

## Spectrum of Thyroid Dysfunction in Women of Perimenopausal Age

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### Abstract

### Original Research Article

A prospective study including 100 women of perimenopausal age group (40-55 years) with newly detected thyroid dysfunction were evaluated with Detailed history regarding symptoms and signs of thyroid dysfunction. They were subjected to clinical examination and lab investigations. Dysfunction and subjected to lab investigations. Hypothyroidism was the most common thyroid disorder observed followed by sub-clinical hypothyroidism, hyperthyroidism and least common was sub-clinical hyperthyroidism. Symptoms common to perimenopause and thyroid dysfunction were tiredness, lethargy, weight gain, anxiety and depression which were found in significant number of patients. Significant number of patients had symptoms of thyroid dysfunction which were mimicking perimenopausal hormonal fluctuations. Screening and early detection of thyroid dysfunction will prevent the consequences of overt thyroid disorders avoid unnecessary hormonal treatment for perimenopausal symptoms and its consequences.

**Key words:** Perimenopausal, hypothyroidism, hyperthyroidism, overt hypothyroidism and overt hyperthyroidism.

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## INTRODUCTION

Perimenopause refers to the period around menopause (40-55years)[1]. This includes the period prior to menopause when the endocrinological, biological and clinical features of approaching menopause commence and the first year after menopause. This is the natural transition period which encompasses changes from normal ovulatory cycles to cessation of menses [2]. Perimenopausal age is an important stage in a woman's life. She is exposed to several social and psychological stress factors at this period, external stress factors as well as fluctuating hormonal levels make women vulnerable to various disorders.

Thyroid dysfunction is one of the common disorders that affect perimenopausal women. This can be in the form of overt as well as subclinical hyperthyroidism or hypothyroidism [3].

Symptoms of thyroid disorders often develop so insidiously that they go unnoticed. Main symptoms like obesity, menstrual irregularities, dry skin, anxiety, depression etc. are common to thyroid dysfunction and perimenopausal hormonal fluctuations[4]. Even when symptoms are due to thyroid dysfunction, many a times they are attributed to perimenopausal hormonal fluctuations. During this period hormone levels may widely fluctuate and some of the inherent effects of

estrogen on bone health and endothelial function may also decrease. This leads to treatment with unnecessary medications and omission of required treatment. Similar strategies may also apply to subclinical hypothyroidism and subclinical hyperthyroidism.

Screening for thyroid disorders in perimenopausal age group will help in uncovering subclinical thyroid dysfunction and detection of overt disease. This will prevent progression of subclinical thyroid dysfunction to overt disease where annually around 1 to 4% of subclinical hypothyroid patient's progress to overt disease and 0.5 to 1% of subclinical hyperthyroid patient's progress to overt disease. Timely detection and proper management of these problems will help in reducing the morbidity and preventing further complications. This preventive intervention will play a significant role in prolonging the period of maximum physical energy and optimal physical and mental health. This will also help women to smoothly traverse the perimenopausal period of life and avoid unnecessary medications. This study was undertaken to study thyroid dysfunction in women of perimenopausal age.

### Aims and objectives

To study clinical picture of thyroid dysfunction in women of perimenopausal age group

## MATERIALS AND METHODS

A total of 100 female patients of perimenopausal age group were recruited for the study. Informed consent was taken from all the subjects.

Evaluated for signs and symptoms of thyroid dysfunction and for perimenopausal signs and symptoms. Each individual was then subjected to investigations such as complete haemogram, TPOAb, USG thyroid and FNAC thyroid.

### Inclusion criteria

Women of perimenopausal age group (40 to 55 years) with newly detected thyroid dysfunction.

### Exclusion criteria

Patients already on treatment for the thyroid dysfunction were excluded.

### Statistical method

Descriptive and inferential statistical analysis was carried out in the present study.

