9%	-	-	-	-	-	-	-

Table 9: Fetal complications in subclinical hypothyroidism in different studies

STUDY	IUGR	Low birth weight	Still born
Our study	7%	5.6%	1.4%
Sahu M et al [4]	2.4%	-	2.5%
Ajmani et al [8]	8.4%	25%	-
sarala devi et al [6]	6.25%	4.68%	1.56%
Ruchi kishore [13]	18.75%	31.25%	6.25%

In a study done by Mohammed .M. Z [17]. Maternal complications in hypothyroidism included anaemia 18%, pre-eclampsia 16%, PPH 6%, preterm delivery 4% and abruption placentae 2%. The incidence of anaemia, preterm delivery, abruption placenta in our study is high compared to this study and the incidence of pre-eclampsia is less compared to this study. In our study, overt hypothyroidism was associated with complications like Pre- eclampsia (19.4%) , Abruption placenta (2.8%), Preterm delivery (13.9%), Anaemia(33.3%) , Abortions (11.1%),OLIGO(16.7%),PPH(5.5%) , IUGR (11.1%) , Low birth weight (11.1%), Still born (2.8%). The incidence of Anaemia was high followed by Pre-eclampsia, OLIGO, Preterm delivery, Low birth weight, IUGR respectively. In a study done by Sahu M et al [4], the complications like Pre-eclampsia (20.7%) , Preterm delivery(4.7%), IUGR (13.8%) , Still born (2.9%) were seen in cases of overt hypothyroidism. In a study done by Abalovich et al [18] the complications like Abruption placenta (19%), Low birth weight (6%), still born (3%) were seen in cases of overt hypothyroidism. The incidence of complications varied in different studies but some studies are comparable. In a study done by Hirsch et al [19], the complications like Abortions (7.8%), Preterm delivery (2.9%) were seen in cases of overt hypothyroidism. In a study done by Ajmani et al [8], the complications like Pre- eclampsia(16.6%) , Abortions(16.6%) , Preterm delivery(33.3), Abruption placenta(16.6%) , Low birth weight(50%) , IUGR (25%) , Still born(16.6%) were seen in cases of Overt hypothyroidism. In a study done by sarala devi et al [6], the complications like Pre- eclampsia (14.28%), Abruption placenta (3.57%), Preterm delivery (10.7%) Abortions (7.14%), still born (3.57%), Low birth weight (10.71%), IUGR (10.71%) were seen in cases of overt hypothyroidism.

In a study done by Ruchi Kishore[13], the complications like Abortions(11.1%) , Pre-eclampsia(22.2%) , Abruption placenta(11.1%) , OLIGO(11.1%) , Anaemia(22.2%) , Preterm delivery(44.4%) , PPH(0%), IUGR(22.2%) , Low birth weight(55.5%) , Still born(22.2%) were seen in cases of Overt hypothyroidism.

Table 10: Maternal complications in overt hypothyroidism in different studies

STUDY	Pre-eclampsia	Abruption placenta	Preterm delivery	Abortions	Anaemia	OLIGO	PPH
Our study	19.4%	2.8%	13.9%	11.1%	33.3%	16.7%	5.5%
Sahu M et al [4]	20.7%	-	4.7%	-	-	-	-
Abolovich et al [18]	-	19%	-	-	-	-	-
Rama sarala devi et al [6]	14.28%	3.57%	10.7%	7.14%	-	-	-
Ajmani et al [8]	16.6%	16.6%	33.3%	16.6%	-	-	-
Hirsch et al [19]	-	-	2.9%	7.8%	-	-	-
Ruchi kishore [13]	22.2%	11.1%	44.4%	11.1%	22.2%	11.1%	0%

Table 11: Fetal complications of overt hypothyroidism in different studies

STUDY	IUGR	Low birth weight	Still born
Our study	11.1%	11.1%	2.8%
Sahu M et al [4]	13.8%	-	2.9%
Ajmani et al [8]	25%	50%	16.6%
Rama sarala devi et al [6]	10.71%	10.71%	3.57%
Abolovich et al [18]	-	6%	3%
Ruchi kishore [13]	22.2%	55.5%	22.2%

