

## Pattern, Clinical Presentation and Pregnancy Outcome of Thyroid Diseases in Pregnant Women at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia from June 2010 to June 2015

Kurabachew Debebe<sup>1\*</sup>, Gashayeneh Genetu<sup>1</sup>, Yeweyenhareg Feleke<sup>2</sup> and Tedla Kebede<sup>2</sup>

<sup>1</sup>Department of Internal Medicine, School of Medicine, College of Health Sciences, Addis Ababa University, Ethiopia

<sup>2</sup>Endocrinology and Metabolism Unit, Department of Internal Medicine, School of Medicine, College of Health Sciences, Addis Ababa University, Ethiopia

\*Corresponding author: Kurabachew Debebe, Department of Internal Medicine, School of Medicine, College of Health Sciences, Addis Ababa University, Ethiopia, Tel: +251921577796; E-mail: kuradebe123@gmail.com

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### Abstract

**Background:** The major disorders of thyroid gland are hypothyroidism and hyperthyroidism and thyroid disorders are predominantly of autoimmune etiology in pregnant women. To date there is no study done in Ethiopia to show pattern and pregnancy outcomes of pregnant women with thyroid disorders.

**Objectives:** To assess pattern of thyroid diseases, thyroid function test profiles, clinical presentations and pregnancy outcomes in pregnant women at National Endocrine Referral Clinics of Tikur Anbessa Specialized Hospital.

**Methods:** A retrospective study was conducted at National Referral Endocrine Clinics of TASH from June 2010 to June 2015. All pregnant women with thyroid disorders were included in the study and patients' charts were retrieved from follow up clinics and hospital archive by two trained residents of Internal medicine using pre-structured data collection tools.

**Results:** Among a total of 1124 patients with endocrine disorders, 670 (59.6%) were patients with thyroid disorders and 9.25% (62) were pregnant women. Among pregnant women with thyroid disorders, majority, 51 (82.2%) were pregnant women with hyperthyroidism with mean (SD) age of 30 ± (6.45) years. Majority of patients with hyperthyroidism, 43(84.3%) were diagnosed to have TMNG followed by Graves' disease. Among pregnant women with hypothyroidism, six were cases of iodine deficiency. The commonly seen symptoms of hyperthyroidism were, anterior neck swelling (94.1%), palpitation (47.1%) and heat intolerance (31.4%). Patients with hypothyroidism, accounted for 17.74% of thyroid diseases in pregnancy and the common symptoms were fatigue and cold intolerance each accounting for 9 (81.8%) of the cases. Most of pregnant women with hyperthyroidism, 37 (72.5%) gave birth to an alive neonate, 11 (21.6%) had abortion and the remaining 3 (5.9%) had IUDF.

**Conclusion:** From our study, most of pregnant women with thyroid disorders were patients with hyperthyroidism. The pregnancy outcome of these patients was generally good.

**Recommendation:** We recommend proper documentation and electronic medical recording to be practiced in the hospital and to have pre-pregnancy counseling for all reproductive age women who have follow up at endocrine referral clinics. We also recommend doing more comprehensive research on pregnancy outcomes of pregnant women with thyroid disorders and neonatal screening for congenital hypothyroidism.

**Keywords:** Thyroid disorders; Pregnancy; Hypothyroidism; Hyperthyroidism

### Introduction

The major disorders of thyroid gland are hypothyroidism and hyperthyroidism which have been reported in around 110 countries of the world and about 1.6 billion people at risk and need some form of iodine supplementation. Most cases of thyroid disorders are seen in Asia, Africa and Latin America [1]. In another study, the overall prevalence of thyroid dysfunction was 24.7% [2]. According to a study done by El Hassene Sidibe in sub Saharan Africa, Women are mainly affected by thyroid diseases (94.2%), most often with euthyroid goiters

(54.7%) [3]. Thyroid disorders are predominantly of autoimmune etiology in pregnant women [4]. Hypothyroidism, both overt and subclinical, is common in women of reproductive age and during pregnancy, with frequencies ranging from 0.3% to 2.5% [5] and Hypothyroidism in pregnant women is commonly associated with Hashimoto's thyroiditis [4]. In an article done by Vimal Nambiar, the prevalence of hypothyroidism was 4.8% [2].

