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PREVALENCE OF OVERT AND SUBCLINICAL THYROID DYSFUNCTION IN PREGNANT WOMEN AND OUTCOME IN A TERTIARY CARE CENTRE

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Aim: *To know the prevalence of overt and subclinical thyroid disorders in Indian pregnant women and to know the effect of overt and subclinical thyroid dysfunction on maternal and fetal outcome.*
Materials and methods: *This study was conducted at the Government Maternity Hospital, sultan bazaar, Osmania medical college, Hyderabad over a period of 15 months from august 2016 to October 2017. 1000 pregnant women who attended the antenatal clinic were screened for the thyroid dysfunction. Serum TSH level estimated. fT3, fT4 and anti TPO Ab levels were estimated if the TSH level was abnormal. Patients were managed accordingly and followed till the delivery. Maternal and fetal outcome recorded.*
Results: *It was a prospective study done on 1000 antenatal women. Prevalence of thyroid disorder in this study was 11.3%. Prevalence of subclinical, overt hypothyroidism, subclinical and overt hyperthyroidism was 9.4%, 1.4%, 0.4% and 0.1% respectively. Subclinical hypothyroidism was associated with complications like preeclampsia (13.8%), Anaemia (15.95%), preterm delivery (6.38%), Intrauterine growth restriction (4.25%), low birth weight (12.76%) and Intrauterine fetal death)(2.12%). Overt hypothyroidism was associated with complications like Preeclampsia (14.28%), anaemia (21.4%), Preterm delivery (14.28%), intrauterine growth restriction (14.28%), low birth weight (21.4%) and Intrauterine fetal death (7.14%). Incidence of CD was 18.05% in women with hypothyroidism. Subclinical hyperthyroidism was associated with complications like Preeclampsia, Preterm delivery, Intrauterine growth restriction, Intrauterine fetal death.*
Conclusion: *Thyroid disorders in pregnancy are significantly associated with both maternal and fetal complications and adversely affect the outcome of pregnancy. Hence, early identification of thyroid disorders and timely initiation of treatment is essential.*
Keywords: *subclinical hypothyroidism, preterm delivery, preeclampsia*

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1. Introduction

Thyroid disease is more common in women than in men because most thyroid diseases are autoimmune, and increased susceptibility to autoimmune diseases, perhaps secondary to the female endocrine environment, is likely contributing factor.

Thyroid physiology plays a significant role in pregnancy, and thyroid disorders constitute one of the most common endocrine disorders. Pregnancy is associated with significant and reversible changes in thyroid function, and failure to adapt to these changes results in thyroid dysfunction. The thyroid gland enlarges by 10 % in iodine-sufficient areas and 20–40 % in iodine-deficient regions [1]. The reasons are increased TBG due to increased estrogen and decreased plasma clearance, altered metabolism of natural thyroid hormones, increased renal loss of iodine due to increased renal blood flow and increased glomerular filtration rate and altered iodine transfer from placenta due to placental enzyme deiodinase, which increases the peripheral metabolism of thyroid hormones and regulates the transplacental transport of thyroid hormones and iodide. Thus, pregnancy is a stress for the thyroid, resulting in hypothyroidism in women with limited thyroidal reserve or iodine deficiency. The developing fetus synthesizes thyroid hormones only by the end of the first trimester (8–10 weeks). It hence depends on maternal thyroid hormone for organogenesis, general growth and development of the central nervous system. Thyroid hormones are also essential for maintaining and successfully completing normal pregnancy. Therefore, thyroid disorders during early gestation can adversely influence pregnancy outcomes and fetal development.

Thyroid dysfunction may be overlooked in pregnancy because the physiological changes of pregnancy simulate thyroid disease. For example, fatigue, sluggishness, constipation, and oedema may simulate hypothyroidism. In addition, heat intolerance, wide pulse pressure, and tachycardia may simulate hyperthyroidism. Maternal complications of hypothyroidism are spontane-

ous abortions, anaemia, PE, cardiac dysfunction, placental abruption, PPH, puerperal pyrexia, sepsis and prolonged hospital stay. Fetal complications include PTD, LBW IUGR, fetal distress, fetal death, low APGAR scores at 1 minute and 5 minutes, perinatal death and neonatal hypothyroidism.