### Statistical software

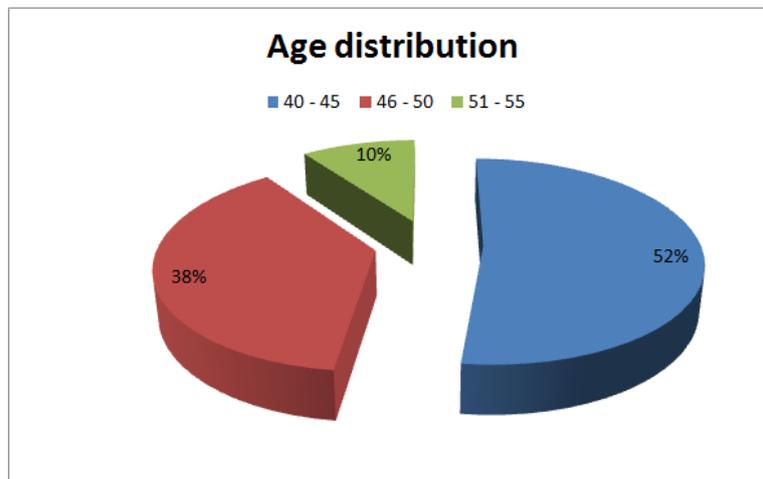
The Statistical software namely SAS 9.2, SPSS 15.0, Stata 10.1, Medcalc 9.0.1, Systat 12.0 and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

## RESULTS

In this study, 100 women of perimenopausal age group were included. Out of 100 Patients, 60 had hypothyroidism, 24 had sub clinical hypothyroidism, 15 had overt hyperthyroidism and 1 had subclinical hyperthyroidism. Highest incidence (52%) of thyroid dysfunction was seen in the age group 40-45 years compared to 48% in 46-55 years. Occurrence of overt hypothyroidism was similar in 40-45 years and 46-50 years age group.

**Table-1: Age distribution of patient studied**

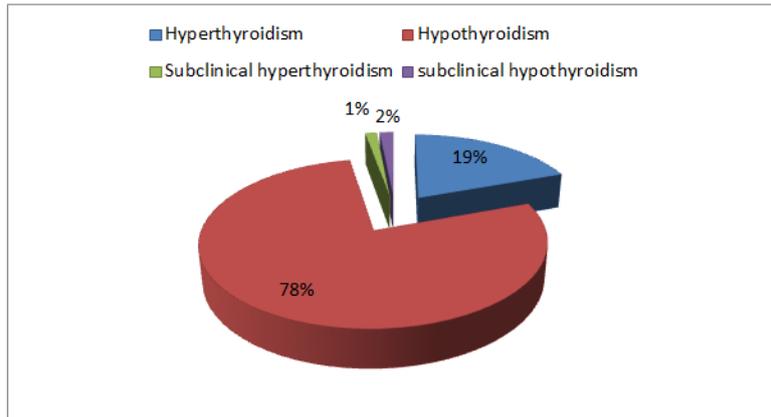
Age in years	%
40-45	52
46-50	38
51-55	10
Total	100



**Fig-1: Age distribution of patient studied**

**Table-2: Spectrum of thyroid disorders**

Diagnosis	%
Hyperthyroidism	15
Hypothyroidism	60
Subclinical hyperthyroidism	1
Subclinical hypothyroidism	24
Total	100



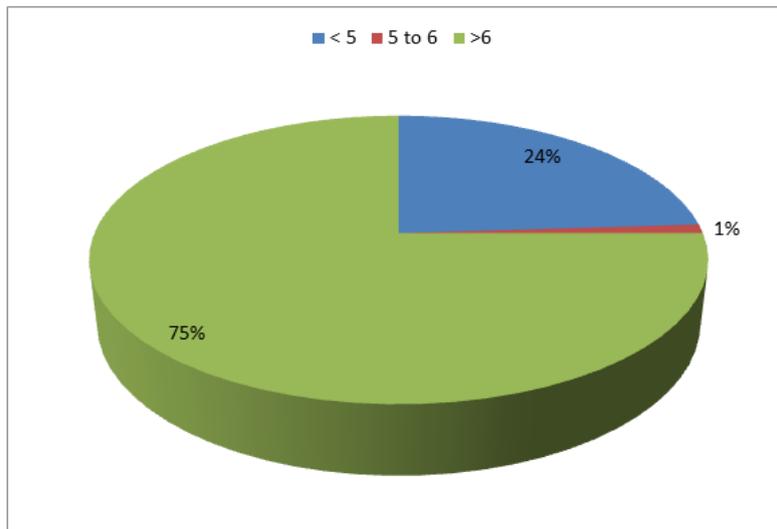
**Fig-2: Spectrum of thyroid disorders**

In this study, 100 women of perimenopausal age group with newly detected thyroid dysfunction were included. out of which 60 had overt

hypothyroidism,24 had subclinical hyperthyroidism,15 had overt hyperthyroidism and 1 had subclinical hyperthyroidism.

