

# Hypothyroidism and its relationship to cholesterol levels in premenopausal women: A cross-sectional study

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## ABSTRACT

**Background:** A brief overview of the disease: Thyroid dysfunction is a common premenopausal ailment characterized by subtle signs and symptoms that may go unnoticed for a lengthy period of time. Female hypothyroidism is common in the older population. In patients with SCH, primary hypothyroidism is a prevalent consequence.

**Aim:** To determine the prevalence of thyroid dysfunction and the associated clinical symptoms in premenopausal women who attended gynecology outpatient appointments.

**Methods:** The purpose of this study was to determine the prevalence of thyroid dysfunction and its associated clinical symptoms in premenopausal women who were seen as outpatients in gynecology. The participants in this research ranged in age from 42 to 52 years. Thyroid function and blood cholesterol were measured in all of the SCH patients using an ELISA assay.

**Results:** Seventy women between the ages of 42 and 52 participated in the research. Patients with menorrhagia accounted for 56% of all cases of menstrual disturbance in the study population. Women who experienced oligomenorrhea, a premenopausal symptom, accounted for 40% of the total. Thyroid impairment was shown to be associated with irregular menstruation (80% of cases) and weight gain (80%). Irritability and mood fluctuations (59%) are common (70%) Anxiety and depression are the most prevalent symptoms (58%), followed by the loss of one's job, astonishment (6%) TSH levels were elevated in SCHs, while free T3 and T4 levels remained normal. There were 17 with SCH, 4 with hypothyroidism, and 49 with normal thyroid function. Seventy percent of individuals with SCH had hypercholesterolemia.

**Conclusion:** Our findings encourage regular screening of premenopausal women, regardless of whether or not they are experiencing symptoms. Early detection and treatment of issues can help to avoid difficulties.

**Keywords:** Thyroid dysfunction, premenopausal ailment, hypothyroidism

## INTRODUCTION

This is a vital time in the lives of women. This is a particularly challenging time for women. Women become unwell as a result of stress and hormonal imbalances. It has a lifespan of 42–52 years. During the year preceding and following menopause, endocrinological, biochemical, and clinical indications of imminent menopause begin to manifest themselves. It is common for women to have a shift from regular to irregular ovulatory cycles.

In Pakistan, it is the most common endocrine disease to be found. Thyroid diseases can manifest itself in a variety of ways. In addition to anxiety, depression, and obesity, thyroid disorders and premenopausal hormone shifts can cause a variety of other symptoms. It is possible that SCH will increase the risk of cardiovascular death. Even thyroid disease is frequently associated with the hormonal changes that occur during per menopause. As a result, medications and therapy are being squandered. Hypothyroidism can be caused by similar methods (SCH). A high TSH level in the presence of normal free T3 and thyroxine levels is considered to be SCH (T4).

The likelihood of rapid progress increases with age. Women over the age of 65 are more vulnerable to SCH. In the United States, this condition affects 16% of women over the age of 50. Hypothyroidism was discovered in women with SCH at a rate ranging from 3-18% year. Patients with SCH have elevated cholesterol levels. A new study from the University of Rotterdam has found a relationship between SCH and aortic atherosclerosis and MI. TSH increases cholesterol levels in women by around 0.08 millimoles per litre, or 3–5 milligrammes per deciliter.

Some study connects SCH to elevated cholesterol, although other research disputes this. This study's purpose was to find out how frequent SCH is in perimenopausal women and how it connects to cholesterol.

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## MATERIALS AND METHODS

In this cross-sectional study, the department conducted it after receiving clearance from the institutional ethical committee and after examining the Inclusion and Exclusion Criteria. The research comprised 70 women ranging in age from 42 to 52 who had just been diagnosed with thyroid disease. Patients were examined by doing a thorough history and physical examination. After the patient has fasted for at least 12 hours, 5 mL of venous blood is drawn from the median cubital vein and placed in a basic sterile test tube. There will be no anticoagulants or chemicals. The sample is allowed to coagulate undisturbed for a period of time. After that, the serum is centrifuged. T3, T4, and TSH levels were determined using an ELISA kit, and cholesterol levels were determined using a cholesterol oxidase-peroxidase assay.