The prevalence of hyperthyroidism in pregnancy ranges from 0.1% to 0.4%, with Graves' disease accounting for majority of the cases [4,6]. As shown by one case series; prevalence of hyperthyroidism ranges from 0.05% to 0.2% in pregnancy [6]. Other, less common causes of hyperthyroidism in pregnancy include single toxic adenoma, toxic

multinodular goiter (less than 5%), sub-acute thyroiditis, trophoblastic tumor or hydatidiform molar disease (a mass forming in the uterus), iodine induced hyperthyroidism, struma ovarii or thyrotropin receptor activation [6]. Generally speaking, the hypothyroid clinical features in pregnancy are similar to those in non-pregnant women; but in contrary to this, the features of thyroid over-activity during pregnancy may be masked by normal gestational manifestations, such as palpitations, excessive perspiration, dyspnea, and nervousness [7].

According to a study done here in Ethiopia [8]; common symptoms of thyrotoxicosis were: palpitation (96.1%), hot intolerance (81.9%), excessive sweating (74.6%), irritability (71.6%), and weight loss (68.5%) whereas common signs were; goiter (99%), tachycardia (74.6%), fine tremor (52.6%), and warm and moist skin (45.7%). The commonest symptoms of hypothyroidism include: cold intolerance (50.4%), depression (38%), weight gain (32.6%), and constipation (32.6%). Goiter was found to be the commonest physical finding.

There is a known association between hypothyroidism and decreased fertility, as well as increased risk for early and late obstetrical complications, such as increased prevalence of abortion, anemia, gestational hypertension, placental abruption, and postpartum hemorrhages [9]. Hypothyroidism has adverse effects on the course of pregnancy and development of the fetus. Several studies have reported that maternal hypothyroidism is associated with increased risks of abortions, stillbirths, preterm delivery, and pregnancy induced hypertension. Maternal hyperthyroidism during pregnancy is associated with an increased risk of low birth weight, predisposing to neonatal morbidity and mortality. In addition, maternal high-normal free T4 levels in early pregnancy are associated with lower birth weight and an increased risk of small for gestational age (SGA) newborns [5]. Thyroid disorders are common in Ethiopia, especially in the high lands, like many other African countries; according to a research done at Tikur Anbessa Specialized Hospital by Dawit, Feleke et al. the prevalence of hyperthyroidism and hypothyroidism was 61.7% and 34.3% respectively. Many researchers have outlined prevalence of thyroid disorders in pregnant women in Africa and many countries of the world.

So far there is only one study done in Ethiopia to show prevalence of thyroid disorders in pregnant women to be 7% but detailed pattern and pregnancy outcomes was not stated. This study was aimed to assess pattern of thyroid diseases, see thyroid function test profile, outline clinical presentation and assess pregnancy outcomes in pregnant women seen at National Endocrine Referral Clinics of Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia.

## Methods and Materials

A retrospective study was conducted at National Referral Endocrine Clinics of Tikur Anbessa Specialized Hospital; which is the only endocrine referral clinic in the country. The hospital has the National Endocrine Referral Clinics which are active throughout the week and managing diabetic patients and other endocrine cases. The endocrine clinic is separate from diabetic clinics. An average of 100-120 patients have follow-up every week in the endocrine referral clinics; the duration of follow up period varies from 1 week to 16 weeks depending on the clinical conditions of the patient. The Endocrine clinics run by five Endocrinologist as well as fellows and medical residents. The diagnosis of the endocrine patient is usually made in consultation with endocrine consultants of the clinics. All consecutive pregnant women with thyroid diseases were used in the study. Patients' charts were

retrieved from follow up clinics and hospital archive. A five year data was collected using available information from major registration books, appointment registration books and by tracing for pregnancy outcomes in labor ward by two trained residents of Internal medicine supervised by Endocrinologists. The completed data collection tool was checked for completeness, consistency and then coded.