In our study, subclinical hyperthyroidism was associated with complications like Pre-eclampsia (10.5%), Preterm delivery (10.5%), Anaemia (31.6%), Abortions (5.2%), PPH (5.2%), IUGR (10.5%), Low birth weight (5.2%). The incidence of Anaemia was high followed by PE, PTD, IUGR respectively. In our study, overt hyperthyroidism was associated with complications like Abortions (50%), Pre-eclampsia (25%), Anaemia (25%), Preterm delivery (25%), OLIGO (25%), IUGR (25%). The incidence of Abortions is high followed by Pre- eclampsia, Anaemia, Preterm delivery, OLIGO. In a study done by Robert negro et al [20] the hyperthyroidism in low risk group was associated with complications like gestational HTN (16.7%), Pre- eclampsia (0%), Preterm delivery (16.7%), Abortions (14.3%), Still born (0%). In a study done by Tuija Mannisto et al [10], the subclinical hyperthyroidism was associated with complications like Pre-eclampsia (3.5%), Abruptio placenta (1%). In our study overt hyperthyroids were prone to have miscarriage (50%), which is significantly high. In a study done by sarala devi et al [6] subclinical hyperthyroidism was associated with complications like Pre-eclampsia(11.11%) , Pretrem delivery(5.55%) , Abortions(5.55%) ,

IUGR(11.11%) , Still born(5.55%). In a study done by Taghavi et al [9] subclinical hyperthyroidism was associated with complications like Pre-eclampsia (4.7%), Preterm delivery (4.7%). In a study done by Ajmani et al [8] no adverse outcomes are noted with hyperthyroidism omplicating pregnancy. In a study done by Casey et al [14] Subclinical hyperthyroidism is not associated with adverse pregnancy outcome

Table 12: Maternal Complications of Subclinical hyperthyroidism in different studies

STUDY	Pre-eclampsia	Abruption placenta	Anaemia	Preterm delivery	Abortion	OLIGO	PPH
Our study	10.5%	-	31.6%	10.5%	5.2%	21.05%	5.2%
Tuija mannisto et al [10]	3.5%	1%	-	-	-	-	-
Taghavi et al [9]	4.7%	-	-	4.7%	-	-	-
Rama sarala devi et al [6]	11.11%	-	-	5.55%	5.55%	-	-

Some studies have not classified the cases into sub clinical and overt hyperthyroidism and the incidence of complication in them. The incidence of Pre-eclampsia and Preterm delivery was significantly high in the study of Kriplani et al [21] compared to our study in SUBCLINICAL HYPER group in which Pre-eclampsia was 10.5% and PTD was 10.5%. But the incidence of Pre-eclampsia is 25% and Preterm delivery is 25% in OVERT HYPER group which is comparable to study done by Kriplani et al [21]

Table 13: Maternal and foetal complications of hyperthyroidism in different studies

STUDY	Pre-eclampsia	Abruptio placenta	Preterm delivery	Abortions	IUGR	Low birth weight	Still born
Our study	10.5%	-	10.5%	5.2%	10.5%	5.2%	-
Kriplani [21]	22%	-	25%	-	-	-	-
Robert Negro [20]	-	-	16.7%	14.3%	-	-	-

In our study 27.9% are delivered by VD and 72.05% by LSCS in subclinical HYPO, 28.12% are delivered by VD and 71.9% by LSCS in overt Hypo, 27.8% are delivered by VD and 72.2% by LSCS in subclinical hyper, 50% are delivered by VD and 50% by LSCS in overt hyper group. In our study the most common indication for LSCS in subclinical hypo, overt hypo, subclinical hyper, overt hyper was Fetal distress followed by previous LSCS with risk of scar dehiscence. In a study done by Sapana. C. Shah [12] 45.8% of women with hypothyroidism, 50% of women with hyperthyroidism, 61.9% of women with euthyroidism delivered vaginally. 54.2% of women with hypothyroidism, 50% of women with hyperthyroidism underwent caesarean section. Incidence of LSCS is high in our study compared to this study. In a study done by Anupama dave[22] 88.85% women had normal delivery, out of them 0.36% were hyperthyroid, 5.5% were hypothyroid rest were euthyroid. In abnormal perinatal outcomes 6.2% women had lower segment caesarean section (LSCS) out of them 73.68% were euthyroid and 26.31% were hypothyroid. The main indications for LSCS in these cases were fetal distress, maternal Cephalopelvic Disproportion (CPD), contracted pelvis, and failed induction. Incidence of LSCS is high in our study which is comparable to this study.

In a study done by Alpana Singh[14] the rate of caesarean section was high in cases with hypothyroidism when compared with controls with euthyroidism (39.28% vs. 23.3%, p = 0.046). Among the various indications of caesarean section, caesarean section for fetal distress was significantly high in hypothyroid cases (36.36% vs. 14.4%). In our study caesarean section for fetal distress was high which is comparable to this study. To accept the weakness of our study, these women were not screened for thyroid antibodies. Follow up beyond new born period was not possible, after discharge most infants did not come for follow up.

