



## PREVALENCE OF SUBCLINICAL HYPOTHYROIDISM IN ADULT KASHMIRI POPULATION.

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### ABSTRACT

**Background:** Subclinical hypothyroidism is a common endocrine disorder worldwide as well as in India. The clinical manifestations of hypothyroidism are varied including weight gain, cold intolerance, menstrual irregularities, lethargy, fatigue etc. The clinical spectrum of hypothyroidism varies from asymptomatic subclinical hypothyroidism through overt hypothyroidism to life threatening myxoedema coma.

**Aims and Objectives:** The present study was designed to see the prevalence and distribution of subclinical hypothyroidism in adult Kashmiri population.

**Materials and methods:** The study population consisted of a sample of four hundred healthy Kashmiri subjects aged 20 – 60 yrs of both sexes. Out of this 178 were males and 222 females. A detailed history was taken and general physical examination and systemic clinical examination was done to exclude the subjects known to suffer from any significant non – thyroidal illness or any thyroid related illness. Blood samples (venous) were taken and auto analyzed by the “Elecys 1010 auto analyzer” for estimation of serum levels of T3, T4 and TSH.

**Results:** Out of total 400 subjects studied of whom 45% were males and 55% females, 72 patients (18%) had subclinical hypothyroidism including both males and females with female predominance. Out of 226 females, 54(24%) presented with subclinical hypothyroidism and out of 174 males, 18(11%) were having subclinical hypothyroidism.

**Conclusion:** Subclinical Hypothyroidism is a significant health problem worldwide. Our study gives an idea of prevalence of this entity in adult Kashmiri population. Subclinical as well as overt hypothyroidism is significantly common in this part of the world and early diagnosis is the need of the hour.

**KEYWORDS :** subclinical hypothyroidism, overt, complications, prevalence.

### INTRODUCTION:

Subclinical hypothyroidism is an early, mild form of hypothyroidism, a condition in which the body doesn't produce enough thyroid hormones. It's called subclinical because only the serum level of thyroid stimulating hormone is a little bit above normal. The thyroid hormones produced by the thyroid gland i.e. T3 & T4 are still within the laboratory's normal range. These hormones help support heart, brain, and metabolic functions. According to published research, 8 to 15 percent of people have subclinical hypothyroidism. It's common for the condition to progress to full-blown hypothyroidism. In one study, 26.8 percent of those with subclinical hypothyroidism developed full-blown hypothyroidism within six years of their initial diagnosis.

Subclinical hypothyroidism and full-blown hypothyroidism share the same causes. These include:

- a family history of autoimmune thyroid disease, such as Hashimoto's disease (an autoimmune condition that harms thyroid cells)
- injury to the thyroid (for example, having some abnormal thyroid tissue removed during head and neck surgery)
- the use of radioactive iodine therapy, a treatment for hyperthyroidism (a condition when too much thyroid hormone is produced)
- taking medications that contain lithium or iodine

A variety of other things can also increase the chances of developing subclinical hypothyroidism:

- **Gender.** A study published in Endocrinology and Metabolism showed that women are two to five times more likely to develop subclinical hypothyroidism than men. The reasons aren't entirely clear, but researchers suspect the female hormone estrogen may play a role.
- **Age.** TSH tends to rise as you age, making subclinical hypothyroidism more prevalent in older adults.
- **Iodine intake.** Subclinical hypothyroidism tends to be more prevalent in populations that consume sufficient or excess iodine, a trace mineral essential for proper thyroid function. However, a deficiency in iodine intake could lead to subclinical hypothyroidism.

Subclinical hypothyroidism is diagnosed with a blood test. A person with a normal functioning thyroid should have a blood TSH reading within the normal reference range, which commonly goes up to 4.5mIU/L or 5.0 mIU/L. However, there is debate currently underway in the medical community about lowering the highest “normal” threshold. People with a TSH level above the normal range, who have normal thyroid gland hormone levels, are considered to have subclinical hypothyroidism. Because amounts of TSH in the blood can fluctuate, the test may need to be repeated after a few months to see if the TSH level has normalized.