Data was entered into statistical software (SPSS version 20) and analyzed. Descriptive statistics was done for the prevalence of clinical presentations, laboratory and FNAC results and pregnancy outcomes using simple frequencies.

Ethical clearance was obtained from research ethics committee of Department of Internal Medicine, School of Medicine and Institution Review Board of College of Health Sciences of Addis Ababa University. Then formal letter of cooperation was obtained from the Endocrinology and Metabolism unit. The data collected was kept anonymous and coded in numbers and maintained confidentially as per the Helsinki regulation.

## Results

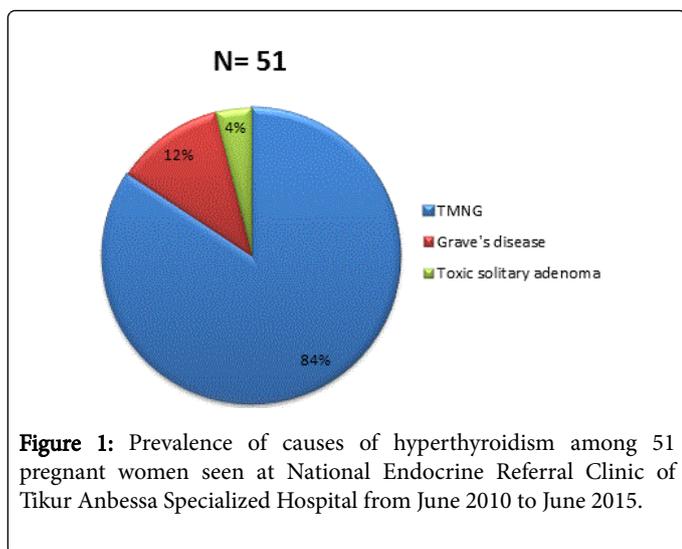
Among a total of 1124 patients seen at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015, 670 (59.6%) were patients with thyroid disorders; of which 374 were eligible (in their reproductive age) and data was collected from 62 patients (16.6%) which in turn makes up 5.5% of total endocrine cases. From the total of 670 patients with thyroid disorders 9.25% were pregnant women. Majority of these 51 (82.2%) were pregnant women with hyperthyroidism. The mean (SD) age (of all pregnant women with thyroid disorders) was 30 ± (6.45) years. Forty six (74.2%) patients were from urban area (Table 1).

Socio-demographic characteristics		Number	Percent (%)
Address	Urban	46	74.2
	Rural	16	25.8
Age	20-30	39	62.9
	31-40	18	29
	>40	5	8.1

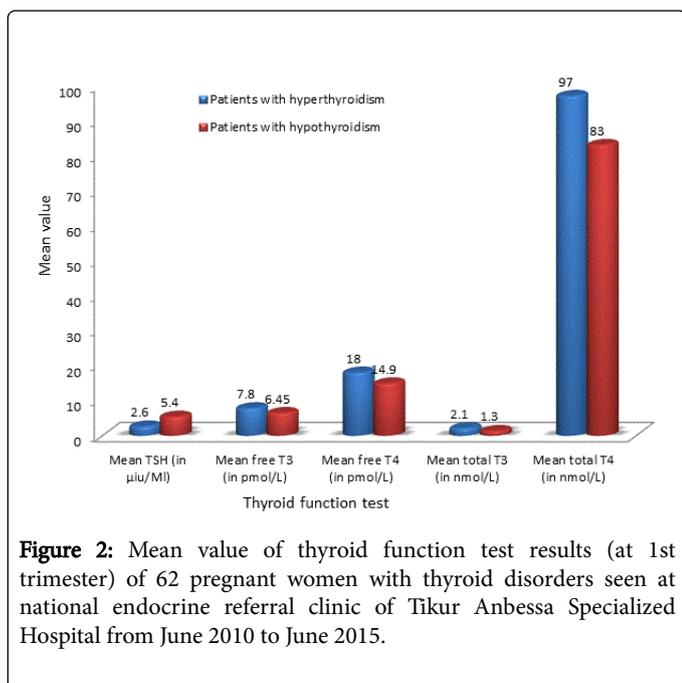
**Table 1:** Socio-demographic characteristics of 62 patients with thyroid diseases seen at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015.