**Table-3: TSH levels of patients studied**

TSH	%
<5	24
5-6	1
>6	75
Total	100



**Fig-3: TSH levels of patients studied**

**Table-4: Incidence of goiter**

Goiter	No. of patients	%
No	94	94
Yes	6	6
Total	100	100

**Table-5: FNAC findings of patients studied**

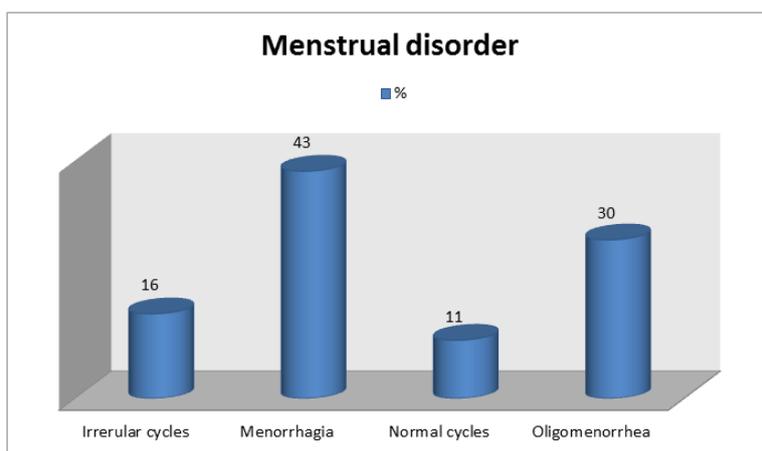
FNAC	No. of patients	%
Colloid goiter	1	16.6
Hashimoto’s thyroiditis	5	83.3
Total	6	100

Goiter was found in 6% of patients. Among which, FNAC showed colloid goiter in 1% and

hashimoto's thyroiditis in 5% patients.

**Table-6: Menstrual disorders in patients studied**

Menstrual disorder	No. of patients	%
Irregular cycles	16	16
Menorrhagia	43	43
Normal cycles	11	11
Oligomenorrhoea	30	30
Total	100	100



**Fig-4: Menstrual disorders in patients studied**

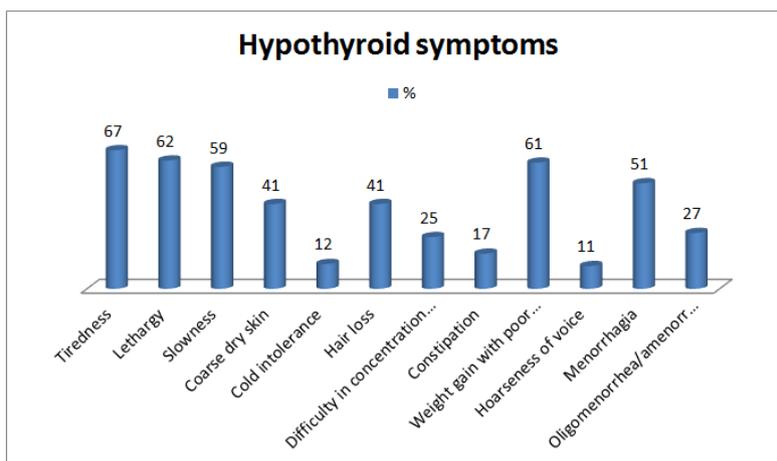
Most common menstrual disorder in this study is menorrhagia seen in 43% of patients, 30% had oligomenorrhoea, 16% had irregular cycles and 11% had normal cycles. (P=0.005, significant, Fisher Exact test).

Among hypothyroid symptoms most commonly observed symptoms were tiredness and weakness 67%. lethargy (62%), weight gain and poor appetite (61%), slowness (59%), difficulty in concentration(25%),menstrual disturbances(78%). Less common symptoms of overt hypothyroidism were

dryness of skin, hoarseness of voice, cold intolerance and constipation. Common signs found in overt hypothyroid patients were coarse dry skin (16%), edema of extremities (8%), alopecia (5%) and hoarseness of voice (4%). Among overt hyperthyroid symptoms most common were oligomenorrhoea (16%) fatigue& weakness (15%), hyperactivity and irritability (15%) heat intolerance and sweating (9%) palpitations, diarrhea (2%), loss of libido (9%). Common hyperthyroid signs were tachycardia (5%), warm moist skin (3%), edema (3%) and tremors (2%).