The connection between subclinical hypothyroidism and cardiovascular disease is still being debated. Some studies do suggest that elevated TSH levels, when left untreated, may contribute to developing: high blood pressure, high cholesterol, congestive heart failure. In one study looking at older men and women, those with a blood TSH level of 7.0 mIU/L and above were at twice the risk or more for having congestive heart failure compared to those with a normal TSH level.

Various studies have shown that subclinical hypothyroidism is associated with hyperlipidemia, neuromuscular and neuropsychiatric symptoms, myocardial dysfunction and decrease in quality of life with progression to overt hypothyroidism. Due to apparently asymptomatic nature of the illness, the “American Thyroid Association”(ATA) has recommended routine population screening of both sexes at age 35 years and then every 5 years thereafter for early detection and treatment of subclinical hypothyroidism

The present study has been done in normal Kashmiri adult population (both males and females). Kashmir also forms a part of “Himalaya Goitre Belt” which stretches from Kashmir to Naga hills in the east, extending about 2400 km and considered to be the biggest goitre belt. The aim of the study was to assess the prevalence of subclinical hypothyroidism in Kashmiri population.

### MATERIAL AND METHODS:

THE PRESENT STUDY IS A CROSS SECTIONAL study to determine the prevalence of hypothyroidism in adults in Kashmir. The present study was designed to measure the serum levels of T3, T4 and TSH in

normal Kashmiri adult population. The study of population consisted of a sample of four hundred healthy Kashmiri subjects aged 20 – 60 yrs of both sexes. A detailed history was taken and general physical examination and systemic clinical examination was done to exclude the subjects known to suffer from any significant non – thyroidal illness or any thyroid related illness. On detailed clinical examination, only those subjects were selected who were ambulatory, in apparently normal nutritional state and without any abnormality.

After obtaining their consent, blood samples were taken from selected subjects. To collect blood sample cubital fossa has been selected and after all aseptic precautions, about 4 ml of blood was drawn from anterior cubital vein and collected in a vacutainer. Then the samples were auto analyzed by the “Elecys 1010 auto analyzer”. The electro chemiluminescence immuno assay “ECLIA” is considered to be highly sensitive method for estimation of serum T3, T4 and TSH levels.

**RESULTS:**

The present study was conducted on 400 subjects who were in the age of 20 – 60 yrs. All the subjects were ambulatory and in apparently normal health. The minimum age of the volunteers was 20 yrs and the maximum age was 60 yrs with an average age of 37.65 ± 13.97 yrs. The minimum weight of the volunteers was 40 kgs and maximum was 85 kgs with an average weight of 59.36 ± 9.62 kgs. The maximum height of volunteers was 141 cms and maximum was 183 cms with an average height of 163 ± 9.43 cms. In group A i.e. subjects aged 20 – 39 yrs, there were 102 (45.10%) males and 124 (54.90%) females. While as in group B i.e. subjects aged 40 – 60 yrs, they were 76 (43.70%) males and 98 (56.30%) females. The distribution of sex with respect to the different age groups was non – significant (Table 1).

Table-1: Comparison of age (yrs) and sex of the studied subjects

Age (yrs)	No. of cases	Male	Female		
				X <sup>2</sup> =0.084	0.772
20 – 39	226	102(45.10%)	124(54.90%)		
				i.d.f	N/S
40 – 60	174	76(43.70%)	98(56.30%)		
Total	400	178(44.5%)	222(55.5%)		