Maternal and Fetal complications of hyperthyroidism include congestive heart failure, thyroid storm, preterm delivery, fetal growth restriction, stillbirth, and fetal and neonatal thyrotoxicosis. The prevalence of thyroid disorders during pregnancy has a wide geographic variation. Western literature shows the prevalence of hypothyroidism in pregnancy as 2.5 % and hyperthyroidism in pregnancy as 0.1-0.4 % [1]. However, there is a paucity of data on the prevalence of thyroid disorders in pregnant Indian women. Few reports show the prevalence of hypothyroidism during pregnancy in India as 4.8 % to 11 % [2, 3].

With this background, a sincere effort was made to find the prevalence of ,overt and subclinical thyroid disorders among Indian pregnant women attending antenatal clinic at Government Maternity Hospital, Sultan Bazaar Hyderabad, Telangana, and to see the effect of the thyroid disorders on Maternal and Fetal outcome.

2. Materials and methods

It is a prospective study done on 1000 pregnant women. Antenatal women were attending the outpatient department of tertiary care centres, i. e: Government Maternity Hospital, Sultan bazaar, Osmania Medical College, Hyderabad from August 2016-October 2017.

Inclusion Criteria: Singleton pregnancy, Primigravida / Multigravida**,** 13-32 weeks gestational age and Women with a history of thyroid disorders and women on treatment for thyroid disorders.

Exclusion Criteria: Multifetal gestation, Known chronic disorders – Diabetes and Hypertension, previous bad obstetric history with a known cause and Who planned to deliver at another hospital.

Institutional ethics committee clearance obtained the prevalence of overt and subclinical thyroid dysfunction in pregnant women and outcome in a tertiary care centre, dated 28-07-2016, with registration-M150714047.

1000 Pregnant women attending the antenatal clinic at Government Maternity Hospital, Sultan bazaar and fulfilling inclusion criteria were enrolled in the study after institutional ethics approval and consent from the study subjects. A detailed history was taken regarding the symptoms of thyroid disorders, menstrual history, obstetric history, past medical history, family history and personal history.

A general examination concerning the patient's general condition, body temperature, pulse rate, blood pressure, and respiratory rate was done. Examination of the Thyroid gland and breast was done. A systematic examination of the CVS, CNS and respiratory system was done. An obstetric examination was done, and findings were recorded.

Basic Investigations: Complete blood picture, Clotting time, Bleeding time, Blood grouping and Rh typing, RBS, Blood urea, and Serum creatinine were noted.

Specific Investigations: serum TSH was done by ELISA method. If serum TSH was abnormal, f T_3 and f T_4 levels and anti- TPO antibody levels were checked. The reference ranges used in this study were per the guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. As per regulation 14.2 of ATA guidelines, the following normal reference ranges are recommended: 1st trimester - 0.1 to 2.5m IU/L, 2nd trimester - 0 .2 to 0.3 m IU/L & 3rd trimester – 0.3 to 3.0 m IU/L. The normal range for free T4 level was taken as 0.7 to 1.8 ng/ml and free T3 levels as 1.7 To 4.2 pg/ml. Anti-TPO antibody levels < 35 IU/ml were taken as usual.

Depending on the hormonal values, patients were classified into

Subclinical Hypothyroidism: High serum TSH level with standard f T_3, f T_4 level.

Overt hypothyroidism: High serum TSH level with f T_3 & f T_4 less than normal range or serum TSH >10 m IU/L irrespective of f T_3 and f T_4 levels.

Subclinical hyperthyroidism: Low serum TSH level with standard f T_3, f T_4 level.

Overt hyperthyroidism: Low serum TSH level with f T_3 and f T_4 more than the normal range

Subclinical/ overt hypothyroid cases were given Thyroxine replacement. Subclinical/ overt hyperthyroid cases were given Propylthiouracil. Every 4 weeks, the TSH level was estimated, and the drug dose was adjusted. Women were followed up throughout pregnancy and monitored. The outcome of the pregnancy was documented.

