

**ASSESSMENT OF PREVALENCE OF THYROID DISORDERS AND FACTORS AFFECTING IT AMONG PREGNANT WOMEN**Sally Bahnam Habeeb<sup>1\*</sup>, Enas Abdulazeez Mislit<sup>2</sup> and Ghada Atallah Mohamad<sup>3</sup><sup>1</sup>Senior Chief General Doctor, M.B.CH.B Higher Diploma Family Medicine Makhmour Center Hwera PHC.<sup>2</sup>Senior Chief General Doctor, M.B.CH.B High Diploma Family Medicine Al-Qayara Health Center PHC.<sup>3</sup>Senior Chief General Doctor, M.B.Ch.B. High Diploma Family Medicine, Al-Ayman Center Maamoon PHC.**\*Corresponding Author: Sally Bahnam Habeeb**

Senior Chief General Doctor, M.B.CH.B Higher Diploma Family Medicine Makhmour Center Hwera PHC.

Article Received on 09/11/2023

Article Revised on 30/11/2023

Article Accepted on 21/12/2023

**ABSTRACT**

**Background:** Thyroid problems are common in pregnant women. This condition is often missed in pregnant women because the symptoms are not specific and because pregnancy causes the body to work really hard. In Western literature, it is found that 2.5% of pregnant women have hypothyroidism and 0.1-0.4% have. This study was done to find out how common thyroid problems are in pregnant women. **Methods:** We picked 200 pregnant women in their first three months of pregnancy for our study. We made sure to get their age and permission first. We included pregnant women who were having their first or multiple pregnancies, were carrying only one baby, and were less than 13 weeks pregnant. We did not include women with a history of pregnancy problems with a known reason, carrying more than one baby, or having diabetes or hypertension. A very complete examination and investigation were done. We didn't just do the usual health and pregnancy tests, we also checked levels of TSH, FT3 and FT4. **Results:** Many pregnant women in their first trimester have a high risk of thyroid problems. 42.5% have mild hypothyroidism, 10.5% have severe hypothyroidism, 38% have mild hyperthyroidism, and 9% have severe hyperthyroidism. The groups that were studied had a big difference in BMI. People who were overweight or obese were more likely to have thyroid problems. **Conclusions:** Many people have thyroid problems, with a lot having mild hypothyroidism, a smaller amount having severe hypothyroidism, and many having mild hyperthyroidism. To make sure both the mom and baby stay healthy, it's important to regularly check the mom's thyroid during pregnancy.

**KEYWORDS:** Chest circumference, Gestational age, Thyroid disorders.**INTRODUCTION**

Thyroid problems are very common during pregnancy. Thyroid problems happen when the mother's thyroid doesn't work well during pregnancy.<sup>[1]</sup>

During pregnancy, many things can cause changes in thyroid hormone levels, including higher levels of hormones like estrogen and human chorionic gonadotropin, more iodine being lost through the kidneys, and changes in how the body uses thyroid hormone. Because of these changes, pregnant women need 50% more thyroid hormone and more iodine.<sup>[2]</sup>

In countries where people get enough iodine, the thyroid gland grows by 10% when women are pregnant. But in places where there is not enough iodine, the thyroid gland grows even more.<sup>[1]</sup>

Pregnancy can cause low thyroid function in women with low thyroid reserves or low levels of iodine. This can be a test of the thyroid gland's ability to handle stress.

Thyroid problems in the early stages can cause bad outcomes for both the mother and the baby. Early labor, placenta coming off early, pregnancy loss, and high blood pressure during pregnancy are the main problems for moms; early birth, small babies, babies born dead, and baby death around the time of birth are the main problems for the baby. Children whose mothers do not get help can have trouble learning and thinking well in the future.<sup>[2]</sup>

Problems during pregnancy and after giving birth, like children having trouble paying attention and being too active, have been seen in kids whose moms had hypothyroidism.<sup>[2,3]</sup>

More babies are having trouble breathing and needing special care in the hospital. If a pregnant woman has low thyroid hormones in the first three months of pregnancy, it can harm the baby's brain and body development and affect many parts of the body. This can lead to problems with thinking and physical growth.<sup>[4]</sup>

New research shows that women with normal thyroid function who test positive for thyroid peroxidase (TPO) antibodies are more likely to have premature births or miscarriages.<sup>[4,5]</sup> During the first few months of pregnancy, about 10% of women make antibodies against thyroglobulin or TPO. Of those women, 16% may end up getting hypothyroidism.<sup>[5]</sup>

Pregnancy can make the body work faster and some symptoms of thyroid problems may not show up, so the problems might not be detected. Pregnancy can make thyroid problems worse because of changes in the body. The number of women who have thyroid problems while pregnant varies depending on where they live. In Western literature, it's said that about 0.1 to 0.4% of pregnant women have hyperthyroidism, while 2.5% of pregnant women have hypothyroidism.<sup>[6]</sup>

There isn't enough information about how common thyroid problems are in pregnant women. Some information shows that between 4.8% and 11% of pregnant women have problems with their thyroid.<sup>[7,8]</sup> Many experts around the world suggest that all pregnant women should have their thyroid checked regularly. This is because thyroid problems during pregnancy can have bad effects on both the mother and the baby, but finding and treating the problem early can help.