Comparison of T3, T4 and TSH values with the respect to age i.e. group A (20 – 39 yrs) and group B (40 – 60 yrs). The mean T3 values in group A (20 – 39 yrs) was 0.99 ± 0.19 ng/ml while as the mean T3 value in group B (40 – 60 yrs) was 0.95 ± 0.18 ng/ml. On comparing the mean T3 values in group A and group B, the difference was statistically non – significant (P – 104 i.e. P > 0.05). The mean T4 value in group A (20 – 39 yrs) was 8.74 ± 1.92U g/dl. On comparing the mean T4 value in group A and group B, the difference was statistically non – significant (P – 0.092 i.e. P > 0.05). The mean TSH value in group A (20 – 39 yrs) was 2.19 ± 0.93 µIU/ml while as the mean TSH value in group B (40 – 60 yrs) was 2.37 ± 1.00 µIU/ml. On comparing the mean TSH values in group A and group B, the difference was statistically non – significant (P – 0.185 i.e. P > 0.05) (Table 2).

Table-2: Comparing of T3, T4 and TSH values with respect to age (yrs).

		Group A (20 – 39 yrs)	Group B (40 – 60 yrs)	T value	P value	Results
	Variable	Mean ± S.D	Mean ± S.D			
T3	(ng/ml)	0.99 ± 0.19	0.95 ± 0.18	1.63	0.104	NS
T4	(µg/dl)	8.74 ± 1.92	8.48 ± 1.51	1.73	0.092	NS
TSH	(µ IU/ml)	2.19 ± 0.93	2.37 ± 1.00	1.33	0.185	NS

Out of total 400 subjects studied of whom 45% were males and 55% females, 72 patients (18%) had subclinical hypothyroidism including both males and females with female predominance. Out of 226 females, 54(24%) presented with subclinical hypothyroidism and out of 174 males, 18(11%) were having subclinical hypothyroidism.

**DISCUSSION:**

Subclinical hypothyroidism is a common endocrine disorder worldwide as well as in India. The clinical manifestations of hypothyroidism are varied including weight gain, cold intolerance, menstrual irregularities, lethargy, fatigue etc. The clinical spectrum of hypothyroidism varies from asymptomatic subclinical hypothyroidism through overt hypothyroidism to life threatening myxoedema coma. In the recent study, subclinical hypothyroidism has been found to be significantly prevalent in this part of the world. Females are more affected than males. In the recent study overt hypothyroidism has been found to be more common in females than males, prevalence increasing with aging in males as well females. There is a rise in the prevalence of all the thyroid disorders including subclinical hypothyroidism in India post iodization era. However, screening studies have been a rarity in India and there is scanty literature on prevalence of these disorders in all regions of India.

In the present study, we assessed the prevalence of subclinical hypothyroidism in adults from various parts of Kashmir valley. Subclinical Hypothyroidism was found to be affecting 18% of the study population. The subjects with subclinical hypothyroidism were diagnosed for the first time during the course of study-related screening. This suggests that a significant proportion of patient population may go undetected and untreated even as it continues to impair the daily quality of life, work performance and economic productivity of an individual. This prevalence of subclinical hypothyroidism is comparable to the large epidemiologic studies, viz: Framingham, Rotterdam and Colorado studies. The prevalence of subclinical hypothyroidism in our population was higher than many other surveys carried out in various parts of globe. Prevalence was also more in women. These findings call for a general screening for subclinical hypothyroidism at least after the age of 30yrs and the tests may be repeated every 5 years thereof.

**CONCLUSION:**

Subclinical Hypothyroidism is a significant health problem worldwide. Our study gives an idea of prevalence of this entity in Kashmiri population. Subclinical as well as overt hypothyroidism is significantly common in this part of the world. Subclinical hypothyroidism is more common especially in females, usually presenting as vague manifestations.. Subclinical hypothyroidism is associated with hyperlipidemia, neuromuscular and neuropsychiatric symptoms, myocardial dysfunction and decrease in quality of life with progression to overt hypothyroidism. So any subject presenting with undiagnosed fatigue, weight gain and menstrual irregularities should be subjected to TSH screening.

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