The maternal outcome was noted in terms of Preeclampsia, Anaemia, Preterm delivery and Caesarean delivery. The fetal outcome was noted regarding IUGR, Low birth weight and IUFD.

Raw data were entered into a Microsoft Excel spreadsheet. Appropriate statistical tests were done using SPSS 17A and openepi.com to compare qualitative and quantitative data. The qualitative data were presented in the form of numbers and percentages, and the quantitative data were presented in the form of mean and standard deviation.

3. Results

Out of the 1000 pregnant women screened, 113 had a thyroid disorder. Thus, this study's prevalence of thyroid disorders was 11.3 % (Fig. 1).

65 % of the women with thyroid dysfunction were between 21–25 years. In addition, 61 % of women with thyroid dysfunction were multipara (Table 1).

In the present study, serum TSH was <0.3μIU/ml in 5 women and >3μIU/ml in 108 women. AntiTPOAb was positive in 11 cases of hypothyroidism. The prevalence of SCH, overt hypothyroidism, subclinical hyperthyroidism and overt hyperthyroidism was 9.4 %, 1.4 %, 0.4 % and 0.1 %, respectively. Out of 1000 pregnant women screened, 94 had SCH. Thus SCH was the thyroid disorder with the highest prevalence in pregnant women. Only one pregnant woman had overt hyperthyroidism. Thus it has the least prevalence of 0.1 % (Table 2).

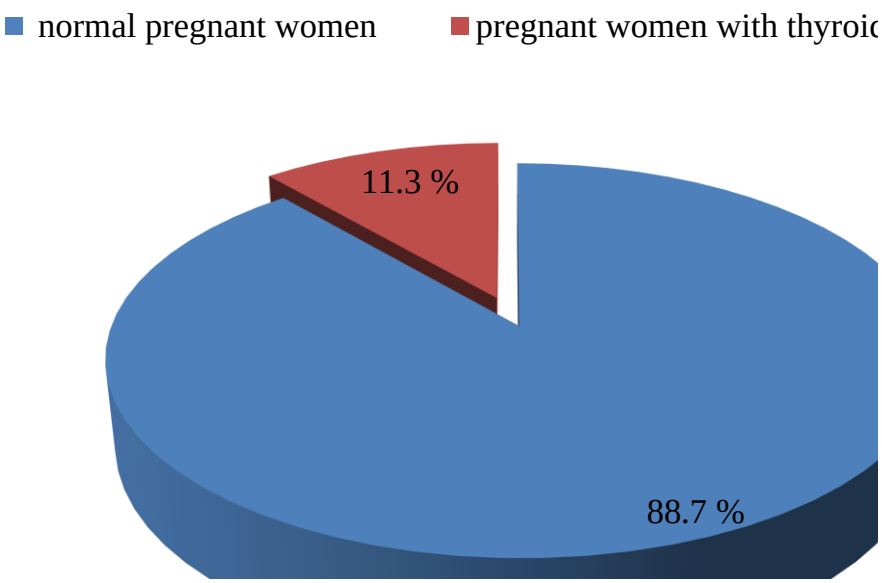

Fig. 1. Prevalence of thyroid disorders in pregnant women

Table 1

Prevalence of types of thyroid disorders among 1000 pregnant woman screened

Age (in years)	No. of total pregnant women	No. of pregnant women with thyroid dysfunction	Percentage	Prevalence
15–20	104	9	7.9	8.6 %
21–25	663	74	65.5	11.2 %
26–30	228	28	24.7	12.2 %
31–35	5	2	1.8	40 %

Table 2

Prevalence of types of thyroid disorders among 1000 pregnant women screened (n=113)

Type of disorder	Number of cases	Percentage
Subclinical hypothyroidism	94	9.4
Overt hypothyroidism	14	1.4
Subclinical hyperthyroidism	4	0.4
Overt hyperthyroidism	1	0.1
Total	113	11.3

Out of 94 cases of SCH, 15 cases had anaemia (15.95 %), 13 cases had PE (13.8 %), 6 cases had PTD (6.38 %), and 16 cases had CD (17 %) (Table 3).