At present there is no available recommendations for detection or screening of thyroid dysfunction among Indian pregnant women. Recent consensus guidelines do not advocate universal thyroid function screening during pregnancy, but recommend testing for high risk women with personal history of thyroid or other autoimmune disorders or with a family history of thyroid disorders. Our study shows high prevalence of thyroid dysfunction, especially subclinical (7.1%) and overt hypothyroidism (3.6%) among Indian pregnant women with associated adverse pregnancy outcome. In our study, subclinical hypothyroidism was associated with complications like Pre-eclampsia (14.1%), Abruption placenta (4.2%), Preterm delivery (11.2%), Abortions (4.2%), Anaemia (35.2%), and Oligo (14.1%) IUGR (7%), Low birth weight (5.6%), still born (1.4%). The incidence of Anaemia was high followed by Pre-eclampsia, Oligo, Preterm

delivery, IUGR respectively. In our study Overt hypothyroidism was associated with complications like Pre- eclampsia (19.4%), Abruption placenta (2.8%), Preterm delivery (13.9%), Abortions (11.1%), Anaemia (33.3%), Oligo (16.7%), IUGR (11.1%), Low birth weight (11.1%), Still born (2.8%). The incidence of Anaemia was high followed by Pre-eclampsia, Preterm delivery, Abortions, IUGR, Low birth weight respectively. The incidence of Pre-eclampsia and OLIGO were significantly high in overt hypo group after Anaemia.

In our study Subclinical hyperthyroidism was associated with complications like Pre-eclampsia (10.5%), Preterm delivery (10.5%), Abortions (5.2%), Anaemia (31.6), Oligo (21.05%), IUGR (10.5%), and Low birth weight (5.2%). The incidence of Anaemia was high followed by OLIGO, Pre-eclampsia, Preterm delivery, IUGR respectively. The incidence of OLIGO was significantly high in subclinical hyper group after Anaemia. In our study overt hyperthyroidism was associated with complications like Abortions (50%), Pre-eclampsia (25%), Anaemia (25%), Preterm delivery (25%), OLIGO (25%), IUGR (25%). The incidence of Abortions was significantly high followed by Pre-eclampsia, Anaemia, Preterm delivery, oligo, IUGR. The incidence of Anaemia was significantly high in all subclinical hypo, overt hypo, and subclinical hyper and overt hyper groups. Overt hyperthyroid were prone to have miscarriage (50%) which was significantly high. The incidence of oligo is high in overt hyper group (25%) followed by subclinical hyper (21.05%), overt hypo (16.7%), subclinical hypo (14.1%) respectively. 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 to routine antenatal clinic and to be potentially aware of associated maternal and fetal complication.

Conclusion

Prevalence of thyroid disorders, especially subclinical hypothyroidism (7.1%) and overt hypothyroidism (3.6%) was high. Significant adverse effects on maternal and fetal outcome were seen. Thus, universal screening of pregnant women for thyroid disorder should be considered especially in a country like India where there is a high prevalence of undiagnosed thyroid disorder. All women with thyroid disorders should be counselled about the importance of achieving euthyroidism before conception to avoid poor outcomes. In patients with ↑TSH and normal FT3, FT4 antibody testing for thyroid peroxidise (TPO) should be offered routinely. Early universal screening in first trimester will optimise fetal outcome.