**Table-7: Hypothyroid symptoms in patients studied**

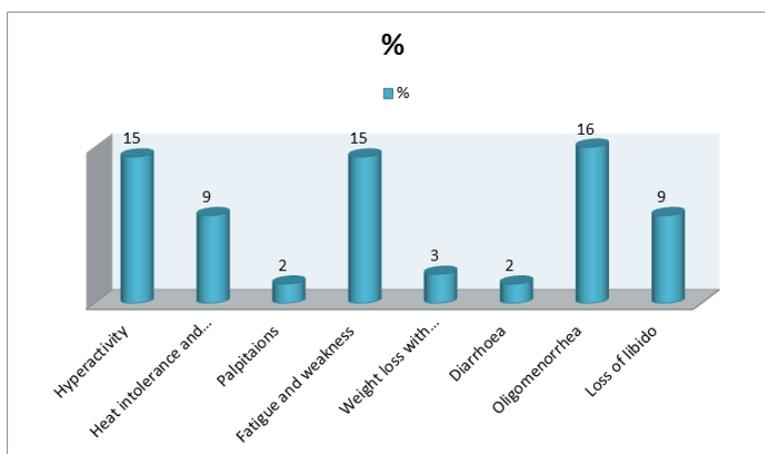
Hypothyroid symptoms	No. Of patients n = 100	%
1.Tiredness,weakness	67	67.0
2.Lethargy	62	62.0
3.Slowness	59	59.0
4.Coarse dry skin	41	41.0
5.Cold intolerance	12	12.0
6.Hair loss	41	41.0
7.Difficulty in concentrating and poor memory	25	25.0
8.Constipation	17	17.0
9.weight gain with poor appetite	61	61.0
10.Hoarseness of voice	11	11.0
11.Menorrhagia	51	51.0
12.Oligomenorrhoea/amenorrhoea	27	27.0



**Fig-5: Hypothyroid symptoms in patients studied**

**Table-8: Hyperthyroid symptoms in patients studied**

Hyperthyroid symptoms	No. of patients (n=100)	%
A.Hyperactivity & irritability	15	15.0
B.Heat intolerance & sweating	9	9.0
C.Palpitations	2	2.0
D.Fatigue and weakness	15	15.0
E.Weight loss with increased appetite	3	3.0
F.Diarrhea	2	2.0
G.Oligomenorrhea	16	16.0
H.Loss of libido	9	9



**Fig-6: Hyperthyroid symptoms in patients studied**

**Table-9: Perimenopausal symptoms of patients studied**

Perimenopausal symptoms	No. of patients (n = 100)	%
Hot flushes	62	62.0
Vaginal dryness	11	11.0
Loss of libido	9	9.0
Weight gain	48	48.0
Anxiety / Depression	36	36.0
Menstrual disturbances	90	90.0
Mood swings/irritability	44	44.0

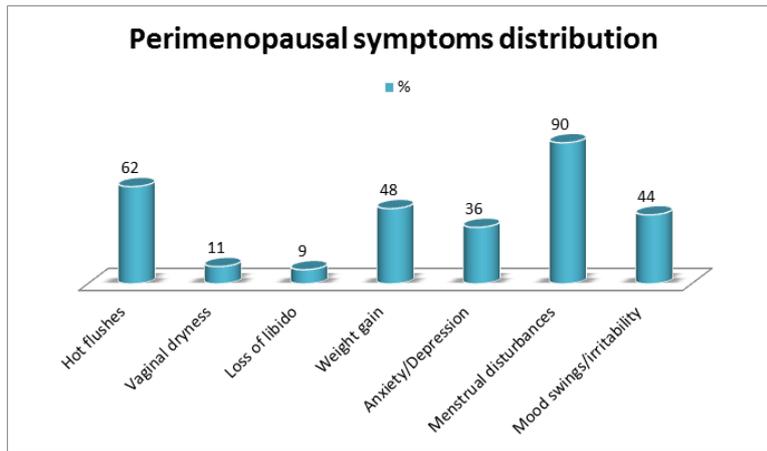


Fig-7: Perimenopausal symptoms of patients studied

Table-10: Distribution of symptoms common to perimenopause and thyroid dysfunction