Out of 94 cases of SCH, 9 cases had LBW babies, constituting 9.57 % of the total cases of subclinical hypothyroidism. 4 cases had IUGR (4.2 %), and 2 cases had IUFD (2.1 %). Three cases of IUGR had PE, and 2 cases of IUFD had PE and abruption placenta.

Among 14 cases of overt hypothyroidism, 3 cases delivered LBW babies (21.4 %), 2 cases had babies with IUGR (14.3 %), and IUFD was seen in only 1 case (7.14 %).In both cases of IUGR, PE was present. IUFD was due to congenital anomalies.

Out of 04 cases of subclinical hyperthyroidism, 1 had IUGR, and 1 had IUFD. Both IUGR and IUFD were seen in the woman with PE (Table 4).

Table 3

Maternal complications associated with thyroid disorders (n=113)

Complications	Number of cases	Percentage
Subclinical hypothyroidism		
Preeclampsia	13	13.8 %
Preterm delivery	6	6.38 %
Anaemia	15	15.95 %
Caesarean delivery	16	17 %
overt hypothyroidism		
Preeclampsia	2	14.28 %
Preterm delivery	2	14.28 %
Anaemia	3	21.4 %
Caesarean delivery	4	28.57 %
subclinical hyperthyroidism		
Preeclampsia	1	25 %
Preterm delivery	1	25 %
Caesarean delivery	2	50 %

Among 108 pregnant women with hypothyroidism, both overt and subclinical together, PE was seen in 15 (13.8 %), anaemia in 18 (16.6 %), PTD in 8 (7.4 %), IUGR was seen in 6 (5.55 %), LBW in 12 (11.11 %), IUFD in 3 (2.77 %) and 20 women delivered by CD (18.5 %), Among 5 pregnant women with hyperthyroidism both overt and subclinical together, 1 had PE (20 %), 1 had PTD (20 %), 1 had IUGR (20 %), 1 had IUFD (20 %) and 2 delivered by CD (40 %) (Table 5).

Table 4

Fetal complications among 94 cases of SCH

Complications	No. of cases	Percentage
Subclinical hypothyroidism		
IMAGE	4	4.2
LBW	9	9.6
IUFD	2	2.1
Overt hypothyroidism		
IMAGE	2	14.3
LBW	3	21.4
IUFD	1	7.1
Subclinical hyperthyroidism		
IMAGE	1	25
IUFD	1	25

Table 5

Incidence of complications and CD among 108 hypothyroid and 5 hyperthyroid pregnant women (n=113)

Complications	Percentage of hypothyroid pregnant women, %	Percentage of hyperthyroid pregnant women, %
PE	13.8	20
Anaemia	16.6	0
PTD	7.4	20
IMAGE	5.5	20
LBW	11.1	0
IUFD	2.8	20
CD	18.5	40

Preeclampsia: 13 cases with SCH, 2 cases with overt hypothyroidism, and 1 with subclinical hyperthyroidism developed PE with an incidence of 14.1 %.

Anaemia: 15 cases with SCH and 3 with overt hypothyroidism had anaemia with an incidence of 15.9 %.

Preterm delivery: 6 cases with SCH, 2 with overt hypothyroidism and 1 with subclinical hyperthyroidism had PTD, making the incidence of PTD 7.9 %.

Caesarean delivery: 16 cases with SCH, 4 cases with overt hypothyroidism, and 2 cases with subclinical hyperthyroidism delivered by CD, making the incidence of CD 19.5 %. Fetal distress (55 %) was the common indication (Fig. 2).

IUGR: Seen in 4 cases with SCH, 2 cases with overt hypothyroidism and 1 with subclinical hyperthyroidism, the incidence of IUGR 6.19 %.

IUFD: 2 cases with SCH, 1 with overt hypothyroidism, and 1 with subclinical hyperthyroidism had IUFD with an incidence of 3.53 %.

LBW: 9 cases with SCH and 3 cases with overt hypothyroidism had LBW babies with an incidence of 10.61 % (Fig. 3).

