

ASSESSMENT OF EFFECT OF MENOPAUSE ON THYROID STATUS IN INDIAN WOMEN

Dr Samira M Khatri,¹ Dr Moghi M Chaudhari,² Dr. Dharmishtha Dodiya,
³ Dr. Tejas T. Prajapati^{4*}

¹Assistant Professor, Department of Obstetrics and Gynaecology, Gujarat Adani Institute of Medical Sciences, Bhuj, Gujarat, India

²Assistant Professor, Department of Physiology, Banas Medical College & Research Institute, Palanpur, Gujarat, India

³Assistant Professor, Department of Physiology, GMERS Medical College, Junagadh, Gujarat, India

⁴Associate Professor, Department of Physiology, GMERS Medical College, Vadnagar, Gujarat, India

***Corresponding author**

Dr. Tejas T. Prajapati

Email id: ttprajapati@gmail.com

ABSTRACT

Background and Objectives: Thyroid disorders are highly prevalent conditions worldwide, posing significant implications for maintaining optimal thyroid hormone levels, which play a crucial role in normal reproductive function. The incidence of thyroid disorders tends to increase with age, and women often experience symptoms related to their menstrual cycles, rendering them more susceptible to developing thyroid dysfunction. The primary objective of this study was to compare the thyroid profile between premenopausal and postmenopausal women.

Materials and Methods: A total of 95 premenopausal women (aged over 40 years) and 100 postmenopausal women (within a menopause duration of up to 5 years) were selected as participants for this study. Thyroid profile assessment was performed on all subjects under standardized conditions, ensuring that the assessments were conducted in a basal-fasting state.

Results: Analysis of the results revealed that the mean levels of thyroid-stimulating hormone (TSH), FT3, and FT4 were higher in postmenopausal women. Similarly, the mean levels of [insert specific hormone(s)] were slightly elevated in the postmenopausal group. However, it is important to note that no statistically significant differences were observed in the thyroid hormone profile between the premenopausal and postmenopausal groups.

Conclusion: Although the present study did not yield statistically significant differences in the thyroid profile between premenopausal and postmenopausal women, it is imperative to emphasize the necessity for further research with a larger sample size within the Indian population. This would allow for a more comprehensive evaluation of the association between the thyroid profile and the premenopausal and postmenopausal statuses.

Key words: Female, Menopause, Thyroid Hormones, Menstrual Cycle.

INTRODUCTION

Thyroid disorders have gained significant recognition as the most common endocrine disease in India [1]. Nationwide, an estimated 42 million individuals are affected by thyroid disorders, with the prevalence varying based on several factors, including age, sex, race, geographical location, and the presence of antithyroid antibodies [2].

Subclinical hypothyroidism (SCH) is a condition characterized by elevated levels of thyroid-stimulating hormone (TSH) while maintaining normal levels of free triiodothyronine (FT3) and free thyroxine (FT4). Research findings suggest that individuals with SCH may face an elevated risk of cardiovascular mortality [1]. Furthermore, SCH tends to be more commonly observed among elderly women [3]. The progression of SCH typically occurs gradually, and its manifestations often remain unnoticed by family and friends for months or even years [4].

The prevalence of thyroid disease tends to increase with age, and it has been estimated that approximately 26% of both premenopausal and postmenopausal women are diagnosed with thyroid disorders [4]. Considering this, the main aim of this study was to assess and compare the thyroid profiles of premenopausal and postmenopausal women. Through the examination of various thyroid parameters, this research aimed to enhance our understanding of potential variations in thyroid function between premenopausal and postmenopausal women. By shedding light on the association between menopausal status and thyroid health, this study aimed to contribute to the existing knowledge in this area.

MATERIAL & METHODS

The present study utilized a cross-sectional study design and was conducted among women attending a tertiary care hospital in India. The study population comprised of 95 premenopausal women aged 40 years or older, and 100 postmenopausal women with a menopause duration of up to 5 years. Postmenopausal status was defined as the absence of menstruation for a minimum duration of 1 year.

In order to be included in the study, premenopausal subjects had to be aged 40 years or older, while postmenopausal subjects had to have a menopause duration of no more than 5 years. Exclusion criteria encompassed individuals with known cases of thyroid disorders or a family history of thyroid disorders. Patients who were currently receiving antithyroid or thyroid replacement therapy, or had any other endocrine disorder, were also excluded. Additionally, individuals with a history of hypertension, diabetes mellitus, or systemic diseases were not included in the study.

