

## STUDY ON SERUM FSH AND LH LEVELS IN WOMEN WITH THYROID ISSUES

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Medical Technologies,  
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Baghdad, Iraq.<https://doi.org/10.5281/zenodo.18440547>**How to cite this Article:** Shatha Hamed Jwaïd<sup>1</sup>, Huda Farhan Ahmed<sup>2</sup>, Zahraa Neamah Abbas<sup>3\*</sup> (2026). Study On Serum Fsh And Lh Levels In Women With Thyroid Issues. International Journal of Modern Pharmaceutical Research, 10(2), 01-03.**ABSTRACT**

Thyroid disorders both hypo and hyperthyroidism are frequently seen in women, the incidence of hypothyroidism is being much higher than hyperthyroidism. Reported studies in these two conditions on reproductive physiology in women In women hypothyroidism is associated with delay in the onset of puberty, anovulation, amenorrhea, polymenorrhea, menstrual irregularities, infertility and increased frequency of spontaneous abortions. In hypothyroid women changes in menstrual cycle suggests that thyroid disorders are associated with ovarian hyperactivity like hyperestrogenemia, impaired fertility. The effects of thyroid hormones on the impaired function of reproductive and to great extent is thought to be due to changes in TSH level, whose secretion overlaps with FSH, LH and thus it may have overlapping function. Similar to hypothyroidism, hyperthyroidism may also result in menstrual abnormalities in adult women. The more common manifestations are hypo, poly and oligomenorrhoea; moreover hyperthyroidism in women has been linked to reduced fertility. Reported studies indicate that menstrual disturbances in hyperthyroidism are 2 times more frequent than in normal population.

**KEYWORDS:** hypothyroidism, FSH, LH, hyperthyroidism, Thyroid Issues.**1. INTRODUCTION**

The function of thyroid hormones include modulation of carbohydrates, proteins and fat metabolism, gene expression and also sexual and reproductive function.<sup>[1]</sup> Thus when the thyroid hormone gets out of balance, many body functions are affected. This is why hypothyroidism can mimic many other diseases. Hypothyroidism is caused by insufficient production of thyroid hormones by the thyroid gland. Hypothyroidism has many effects on reproductive system development and function. The reproductive tract appears to develop normally in cretins, thus hypothyroidism during fetal life does not appear to affect the normal development of the reproductive tract.<sup>[2]</sup> Hypothyroidism beginning before puberty causes a delay in onset of puberty followed by an ovulatory cycle in women. In some cases juvenile hypothyroidism, precocious puberty and galactorrhoea have been reported.<sup>[3]</sup> In women hypothyroidism is associated with delay in the onset of puberty, anovulation, amenorrhea, polymenorrhea, menstrual irregularities, infertility and increased frequency of spontaneous abortions. In hypothyroid women changes in menstrual cycle suggests that thyroid disorders are associated with ovarian hyperactivity like hyperestrogenemia, impaired fertility. The effects of thyroid hormones on the impaired function of

reproductive and to great extent is thought to be due to changes in TSH level, whose secretion overlaps with FSH, LH and thus it may have overlapping function.<sup>[4]</sup> Hyperthyroidism is due to overproduction of thyroid hormones. The most common underlying cause of hyperthyroidism is Graves's disease. Children born with neonatal Graves disease have no defects in the reproductive system that can be related to this disease.

Hyperthyroidism occurring prior to puberty has been reported to delay the onset of menses.<sup>[5]</sup> Similar to hypothyroidism, hyperthyroidism may also result in menstrual abnormalities in adult women. The more common manifestations are hypo, poly and oligomenorrhoea; moreover hyperthyroidism in women has been linked to reduced fertility. Reported studies indicate that menstrual disturbances in hyperthyroidism are 2 times more frequent than in normal population.

**2. MATERIALS AND METHODS****2.1. Patients**

The present study is carried out in the department of Biochemistry, Alexandria hospital in Babylon, during the year 2023. The present studies include 40 women patients between the age group 18-45 years out of which 14 are control, 26 are with thyroid disorders. In this 26

thyroid disorder patients 16 are hypothyroid cases and 10 are hyperthyroid cases.

### 2.1.1. The hypothyroid cases have shown the symptoms like

Enlargement of thyroid, Hair loss, Menstrual irregularities, Weight gain, Dry skin, Cold intolerance etc.

### 2.1.2. Enlargement of thyroid

Hair loss, Menstrual irregularities, Weight gain, Dry skin, Cold intolerance etc.

### 2.1.3 Laboratory analysis

All of the measurements were performed in the clinical laboratory that is affiliated with Alexandria hospital in Babylon. Blood samples were collected from all of the patients between 8:00 A.M. and 10:00 A.M. Sample collection: - sample was collected from women patients between the age group 18 – 45 years, during 2nd or 3rd day of menstrual cycle for the estimation of FSH and LH. All Investigations are done by immunoenzymatic assay (AIA) method. By using automated immunoassay system by Vidas and mini vidas in the hospital.