Perimenopausal symptoms	Diagnosis				Total (n =100)	P-value
	Hyperthyroidism (n = 15)	Hypothyroidism (n = 60)	Subclinical Hypothyroidism(n=1)	Subclinical Hyperthyroidism(n=1)		
Hot flushes	12(75%)	37(61.7%)	13(54.2%)	0(0%)	62(62%)	0.186
Vaginal dryness	1(6.3%)	9(15%)	1(4.2%)	0(0%)	11(11%)	0.499
Loss of libido	7(43.8%)	1(1.7%)	1(4.2%)	0(0%)	9(9%)	< 0.001
weight gain	4(25%)	33(55%)	11(45.8%)	0(0%)	48(48%)	0.145
Anxiety/depression	5(31.3%)	22(36.7%)	9(37.5%)	0(0%)	36(36%)	1.000
Menstrual disturbances	14(87%)	54(90%)	21(87.5%)	1(100%)	90(90%)	
Mood swings/irritability	14(87.5%)	21(35%)	9(37.5%)	0(0%)	44(44%)	-

## DISCUSSION

Thyroid dysfunction has been found to have significant effects on the female reproductive system. A relationship between the thyroid gland and the gonads is suggested by the frequent occurrence of thyroid disorder in women than in men.

While the activity of thyroid gland is closely linked with the process of ovarian maturation, the thyroid gland itself is dependent on direct and indirect stimuli from the ovary to discharge its own function.

Most of the patients of overt hypothyroidism present with menorrhagia and overt hyperthyroidism with hypomenorrhoea. These symptoms are frequently seen during perimenopausal period also.

In the present study, highest incidence (52%) of thyroid dysfunction was seen in the age group 40 – 45 years compared to 48% in 46-55 years. Occurrence of overt hypothyroidism was similar in 40-45 years and 46-50 years age group.

In the present study overt hypothyroidism is the most common thyroid disorder observed in the perimenopausal women by subclinical hypothyroidism, overt hyperthyroidism and subclinical hyperthyroidism.

Sulabha Avinash Joshi *et al* [5]. In their study on perimenopausal and postmenopausal women found that 12.5% of patients were having hypothyroidism, 1.5% being overt hypothyroidism and 11% subclinical hypothyroidism.

In a study by Mary Fran Sowers *et al.* [6], Study of Women across Nation (SWAN), prevalence of hypothyroidism, hyperthyroidism and sub clinical hypothyroidism was found to be 1.45%, 1.17% and 4.75% respectively.

Ayati Sedghesha *et al.* [3]. In their study found that prevalence of sub clinical hypo and hyperthyroidism was 5% & 1% in peri as well as postmenopausal women. Prevalence of sub clinical hypothyroidism was 6.25% among the patients in the age group of 51-60 years.

Most common menstrual disorder observed in the study was menorrhagia which was seen in 43% of patients. 30% of patients had oligomenorrhoea, 16% had irregular cycles and 11% had normal cycles. (P=0.005\*\*, Significant, Fisher Exact test)

In a study done by Yoko Kakuno *et al.* was found that patients with severe hyperthyroidism showed a higher prevalence of amenorrhoea (2.5%) and hypomenorrhoea (3.7%). Patients with severe

hypothyroidism had a higher prevalence (34.8%) of menstrual disturbances [7].

A study conducted on 350 women with different menopausal symptoms showed that 21 women (6%) had hypothyroidism and 18 (5.1%) had hyperthyroidism. Marked improvement in the menopausal-like symptoms occurred after treatment of the thyroid dysfunction. It was found that elderly women with severe or resistant menopausal symptoms can be offered TSH, T3 and T4 assays to rule out the thyroid disturbances before attempting hormone replacement therapy.

## CONCLUSION

Thyroid dysfunction is common in perimenopausal women & the symptoms of thyroid dysfunction mimic the symptoms of perimenopausal hormonal fluctuations.

Women of perimenopausal age group should be screened for thyroid dysfunction as this will prevent the consequences of overt thyroid disorders. This will also avoid unnecessary hormonal treatment for perimenopausal symptoms and its consequences.

## Abbreviations

TPO Ab – thyroid peroxidase antibodies.

USG – ultrasonography.

FNAC – fine needle aspiration cytology.

TSH – thyroid stimulating hormone

T<sub>3</sub> – tri-iodothyronine

T<sub>4</sub> – thyronine

IC – irregular cycles.

M – Menorrhagia

NAC – normal cycles.

OM – oligomenorrhoea

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