LBW was the most common fetal complication observed.

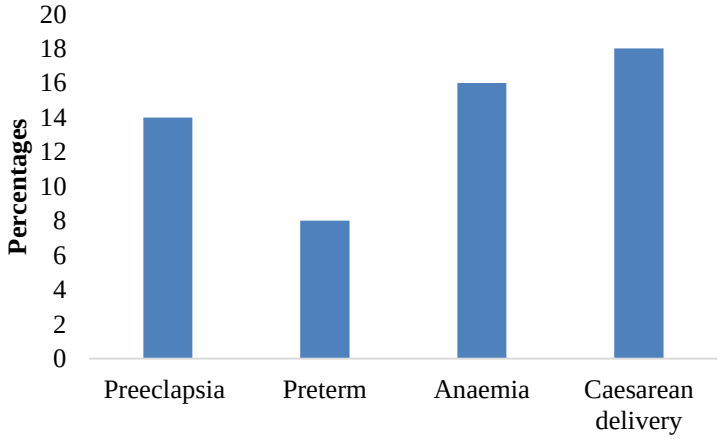

Fig. 2. Incidence of maternal complications and CD in 113 pregnant women with thyroid disorders

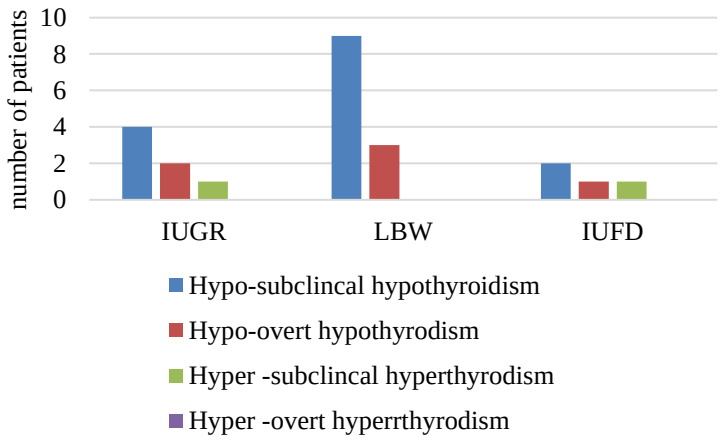

Fig. 3. Fetal complications in 113 pregnant women with thyroid disorders

4. Discussion

In the present study, universal screening was done. ATA recommends antenatal screening for thyroid disorders only in women with high-risk factors. A study done by Dave et al. [4] concluded that there is a significant correlation between risk factors and hypothyroidism. However, screening only high-risk women failed to detect most pregnant women with thyroid disorders.

In this study normal range for serum TSH was taken as per ATA recommendation, first trimester: 0.1–2.5 m IU/L, second trimester: 0.2–3.0 m IU/L and third trimester: 0.3–3 m IU/L Study done by Stricker et al. [5] concluded that interpretation of serum TSH value using non-pregnant reference intervals could potentially result in misclassification of a significant percentage of results.

The prevalence of thyroid disorders in pregnancy and the maternal and fetal complications in pregnant women with thyroid disorders varies significantly in different regions depending upon many factors, and it is difficult to derive a single figure.

The prevalence of thyroid disorder in pregnancy in the present study was 11.3 % which is comparable to the studies conducted by Sarala Devi.R. et al. [5] (11.6 %), Ajmani et al. [6] (13.2 %), Aditi.P.Kaundinya et al. [7] (13.2 %), Saki.F. et al. [8] (15.2 %). On the other hand, the prevalence of thyroid disorder in a study conducted by Thanuja et al. [9] (5 %) was less because women with a history of thyroid disorders and women on treatment for thyroid disorders were excluded from the study. In contrast prevalence of thyroid disorders was found to be high in a study done by Rajput et al. [10] (26.5 %) because the study group was from the endemic region (Table 6).