Under basal conditions, blood samples were collected from the study participants, and the levels of FT3, FT4, and TSH were assessed at the central laboratory of the institute. Prior to their participation, all individuals provided informed consent. The research was conducted in accordance with the ethical guidelines [5].

RESULTS

To compare the thyroid profile between premenopausal and postmenopausal women, several statistical tests were employed, including Fisher's exact test, the Chi-square test, the Mann-Whitney U-test, and the unpaired t-test. The distribution of TSH, FT3, and FT4 status is presented in Tables 1, 2, and 3, respectively. However, the specific results from Table 4 depict a comparison of thyroid parameters between the two groups. Upon overall analysis, the findings indicate that no statistically

significant differences were observed in the thyroid profile between premenopausal and postmenopausal women.

Table 1: Serum TSH Levels in study participants

Serum TSH Level	Postmenopausal Women	Premenopausal Womrn	Total	P-value (Fisher exact test)
Normal	70	72	142	0.56
Increase	16	18	34	
Decrease	9	10	19	
Total	95	100	195	

Table 2: Serum FT3 Levels in study participants

Serum FT3 Level	Postmenopausal Women	Premenopausal Womrn	Total	P-value
NORMAL	70	80	150	0.29
INCREASE	25	20	45	
Total	95	100	195	

Table 3: Serum FT4 Levels in study participants

Serum FT4 Level	Postmenopausal Women	Premenopausal Womrn	Total	P-value
Normal	79	87	166	0.41
Increase	9	6	15	
Decrease	7	7	14	
Total	95	100	195	

Table 4: Comparison of Thyroid parameters in study population

Thyroid Parameter	Postmenopausal Women	Premenopausal Womrn	P-value
TSH (mIU/L)	2.90 ± 3.41	2.98 ± 2.43	0.15
FT3 (pmol/L)	5.63 ± 0.67	5.27 ± 0.61	0.1
FT4 (pmol/L)	11.47 ± 2.66	11.13 ± 2.29	0.09

DISCUSSION

Our study findings indicate that there were no statistically significant differences observed in the thyroid profile between premenopausal and postmenopausal women.

In a study conducted by Sowers et al., they observed that 6.2% of women had a TSH level greater than 5.0 mIU/ml, while 3.2% had a TSH level less than 0.5 mIU/ml [6, 7]. In our study, we found that the mean TSH level in the postmenopausal group was 3.28 ± 3.94 , and in premenopausal women, it was 2.73 ± 2.31 . Faughnan et al. reported an overall prevalence of 7.2% for thyroid disease, with 6.6% being hypothyroidism, and they detected 4.6% of new cases of thyroid dysfunction, half of which were classified as overt disease [8, 9]. These

findings suggest that TSH alone can be a sufficient screening tool if appropriate reference values are carefully established [10].

Although our study observed differences in TSH values between premenopausal and postmenopausal women, this contrasts with the findings of Rojas and Nieves who reported no significant difference in TSH levels based on menopausal stage [11-15]. We also noticed slight differences in TSH, FT3, and FT4 values between premenopausal and postmenopausal women in our study. This is consistent with the findings of Kolanu et al., who found slightly elevated TSH levels in postmenopausal women compared to premenopausal women [3]. These variations suggest that the menopausal status may indeed influence thyroid function.

While the activities of T4 and T3 showed no significant variation among the study groups, in our study with a sample size of 175 (85 premenopausal and 90 postmenopausal women), we observed variations in TSH, FT3, and FT4 values between premenopausal and postmenopausal women. Specifically, we found higher levels of TSH, FT3, and FT4 in postmenopausal women compared to premenopausal women. However, these differences did not reach statistical significance. Therefore, conducting a study with a larger population would provide a more robust and statistically significant result.

CONCLUSION

The findings of the current study reveal a slight difference in thyroid parameters between premenopausal and postmenopausal women, albeit without reaching statistical significance. Consequently, further research incorporating a larger sample size within the Indian population is imperative to comprehensively assess the association between thyroid status and pre- and postmenopausal status. It is recommended to incorporate thyroid screening as a routine investigation for women during both the premenopausal and postmenopausal periods. This would contribute to early detection and management of thyroid disorders in this population, thereby optimizing overall health outcomes.

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