## RESULTS

A total of 70 people took part in this study. The study's participants had an average age of 40 years old on average. Sixteen women (22%) had SCH, three (5%) had overt hypothyroidism, and the remaining 51 (73%) had normal thyroid hormone levels, as seen in the pie chart. Menorrhagia was the most often reported menstrual disorder, with 56% of respondents describing it as a problem. Patients with oligomenorrhea accounted for 18% the population, whereas 14% had irregular periods and 13% had normal cycles. Exhaustion (76%), lethargy (75%), weight gain (59%) and decreased appetite are also common symptoms (59%). The lowest serum free T3 level is 1.04 pmols/L, and the highest is 5.9 pmols/L. The median serum free T3 level is 1.04 pmols/L. The serum-free T4 levels range from 3.42 to 19.73 pmols/L, with a mean and standard deviation of 13.33 and 3.48, respectively. TSH levels in the blood range from 1 to 30.31 mIU/L, with a mean of 5.1 and a standard deviation of 5.98. TSH values in the urine range from 1 to 30.31 mIU/L.

Fourteen SCH patients had increased blood total cholesterol levels, whereas seventeen patients had normal serum total

cholesterol levels. Hypercholesterolemia was discovered in 49 of the SCH patients, indicating a statistically significant link between the two conditions.

Premenopausal women with subclinical hypothyroidism Prevalence		
Parameters	Mean	Std. Deviation ( $\pm$ )
Age (years)	40	3.98
FreeT3 (serum)	3.10	1.03
FreeT4 (serum)	13.98	4.42
TSH (serum)	4.7	5.21

## DISCUSSION

TSH levels in SCH are elevated despite normal freeT3 and freeT4 levels. The clinical and biochemical changes that occur in SCH are distinct. The severity of the symptoms varies from moderate to severe. Despite the fact that SCH has a chemical makeup similar to thyroid hormone, some patients experience hypothyroidism symptoms. SCH, or mild thyroid insufficiency, is the first stage of hypothyroidism.

In this study, the most common age group was 42–52 years old, and there was no well-defined treatment for cholesterol abnormalities in younger women. Schroedinger syndrome (SCH) is a hereditary condition that has an effect on the central nervous system (CNS). In our study, 22% of premenopausal women were found to be overweight.

The frequency of our study's findings is high and consistent. Among those who took part in one study, 24 % in the high-iodine group and 4.4 % were in the low-iodine group.

Menorrhagia was the most often reported menstrual disorder, with four persons reporting it. Only six women had regular menstrual periods, whereas 22 women suffered from oligomenorrhea.

Patients with severe hyperthyroidism had a higher frequency of amenorrhea (2.5%) and hypomenorrhea (2.5%). (5% of the total). 3.7% of the population Menstruation was more frequent when it was intermittent (34.8%). The menstrual cycles of 48 hyperthyroid women were irregular, whereas the menstrual cycles of 32 normal-weight women were irregular. Hypomenorrhoids were discovered in 17 women, polymenorrhoids in 16, oligomenorrhoids in 1, and amenorrhoids were not detected in any of the women.

TSH threshold values have been used to identify schizophrenia spectrum disorder. According to Nystrom et al., a TSH threshold of 7 mIU/L is recommended. The TSH level was 7.01 mIU/L, while the free T3 and T4 concentrations were 6.1 and 20.69 pmols/L, respectively. These results were considered normal. SCH was defined as a rise in serum TSH levels more than 6.22 mIU/L in the presence of normal fT3 and fT4 levels in the absence of hypothyroidism. Approximately 20 million Europeans and 12 million Americans are affected with SCH. TSH monitoring has resulted in an upsurge of SCH patients throughout the world. The consequences of undetected thyroid disorders are severe.

## CONCLUSION

Early detection and treatment can reduce morbidity and mortality. SCH and hypercholesterolemia are the leading causes of atherosclerosis and heart attacks. Hyperlipidemia is linked to greater morbidity in SCH, especially in middle-aged women who are uninformed. Premenopausal thyroid screening can identify subclinical thyroid malfunction and diagnose overt disease.

Positive action will have a big impact. This will help women cope with perimenopause and avoid unneeded medication.

**Conflict of interest:** Nil

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