Table 6

Comparison of prevalence of thyroid disorders in different studies

Study	Prevalence, %
Present study	11.3
Saki. F. et al [8]	15.2
Ajmani et al [6]	13.25
Aditi.P.kaundinya et al [7]	13.2
Sarala devi.R. et al [5]	11.6
Thanuja et al [9]	5
Rajput et al [10]	26.5

The prevalence of subclinical hypothyroidism in pregnancy in the present study was 9.4 % which is similar to other studies conducted by Ajmani et al. [6] (9 %), PV Bandela et al. [11] (10 %), Saki et al. [8] (11.3 %) and Aditi. P. Kaundinya et al. [7] (7 %).

The prevalence of overt hypothyroidism in pregnancy, according to the present study, was 1.4 % which is consistent with the studies conducted by Rajput et al. [10] (1.3 %), Thanuja et al. [12] (1 %), Alpana Singh et al. [13] (1.5 %) and Vidya A Thobbi et al. [14] (2 %) (Table 7).

The prevalence of hypothyroidism during pregnancy has a wide geographical variation. Data from western countries indicate that overt hypothyroidism complicates up to 0.3–0.5 % of pregnancies, and the prevalence of subclinical hypothyroidism is estimated to be 2.5 %. In India, the prevalence of hypothyroidism in pregnancy is much higher compared to western countries. In developing countries like India, the most common cause of hypothyroidism in pregnancy is iodine deficiency. In India, the entire population is prone to Iodine deficiency disorders due to the deficiency of iodine in the soil and, consequently, the food derived from it. To combat the risk of IDD, salt fortified with iodine is being supplied in place of common salt as part of NIDDCP, a programme of GOI. The prevalenceHowever, prevalence varies widely among various states in India, as we still face iodine deficiency in many parts of the country. Hashimoto's thyroiditis is the most common cause of hypothyroidism in iodine-sufficient areas.

Table 7

Comparison of prevalence of disorders in different studies

Study	Prevalence, %
subclinical hypothyroidism	
In this study	9.4
Ajmani et al [6]	9
PV Bandela et al [11]	10
Aditi.P.Kaundinya et al [5, 7]	7
Saki et al [8]	11.3
Overt hypothyroidism	
Present study	1.4
Rajput et al [10]	1.3
Thanuja et al [9]	1
Alpana Singh et al [13]	1.5
Vidya A Thobbi et al. [14]	2
subclinical hyperthyroidism	
Present study	0.4
Jayati Nath et al [15]	0.5
Saki.F.et al. [8]	0.3
Ajmani et al. [6]	0.75
NVR Murthy et al. [16]	0.22
Overt hyperthyroidism	
Present study	0.1
Rajput et al. [10]	0.4
Ajmani et al. [6]	0.5
NVR Murthy et al. [16]	0.8
Aditi P Kaundinya [7]	0.8

The presence of goitrogens in diet and micronutrient deficiency such as selenium and iron deficiency may cause hypothyroidism and goitre. Thus, differences in food habits also contribute to differences in the prevalence of thyroid disorders.

In the sub-mountain areas (Kashmir to North East India), the geo-chemical nature is a deficiency of iodine and micronutrients due to glaciations, high rainfall and floods leading to the decreased iodine content in soil and water is considered to be the cause of the increased prevalence of hypothyroidism in these regions. In the present study, most women with thyroid disorders were from Hyderabad, Medchal and Rangareddy districts, and few were from surrounding districts. Hence, the prevalence of thyroid disorders in the present study was less than in a few other studies whose study population was from north India.

Poverty, insufficient iodine supplementation and fluorinated water may cause thyroid disorder among pregnant women.

The prevalence of subclinical hyperthyroidism, according to the present study, was 0.4 % which is in correlation with the studies conducted by Jayati Nath et al. [15] (0.5 %), Saki.F.et al. [6] (0.3 %), NVR Murthy et al. [16] (0.22 %) and Ajmani et al. [7] (0.75 %). On the other hand, the prevalence of overt hyperthyroidism, according to the present study, was 0.1 % which is slightly less than that of studies conducted by Rajput et al. [11] (0.4 %), Ajmani et al. [7] (0.5 %), NVR Murthy et al. [16] (0.8 %) and Aditi P Kaundinya et al. [7] (0.8 %).