References

1. Reid SM, Middleton P, Cossich MC, Crowther CA. Interventions for clinical and subclinical hypothyroidism in pregnancy. The Cochrane Library. 2010 Jan 1.
2. Nambiar V, Jagtap VS, Sarathi V, Lila AR, Kamalanathan S, Bandgar TR, Menon PS, Shah NS. Prevalence and impact of thyroid disorders on maternal outcome in Asian-Indian pregnant women. Journal of thyroid research. 2011 Jul 17; 2011.
3. Dhanwal DK, Bajaj S, Rajput R, Subramaniam KA, Chowdhury S, Bhandari R, Dharmalingam M, Sahay R, Ganie A, Kotwal N, Shriram U. Prevalence of hypothyroidism in pregnancy: An epidemiological study from 11 cities in 9 states of India. Indian journal of endocrinology and metabolism. 2016 May; 20(3):387.
4. Sahu MT, Das V, Mittal S, Agarwal A, Sahu M. Overt and subclinical thyroid dysfunction among Indian pregnant women and its effect on maternal and fetal outcome. Archives of gynecology and obstetrics. 2010 Feb 1; 281(2):215-20.
5. Casey BM, Dashe JS, Wells CE, McIntire DD, Byrd W, Leveno KJ, Cunningham FG. Subclinical hypothyroidism and pregnancy outcomes. Obstetrics & Gynecology. 2005 Feb 1; 105(2):239-45.
6. Saraladevi R, Kumari TN, Shreen B, Usha V. Prevalence of thyroid disorder in pregnancy and pregnancy outcome.IAIM, 2016;3(3): 1-11
7. Saki F, Dabbaghmanesh MH, Ghaemi SZ, Forouhari S, Omrani GR, Bakhshayeshkaram M. Thyroid function in pregnancy and its influences on maternal and fetal outcomes. International journal of endocrinology and metabolism. 2014 Oct; 12(4).
8. Ajmani SN, Aggarwal D, Bhatia P, Sharma M, Sarabhai V, Paul M. Prevalence of overt and subclinical thyroid dysfunction among pregnant women and its effect on maternal and fetal outcome. The Journal of Obstetrics and Gynecology of India. 2014 Apr 1; 64(2):105-10.
9. Ma T, Sb S. Outcome of thyroid dysfunction in pregnancy in Mashhad, Iran. International Journal of Endocrinology and Metabolism. 2009 Jun; 2009(2, spring):82-5.
10. Mannisto T, Vaarasmaki M, Pouta A, Hartikainen AL, Ruokonen A, Surcel HM, Bloigu A, Jarvelin MR, Suvanto E. Thyroid dysfunction and autoantibodies during pregnancy as predictive factors of pregnancy complications and maternal morbidity in later life. The Journal of Clinical Endocrinology & Metabolism. 2010 Mar; 95(3):1084-94.
11. Stagnaro-Green A. Overt hyperthyroidism and hypothyroidism during pregnancy. Clinical

obstetrics and gynecology. 2011 Sep 1; 54(3):478-87.
12. Sapana C Shah, et al. Thyroid disorders in pregnancy - a comparative study. International journal of fundamental and applied life sciences, 2015; 5(1): 7-14.
13. Kishore R, Mishra N, Yadav J.:Hypothyroidism in pregnancy and its impact on maternal and fetal outcome. Journal of evolution of medical and dental sciences-JEMDS. 2015 Oct 1; 4 (79):13849-55.
14. Singh A, Reddy MJ. Prevalence of thyroid dysfunction in pregnancy and its implications. Int J Med Sci Public Health 2015; 4:1247-1250.
15. Cleary-Goldman J, Malone FD, Lambert-Messerlian G, Sullivan L, Canick J, Porter TF, Luthy D, Gross S, Bianchi DW, D'Alton ME, FASTER Consortium. Maternal thyroid hypofunction and pregnancy outcome. Obstetrics & Gynecology. 2008 Jul 1; 112(1):85-92.
16. Wilson KL, Casey BM, McIntire DD, Halvorson LM, Cunningham FG. Subclinical thyroid disease and the incidence of hypertension in pregnancy. Obstetrics & Gynecology. 2012 Feb 1; 119(2, Part 1):315-20.
17. Mohammed MZ, Chandrashekar K. clinical study of pregnancy with hypothyroidism and its outcome in tertiary care hospital. Journal of evolution of medical and dental sciences-JEMDS. 2015 Nov 23; 4(94):15927-9.
18. Abalovich M. Fau-Amino N, Amino N Fau-Barbour LA, Barbour La Fau-Cobin RH, Cobin Rh Fau-De Groot LJ, De Groot Lj Fau-Glinoer D, Glinoer D Fau-Mandel SJ, et al.-Management of thyroid dysfunction during pregnancy and postpartum: an Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab. 2007; 92 (8 Suppl):S1-47.
19. Hirsch D, Levy S, Nadler V, Kopel V, Shainberg B, Toledano Y. Pregnancy outcomes in women with severe hypothyroidism. European Journal of Endocrinology. 2013 Sep 1; 169 (3):313-20.
20. Negro R, Schwartz A, Gismondi R, Tinelli A, Mangieri T, Stagnaro-Green A. Increased pregnancy loss rate in thyroid antibody negative women with TSH levels between 2.5 and 5.0 in the first trimester of pregnancy. The Journal of Clinical Endocrinology & Metabolism. 2010 Sep; 95 (9):E44-8.
21. Kriplani A, Buckshee K, Bhargava VL, Takkar D, Ammini AC. Maternal and perinatal outcome in thyrotoxicosis complicating pregnancy. European Journal of Obstetrics & Gynecology and Reproductive Biology. 1994 May 18; 54 (3):159-63.
22. Dave A, Maru L, Tripathi M. Importance of Universal screening for thyroid disorders in first trimester of pregnancy. Indian journal of endocrinology and metabolism. 2014 Sep; 18(5):735.