With regard to parity, 19 (30.6%) were para one followed by para two (27.4%) and para three women (25.8%). Duration of thyroid disease before delivery ranges from 3 to 25 years with .mean of 9.37 ± (4.25) years. Of all patients with hyperthyroidism, majority, 43 (84.3%) were diagnosed to have TMNG followed by Graves' disease 6 (11.8%) and toxic solitary adenoma 2 (3.9%); and among 11 pregnant women with hypothyroidism 6 had iodine deficiency (the diagnosis of which was made just clinically), 4 had hypothyroidism following thyroid surgery and only one pregnant mother had hashimoto's thyroiditis (Figure 1).

Thyroid function test of hyperthyroid pregnant women (done in their first trimester) showed low TSH in 56.9% (29) of the cases and normal in 21 (41.2%). About 10% of patients had high free T3 and 27.5% (14) had high free T4 during pregnancy (Figure 2).



**Figure 1:** Prevalence of causes of hyperthyroidism among 51 pregnant women seen at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015.



**Figure 2:** Mean value of thyroid function test results (at 1st trimester) of 62 pregnant women with thyroid disorders seen at national endocrine referral clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015.

The commonly seen symptoms of hyperthyroidism were, anterior neck swelling (94.1%), palpitation (47.1%), heat intolerance (31.4%) and irritability (27.5%) whereas the common signs in our patients

were, thyroid enlargement (84.3%), tachycardia (49%) and hypertension (9.8%). In patients with hypothyroidism, the common symptoms were fatigue and cold intolerance each accounting for 9 (81.8%) of the cases followed by anterior neck swelling 7 (63.3%) and constipation 5 (45.4%) (Tables 2 and 3).

Clinical features		Hyperthyroidism		Hypothyroidism	
		Number	Percent (%)	Number	Percent (%)
Symptoms	Anterior neck swelling	48	94.1	7	63.6
	Palpitation	24	47.1	-	-
	Heat intolerance	16	31.4	-	-
	Irritability	14	27.5	-	-
	Insomnia	8	15.7	-	-
	Excessive sweating	5	9.8	-	-
	Weight loss	4	7.8	-	-
	Fatigue	-	-	9	81.8
	Cold intolerance	-	-	9	81.8
	Constipation	-	-	5	45.4
Signs	Swelling on the face/ extremities	-	-	1	9.1
	Thyroid enlargement	43	84.3	7	63.6
	Tachycardia	25	49	-	-
	HTN	5	9.8	-	-
	Lid lag and lid retraction	3	5.9	-	-
	Periorbital edema	2	3.9	-	-
	Edema	-	-	1	9.1
	Bradycardia	-	-	1	9.1
	Depressed reflexes	-	-	1	9.1

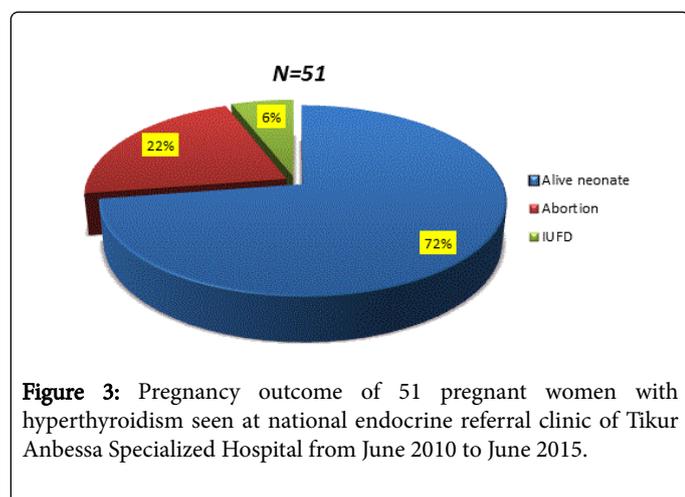
**Table 2:** Common symptoms and signs of 62 patients with thyroid disorders seen at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015.