Thyroid diseases are more prevalent in women of childbearing age and are thus commonly present in pregnancy and the puerperium. Due to impaired function of the endometrium, corpusluteum and placenta, uncorrected thyroid disorders in pregnancy adversely affect fetal and maternal well-being. Therefore, women with a thyroid disorder, both overt and subclinical, are at increased risk of pregnancy-related complications such as anaemia, PE, PTD, LBW, IUGR and IUFD.

In the present study, **subclinical hypothyroidism** in pregnancy was associated with the complications like PE (13.8 %), Anaemia (15.95 %), PTD (6.38 %), IUGR (4.25 %), LBW (9.5 %) and IUFD (2.12 %). 17 % of SCH pregnant women were delivered by CD.

In the present study, the incidence of PE in the pregnant woman with SCH was 13.8 %, which is comparable with the study done by Anitha Sannaboraiah et al. [17] (15 %).

The incidence of anaemia in pregnant women with SCH was 15.95 %, which is inconsistent with the study done by Ajmani et al. [6]. 6.38 % of pregnant women with SCH had PTD in the present study, which correlates with studies done by Ajmani et al. [6] (5.8 %) and Aditi.P.Kaundinya et al. [7] (8.5 %). 4.25 % of pregnant women with SCH had IUGR in the present study in association with the studies done by Ajmani et al. [6] (4.9 %) and Anitha sannaboraiah et al. [17] (5 %). The incidence of LBW in pregnant women with SCH was 9.5 %, which is concurrence with Aditi's studies. P. Kaundinya et al. [7] (8.5 %) and Ajmani et al. [7] (12.11 %). LBW was the most common fetal complication associated with SCH in all the studies. In the present study, the incidence of IUFD in pregnant women with SCH was 2.12 % which is in correlation with studies done by Sahu MT et al. [3] (2.5 %) and Ajmani et al. [6] (1.7 %). In the present study, 17 % of pregnant women with SCH were delivered by CD in association with the study done by Ajmani et al. [6] (16.6 %). In this study, **overt hypothyroidism** in pregnancy is associated with the complications like PE (14.28 %), anaemia (21.4 %), PTD (14.28 %), IUGR (14.28 %), LBW (21.4 %) and IUFD (7.14 %). The incidence of CD was 28.5 %.

The incidence of PE (14.28 %) in pregnant women with overt hypothyroidism in the present study is in concurrence with studies done by Sarala Devi R et al. [5] (14.28 %) and Ajmani et al. [6] (16.6 %).

The incidence of anaemia in pregnant women with overt hypothyroidism was 21.4 % in the present study, which is higher than the study done by Ajmani et al. [6] (8.3 %) and lower than the Rooplekha et al. [18] study (60 %). This may be because of the difference in the prevalence of anaemia in different regions.

In the present study, 14.28 % of pregnant women with overt hypothyroidism had PTD, which is in association with the study done by Aditi P Kaundinya et al. [8] (10.5 %) and Saraladevi R et al. [5] (10.71 %). In the present study, 14.28 % of pregnant women with overt hypothyroidism had IUGR, which is in correlation with the studies done by Sahu MTet al [3] (13.8 %) and Saraladevi R et al. [9] (10.71 %). LBW, with an incidence of 21.4 %, was the most common fetal complication associated with overt hypothyroidism, inconsistent with the studies done by Aditi P Kaundinya et al. [7], Ajmani et al. [6] and Rooplekha et al. [18]. The incidence of IUFD in the present study was 7.14 % which is comparable with the studies done by Sahu MT et al. [3] (2.9 %) and Sarala Devi R et al. 9 (3.57 %).

The present study delivered 28.57 % of overt hypothyroid women by CD. The incidence of CD in the studies done by Ajmani et al. [6] and Rooplekha et al. [18] was 41.6 % and 60 %, respectively. The variability in the incidence of CD in these studies may be because of the difference in the overall incidence of CD and other complications which necessitate CD in pregnant women in different places in the country. Incidence of CD included CD conducted for all indications.

