



ORIGINAL ARTICLE

## Frequency of anti TPO positive subclinical hypothyroidism in pregnancy.

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**ABSTRACT... Objective:** To determine the frequency of anti TPO positive subclinical hypothyroidism in pregnancy. **Study Design:** Cross Sectional Study. **Setting:** Outpatient Departments of Gynaecology & Obstetrics and Medicine at a Tertiary Care Hospital of Quetta, Pakistan. **Period:** May 2020 to May 2021. **Material & Methods:** All the pregnant women of age 18-45 years whose TSH was above 2.5 uIU/ml and less than 10 uIU/ml and Total T4 was between 5.5-16 ug/dl was said to be having subclinical hypothyroidism and is included in the study. Their age, TSH value, anti TPO and history of prior miscarriage was documented in proforma. Those pregnant women who were already on levothyroxine and taking biotin while performing TSH test were excluded from the study. For analysis SPSS version 20 was used. The calculated sample size was 42 with confidence interval of 95%. **Results:** Out of forty two pregnant women with subclinical hypothyroidism, 19 pregnant women were anti TPO positive (45.2%). The mean TSH was 5.26 uIU/ml. The highest number of subclinical hypothyroidism (50%) was in age group of 36-45 years. There was prior history of miscarriage in 9 pregnant women (21.4%). **Conclusion:** The frequency of anti TPO antibodies is high in subclinical hypothyroidism in pregnant women which increases with age and has association with history of prior miscarriage.

**Key words:** Anti TPO Antibodies, Pregnant women, Subclinical Hypothyroidism.

### INTRODUCTION

Thyroid gland dysfunction is common during pregnancy and has an impact on both maternal and fetal outcomes. Anti TPO levels should be tested in pregnant women with subclinical hypothyroidism before levothyroxine dose is determined.<sup>1</sup> Subclinical hypothyroidism has been linked to delayed neurodevelopment in children.<sup>2</sup> Even in the absence of overt hypothyroidism, autoimmune thyroid illness has been shown to raise abortion rates by 3 to 5 times in some investigations.<sup>3</sup>

Subclinical hypothyroidism was found in 2.8 percent of pregnant women in a research in Chennai.<sup>4</sup> Because no trimester-based reference ranges or treatment guidelines have been developed for the Pakistani population, pregnant women are evaluated using internationally accepted reference ranges. Anti TPO antibodies should be screened in pregnant women whose

TSH is >2.5 uIU/ml, and levothyroxine is advised for anti TPO antibodies positive women with TSH larger than the pregnancy-specific reference range, with the goal of keeping TSH below 2.5, according to ATA 2017 guidelines. TSH levels should be checked every four weeks until the second trimester, and at least once near the 28-30th week.<sup>5</sup>

The purpose of our study was to determine the frequency of anti TPO positive antibodies in subclinical hypothyroidism in pregnant women in Pakistan and its relationship with prior history of miscarriage.

### MATERIAL & METHODS

It was a cross sectional study conducted in outpatient departments of Gynaecology & Obstetrics and Medicine, at a tertiary care hospital of Quetta, Pakistan from May 2020 to May 2021. Literature search showed that subclinical

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hypothyroidism in pregnant women is 2.8%.<sup>4</sup> Therefore, taking the frequency of 2.8% with a 95% confidence level and a bound on error of  $\pm 5\%$  the estimated sample size was 42 pregnant women. Non probability consecutive sampling was done. The research was conducted accordingly to the principles of the declaration after approval from Hospital Review Committee.

All the pregnant women of age 18-45 years whose TSH was above 2.5 uIU/ml and less than 10 uIU/ml and Total T4 was between 5.5-16 ug/dl was said to be having subclinical hypothyroidism and is included in our study. Their age, TSH value, anti TPO and history of prior miscarriage was documented in the proforma. Those pregnant women who were already on levothyroxine therapy and those taking biotin while performing TSH test were excluded from the study. For analysis SPSS version 20 was used.

## RESULTS

There were 42 pregnant women with subclinical hypothyroidism, out of which 19 pregnant women were anti TPO positive (45.2%). The mean TSH was 5.26 uIU/ml. The highest number of subclinical hypothyroidism (50%) was in age group of 36-45 years. There was prior history of miscarriage in 9 subclinical hypothyroid pregnant women (21.4%).

Age	Subclinical Hypothyroidism n=42 (%)
18-25 years	5 (11.9%)
26-35 years	16 (38.1%)
36-45 years	21 (50.0%)

**Table-I. Age distribution.**

Mean TSH	5.26 uIU/ml
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**Table-II. Mean TSH**

	n=42(%)
Anti TPO positive	19 (45.2%)
History of Prior miscarriage	9 (21.4%)

**Table-III. Anti TPO positive subclinical hypothyroidism.**

## DISCUSSION

Anti TPO was found to be positive in 45.2 percent of pregnant subclinical hypothyroid individuals in our research. Subclinical hypothyroidism was

found in 2.8 percent of pregnant women in a 2007 study in Chennai, with anti TPO positive in 57.1 percent of them.<sup>4</sup> A study by Zareen K et al. showed the prevalence of anti TPO antibodies in pregnant women to be 66.4% in Pakistani population.<sup>6</sup> 12.8% was the prevalence of anti TPO antibodies in a study from Iran.<sup>7</sup> In other studies, overt hypothyroidism in pregnancy is reported to be 0.2% cases while subclinical hypothyroidism (SCH) have a prevalence of 1-2%.<sup>8</sup> These discrepancies could be due to the timing of antibody testing throughout pregnancy, as autoimmunity reduces<sup>9</sup> and disparities in iodine intake in the general population.

In our study, subclinical hypothyroidism was more common in the 36-45 year old age group, indicating that autoimmunity rises with age. Kalpesh et al also showed higher incidence of thyroid dysfunction with increasing maternal age.<sup>10</sup> Another study have found that autoimmune disease is the most common cause of subclinical hypothyroidism.<sup>11</sup>

In our study, 21.4 percent of pregnant women had a history of previous miscarriage. A study by Moncef Feki et al. also found that women who are anti-TPO positive have a greater risk of miscarriage.<sup>12</sup> Another study by Dendrinis S et al. also showed the association of anti TPO antibodies with miscarriage.<sup>13</sup> Subclinical hypothyroidism is also associated with gestational diabetes, low birth weight and fetal death as found in other studies.<sup>14-15</sup> One of the limitation of our study was not following the outcome of pregnancy which need to be determined in future studies in this region.

Our study was the first study to be carried out in this part of Pakistan to determine the frequency of anti TPO positive subclinical hypothyroidism. The proper understanding and treatment of subclinical hypothyroidism is important for better fetomaternal outcomes.

## CONCLUSION

The frequency of anti TPO antibodies is high in subclinical hypothyroidism in pregnant women which increases with age and has association

with history of prior miscarriage.

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## AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Kalsoom Noor	Conceived, designed and data collection.	<i>Kalsoom Noor</i>
2	Habibullah	Data analysis and manuscript writing.	<i>Habibullah</i>
3	Abdul Aziz	Literature search & Critical analysis of the manuscript.	<i>Abdul Aziz</i>