TFT		Hyperthyroidism		Hypothyroidism	
		Number	Percent (%)	Number	Percent (%)
TSH	Low (<0.25 IU/mL)	29	56.9	0	0
	Normal (0.25-5 IU/mL)	21	41.2	7	53.8
	High (>5 IU/mL)	1	-	4	46.12
	NA*	0	-	0	0
Free T3	Low (<4 pmol/L)	2	-	2	18.2

	Normal (4-8.3 pmol/L)	20	39.2	6	54.5
	High (>8.3 pmol/L)	14	27.5	0	0
	NA*	15	29.4	3	27.3
Free T4	Low (< 9 pmol/L)	5	9.8	2	18.2
	Normal (9-20 pmol/L)	18	35.3	6	54.5
	High (>20 pmol/L)	14	27.5	0	0
	NA*	14	27.5	3	27.3
Total T3	Low (<0.92 nmol/L)	1	-	0	0
	Normal (0.92-2.33 nmol/L)	8	15.7	4	36.4
	High (>2.33 nmol/L)	5	9.8	0	0
	NA*	37	72.5	7	63.6
Total T4	Low (<60 nmol/L)	1	-	0	0
	Normal(60-120 nmol/L)	10	19.6	4	36.4
	High (>120 nmol/L)	3	-	0	0
	NA*	37	72.5	7	63.6

NA\*: Not Available.

**Table 3:** Thyroid function test results (at 1st trimester) of 62 pregnant women with thyroid disorders seen at National Endocrine Referral Clinic of Tikur Anbessa Specialized Hospital from January 2010 to December 2015.



Birth weight	Number	Percent (%)
Low birth weight (<2500 gm)	5	13.6
Normal birth weight (2500 gm-4000 gm)	32	86.4
Macrosomia (>4000 gm)	0	0
Total	37	100

**Table 4:** Weight of all alive neonates born to women with hyperthyroidism seen at national endocrine referral clinic of Tikur Anbessa Specialized Hospital from June 2010 to June 2015.

Majority of pregnant women with hyperthyroidism, 37 (72.5%) gave birth to an alive neonate, while 11 (21.6%) had abortion and the remaining 3 (5.9%) had IUFD, but it was not possible to get pregnancy outcomes of pregnant women with hypothyroidism (Figure 3). Twenty five (67.6%) of the alive neonates were males and 12 (32.4%) were females; and the overall prevalence of low birth weight was 9.8% (Table 4).

## Discussion

Among thyroid patients seen at national endocrine referral clinic of Tikur Anbessa Specialized Hospital over a period of 5 years, 62 had documented pregnancy and among the pregnant women with thyroid diseases, the majorities were patients with hyperthyroidism (82.2%) with the most common etiology being TMNG (84.3%). This was similar to a study done on pattern of thyroid disorders in the same clinic about four years back [8] and general pattern of thyroid disease in the country [10] although globally Graves disease is the commonest cause of hyperthyroidism in pregnant women [4,6]. Studies show that Hashimoto's thyroiditis is the commonest cause of hypothyroidism in pregnant women [2,4] but this pattern was not demonstrated in our study may be because Ethiopia is a country with high prevalence of iodine deficiency so majority of pregnant women (like the general population) have iodine deficiency as a cause for the hypothyroidism but it's very likely that Hashimoto's thyroiditis cases were misdiagnosed as iodine deficient because we have no facilities to test autoimmune markers (antibodies), unless for research purpose where we do it in collaboration with other universities.

Generally the common manifestations of hyperthyroidism are irritability, heat intolerance, excessive sweating palpitation, weight loss

in spite of increased appetite, increased bowel frequency, tachycardia, fine tremor, warm and moist skin muscle weakness and eye lid lag and/or retraction and the features seen in our patients were consistent with these common presentations; anterior neck swelling, heat intolerance, irritability, tachycardia and HTN [8]. Lid lag and lid retraction are relatively less common presentations in our patients due to low prevalence of graves' disease and anterior neck swelling is the commonest sign and symptom most likely due to the higher prevalence of MNG and its relative ease to be reported by clients and documented by physicians since our study is a retrospective descriptive study.