The incidences of the complications varied in different studies, but some studies are comparable. In the present study, the incidence of CD in hypothyroid pregnant women, both overt (28.57 %) and subclinical (17 %), was 18.5 %. Fetal distress was the most common indication. In the study done by Rooplekha et al., the incidence of CD in SCH and overt hypothyroid pregnant women was 22.5 % and 60 %, respectively. Alpana Singh et al. showed the incidence of CD as 39.28 % and 13.84 % in hypothyroid pregnant women. Ajmani et al.'s study also showed a high incidence of CD, 16.6 % and 41.6 % in SCH and overt hypothyroid women, respectively. Thus the incidence of CD was high in all the studies, with fetal distress as the most common indication. It has been suggested that hypothyroidism may exert irreversible effects on the fetus and placenta in early pregnancy, which impair their subsequent ability to tolerate stress, thereby increasing the incidence of fetal distress in labour.

In the present study, subclinical hyperthyroidism was associated with complications like PE (25 %), PTD (25 %), IUGR (25 %) and IUFD (25 %), and incidence of CD was 50 %, overt hyperthyroidism was not associated with any complication probably because of reasonable thyroid control with medications. Thus, overall, the incidence of PE, PTD, CD, IUGR and IUFD in pregnant women with hyperthyroidism, both overt and subclinical, was 20 %, 20 %, 40 %, 20 % and 20 %, respectively. Although hyperthyroidism in pregnancy is uncommon, its effects on both mother and child are critical.

In the study done by Saraladevi R et al. [5], the incidences of PE (11.11 %), PTD (5.55 %), IUGR (11.11 %) and IUFD (5.55 %) in pregnant women with hyperthyroidism are less than the present study probably because of early detection and reasonable thyroid control. According to Saki et al. [8] study, the incidence of IUGR in pregnant women with hyperthyroidism was 22.2 %, comparable to this study (20 %).

In the present study, 40 % of pregnant women with hyperthyroidism had CD, inconsistent with the study conducted by Ajmani et al. [6] (50 %). The incidence of complications varied in different studies, but all these studies reinforced that pregnancy with thyroid dysfunction has adverse maternal and fetal complications.

Limitations of this study:

– the thing to mention about this study, all cases were not screened for thyroid antibodies.

– anaemia might have been present in the study population before conception.

– incidence of caesarean delivery in women with thyroid disorders included CDs conducted for different indications.

– follow-up beyond the newborn period is not done as after discharge, most women and infants did not come for follow-up.

– as most of the women are attending the outpatient department from the second trimester, screening and initiation of treatment for thyroid disorders were done in the second trimester, and the adverse effects would have already started.

Prospects for further research. Current recommendations suggest targeted TSH screening for women at high risk for thyroid disease before or during early pregnancy. Recommendations also focus on TPOabs-positive and negative women. It states that the risk of pregnancy loss is more in TPOabs- positives at 1st trimester cut-off TSH and more so need further studies. The Task Force advocates the evaluation of TPOabs for asymptomatic women with higher TSH in the first trimester. In this study, we have not carried out the TPOabs status of study subjects.

5. Conclusion

This study showed a high prevalence of thyroid disorders (11.3 %). Hypothyroidism (10.8 %) was more common in pregnant women. Thyroid disorders in pregnancy are significantly associated with both maternal and fetal complications and adversely affect the outcome of pregnancy. Hence, early identification of thyroid disorders and timely initiation of treatment is essential.

Universal screening of pregnant women for thyroid disorders should be considered, especially in a country like India, where there is a high prevalence of undiagnosed thyroid disorders. Only 3 of 97 women newly diagnosed with thyroid dysfunction had a family history of thyroid dysfunction. Hence, screening has to be done even in women without a family history.

Screening has to be done at the earliest, preferably in the first trimester, but even if missed in the first trimester, it should be considered in later gestation also, as maintenance of thyroid hormones in the normal range at least in later gestation also decreases the incidence of complications. Antenatal women with known thyroid disorders should also be monitored regularly with serum TSH or free T_4 levels, as the thyroid hormone requirement changes with gestation.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this article.

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