### 2.1.4 In all the cases following hormones are estimated and confirmed the thyroid abnormality

- Tri iodothyronine (T3)
- Tetraiodothyronine (T4)
- Thyroid stimulating hormone (TSH)
- Follicle stimulating hormone (FSH)
- Luteinizing hormone (LH)

## 2.2 RESULTS AND DISCUSSION

### 2.2.1 Results

The present study was done by taking blood samples from 36 women patients who attended to Alexandria Hospital in Babylon for thyroid hormone estimation as per their physician's advice. In all these cases T3, T4 and TSH levels are estimated. All patients belonged to the

Age group 18- 45 years. Careful history regarding their menstrual history, number of children, age of the lost child, signs and symptoms of Hypo/Hyperthyroidism if any, were also recorded. Depending up on their results of T3, T4 and TSH they are categorized into 3 groups.

Group I: - In this group subjects with normal T3, T4 and TSH levels are included, and served as control group. Number of subjects 10. Group II: - In this group subjects with decreased T3, T4 and increased TSH levels are included. Number of subjects 18.

Group III: - In this group subjects with increased T3, T4 and decreased TSH levels are included. Number of subjects 12.

Again in these 3 groups FSH, LH levels are also estimated. In Group I patients the values of FSH, LH of thyroid hormones profile are with in the reported normal levels. Group II patients have shown hypothyroid profile. The LH levels are increase significantly ( $<0.001$ ) with normal FSH levels. All 18 patients have shown hypothyroid symptoms and menstrual irregularities. Out of 16 patients 8 patients had oligomenorrhoea, 3 patients had amenorrhoea, 3 patients had polymenorrhoea, 2 patients had menorrhagia, and 2 patient had normal menstrual cycle. Group III patients have shown hyperthyroid profile. FSH levels though normal, it is significantly lowered, as compared to group II and have very high LH values, All the 12 patients have shown hyperthyroid symptoms and menstrual irregularities. Out of 12 patients, 3 patients had oligomenorrhoea, 1 patient had amenorrhoea, 2 patients had polymenorrhoea, 4 patients had hypomenorrhoea and 2 patients had normal menstrual cycle.

**Table 1: Shows mean concentration of serum TSH and serum T3 and Serum T4 in three group.**

Biochemical parameters	Values of	Group I	Group II	Group III
TSH Normal values 0.2 - 5 mIU/ml	Mean	2.61	10.37	0.13
	'P'value		$< 0.001$	$< 0.001$
T3 Normal Values 0.95 - 2.5 nmol/L	Mean	1.92	1.09	2.43
	'P'value			$< 0.001$
T4 Normal Values 60 - 120 nmol/L	Mean	89.17	67.41	131.15
	'P'valu			NS

**Table 2: Shows mean concentration of serum FSH and serum LH in three group.**

Biochemical parameters	Values of	Group I	Group II	Group III
FSH Normal values $\leq 7.5$ mIU/ml	Mean	5.5	7.6	4.1
	'P'value		NS	$< 0.001$
LH Normal values $\leq 6.5$ mIU/ml	Mean	6.9	12.34	25.19
	'P'value		$< 0.001$	$< 0.001$

### 2.2.2. DISCUSSION

Review of literature and clinical evidence show that

thyroid disorders in women are associated with frequent menstrual disturbances, impaired fertility and unsuccessful pregnancy.<sup>[6]</sup> studies have shown that hypothyroidism may lead to serious disturbances not only in development of the ovarian follicles but also their activity. According to the result obtained in the present study, in hypothyroid women, enhanced basal levels of LH, normal levels of FSH are obtained. It results in alteration of LH: FSH ratio from 1: 1 to 6: 1. The present study also indicates that altered hormonal status of gonadotropins may be responsible for the irregular menstrual cycle, and also may predispose to development of polycystic ovarian syndrome in hypothyroid women. According to Zahringer et al<sup>[7]</sup>, LH secretion was increased in all hyperthyroid patients, while FSH secretion was increased in hyperthyroid men only. In the present study, the mean LH levels in hyperthyroid women are significantly higher than in euthyroid women, Where as FSH levels normal (<20mIU/ml), is significantly lower than in hypothyroid women. The mechanism of increase in serum LH and fall in FSH in hyperthyroid women and the causes of menstrual irregularities in Hyperthyroid women are not very clear.<sup>[8]</sup>

### 2.2.3. CONCLUSION

From the present study it is concluded that there is increased levels of LH with normal FSH in hypothyroid cases, indicating their susceptibility for the development of polycystic ovarian syndrome. There is a normal level of FSH along with increase LH levels in hyperthyroid cases. In both hypo and hyperthyroidism menstrual irregularities and altered gonadotropin patterns are observed, indicating that the thyroid hormones play an important role in reproductive physiology.

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