Majority of pregnant women with hyperthyroidism, (72.5%) gave birth to an alive neonate, while 21.6% had abortion and the remaining 5.9% had IUFD, but it was not possible to get pregnancy outcomes of pregnant women with hypothyroidism and this was one of the major limitations of this study since we are unable to know hypothyroidism related complications of the mother and the neonate and make recommendations accordingly. Among neonates born alive, majority (86.4%) had normal birth weight probably because of fairly significant number of pregnant women had normal free T3 (39.2%) and free T4 (35.2%). In our study only few numbers of neonates were screened for transient hypothyroidism and congenital hypothyroidism although a study done by Feleke et al. [11] showed prevalence of transient hypothyroidism to be 3.6%. Regarding mode of delivery in those who delivered in our hospital, majority delivered by SVD 40 (78.4%); with only 15.7% delivered by C/S (done for obstetric reason) and 6% by assisted vaginal delivery and this was consistent with other studies [12].

As recommended by different guidelines, all pregnant women in our center with hyperthyroidism included in the study were treated with propylthiouracil and cases of hypothyroidism were on thyroxine [13].

### Limitations of the study

As this is a retrospective study, incompleteness regarding clinical presentations, laboratory results and pregnancy outcomes was one of the major problems; others being only limited number of pregnant women have hospital delivery and a significant proportion of them were seen with a new hospital chart where previous patient and illness related records are not available which makes tracing their underlying condition impossible.

### Conclusion

From our study, most of pregnant women with thyroid disorders were patients with hyperthyroidism. The pregnancy outcome of these patients was generally good.

### Acknowledgment

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### References

1. Khan A, Muzaffar M, Khan A, Akhtar S (2002) Thyroid disorders, ethiology and prevalence. *J Med Case Rep* 2: 89-94.
2. Nambiar V, Jagtap VS, Sarathi V, Lila AR, Kamalanathan S, et al. (2011) Prevalence and Impact of Thyroid Disorders on Maternal Outcome in Asian-Indian Pregnant Women. *J Thyroid Res*.
3. Sidibe EH (2007) Thyroid diseases in sub-Saharan Africa. *Santé* 17: 33-39.
4. Karbownik-Lewińska M (2013) Thyroid disorders and pregnancy. *Thyroid Res* 6: A26.
5. Ozdemir H, Akman I, Coskun S, Demirel U, Turan S, et al. (2013) Maternal Thyroid Dysfunction and Neonatal Thyroid Problems. *Int J Endocrinol* 2013: 987843.
6. Earl R, Crowther CA, Middleton P (2010) Interventions for preventing and treating hyperthyroidism in pregnancy. *Cochrane Database Syst Rev* 8: CD008633.
7. Galofre JC, Davies TF (2009) Autoimmune Thyroid Disease in Pregnancy. *J Womens Health (Larchmt)* 18: 1847-1856.
8. Kebede D, Abay Z, Feleke Y (2012) Pattern, Clinical Presentations, and Management of Thyroid Diseases in National Endocrine Referral Clinics, Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. *Ethiopian Medical Journal*.
9. Klubo-Gwiedzinska J, Burman KD, Nostrand DV, Wartofsky L (2011) Levothyroxine Treatment in Pregnancy: Indications, Efficacy, and Therapeutic Regimen. *J Thyroid Res*.
10. Tsegaye B, Ergete W (2003) Histopathologic pattern of thyroid disease. *East Afr Med J* 80: 525-528.
11. Feleke Y, Enquoselassie F, Deneke F, Abdulkadir J, Hawariat GW, et al. (2002) Neonatal congenital hypothyroidism screening in Addis Ababa, Ethiopia. *East Afr Med J* 77: 377-381.
12. Tudosa R, Vartej P, Horhoianu I, Ghica C, Mateescu S, et al. (2010) Maternal and fetal complications of the hypothyroidism-related pregnancy. *Maedica (Buchar)* 5: 116-123.
13. Stagnaro-Green A, Abalovich M, Alexander E, Azizi F, Mestman J, et al. (2011) Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and Postpartum. The American Thyroid Association Taskforce on Thyroid Disease During Pregnancy and Postpartum. *Thyroid* 21: 1081-1125.