## METHODS

The Obstetrics and Gynecology department did a study. They got permission from an ethics committee before doing the study. We chose every patient who came to the doctor's office for regular pregnancy checkups in the first three months of their pregnancy. We selected 200 pregnant women in their first trimester in Iraq for the study. We got their permission and found out how far along they were in their pregnancy before choosing them. We included women who were pregnant for the first or multiple times, had only one baby, and were less than 13

weeks pregnant. We did not include women who had a history of problems with pregnancy, were pregnant with more than one baby, or had diabetes or high blood pressure.

The doctor asked the patient a lot of questions about their health, their family's health, their job, their periods, their pregnancies, and any problems with their thyroid. An overall evaluation was done. Heart rate, body temperature, blood pressure, breathing rate, and pulse rate were measured. The doctor looked at the thyroid gland, breathing, brain, and heart all together. A doctor checked the vagina and belly, and wrote down what they found.

## Investigations

We did some basic tests on the blood and urine, and also checked for pregnancy in the early stages. We used clinical assessment, a pregnancy test and an ultrasound to confirm pregnancy less than 12 weeks into it. Blood was taken to check levels of TSH, FT3, and FT4. The test values in this study followed the American Thyroid Association's guidelines for diagnosing and managing thyroid disease during pregnancy and after giving birth. According to ATA Guidelines, if the lab doesn't have trimester-specific TSH ranges, here are the recommended normal ranges: 1st trimester - 0.15 mIU/L, 2nd trimester - 0.0 mIU/L, and 3rd trimester - 0.0. The average free T4 level is between 0.7 and 1.8 ng/ml, and the average free T3 level is between 1.7 and 4.

## Classification

Patients were grouped as having either slightly low thyroid hormone levels or high thyroid hormone levels based on their blood test results. Thyroxine was given to people who had a problem with their thyroid gland. It was used to treat both serious and less serious cases of the problem. Propylthiouracyl was given to people with an overactive thyroid to help them feel better.

## RESULTS

**Table (1): distribution of age among the studied groups.**

	Hyperthyroidism		Hypothyroidism		p. value
	Subclinical (n=76)	Overt (n=18)	Subclinical (n=85)	Overt (n=21)	
<b>Age (years)</b>					
<25	29(38.2%)	0(0%)	13(15.3%)	1(4.8%)	<0.001
26-30	18(23.7%)	1(5.5%)	22(25.9%)	1(4.8%)	
31-35	17(22.3%)	12(66.7%)	24(28.2%)	16(76.2%)	
35-40	12(15.8%)	5(27.8%)	26(30.6%)	3(14.3%)	

This table shows that there was a highly statistically significant difference between the studied groups as regards Age, as patients with subclinical hypothyroidism, overt hypothyroidism, overt hyperthyroidism were more common in the age group of more than 30 years while patients with subclinical hyperthyroidism were more common in the age group of less than 30 years.

**Table (2): distribution of BMI among the studied groups.**

	Hyperthyroidism		Hypothyroidism		p. value
	Subclinical (n=76)	Overt (n=18)	Subclinical (n=85)	Overt (n=21)	
<b>BMI (kg/m<sup>2</sup>)</b>					
<25	18(23.7%)	1(5.6%)	2(2.4%)	1(4.8%)	<b>&lt;0.0001</b>
26-30	22(28.9%)	2(11.1%)	34(40%)	0(0%)	
>30	36(47.4%)	15(83.3%)	49(57.6%)	20(95.2%)	

This table show that there was highly statistically significant difference between the studied groups as

regard BMI, as All types of thyroid dysfunction were more common in overweight and obese patients.

**Table (3): distribution of Parity among the studied groups.**

	Hyperthyroidism		Hypothyroidism		p. value
	Subclinical (n=76)	Overt (n=18)	Subclinical (n=85)	Overt (n=21)	
<b>Parity</b>					
Single (primipara)	49(64.5%)	14(77.8%)	31(36.5%)	8(38.1%)	<b>&lt;0.001</b>
Multiple (multipara)	27(35.5%)	4(22.2%)	54(63.5%)	13(61.9%)	

This table show that there was highly statistically significant difference between the studied groups as regard Parity as the majority of the subclinical and overt

hypothyroidism patients were multipara, while subclinical and overt hyperthyroidism was more common in the primipara women group.

**Table (4): distribution of Education among the studied groups.**

	Hyperthyroidism		Hypothyroidism		p. value
	Subclinical (n=76)	Overt (n=18)	Subclinical (n=85)	Overt (n=21)	
<b>Education</b>					
Illiterate	60(78.9%)	8(44.4%)	26(30.6%)	15(71.4%)	<b>&lt;0.001</b>
Primary and Middle	4(5.3%)	1(5.6%)	48(56.5%)	2(9.5%)	
Secondary and Graduate	12(15.8%)	9(50%)	11(12.9%)	4(19.1%)	

This table show that there was highly statistically significant difference between the studied groups as regard Education, as Maximum cases of subclinical hypothyroidism and overt hyperthyroidism patients were found in the educated group (Primary to Graduate) while subclinical hyperthyroidism and overt hypothyroidism patients were found in the Illiterate group.

## DISCUSSION

In our research, almost 20% of people had thyroid issues. The new results are similar to those found by Sahu MT et al. who studied 633 women in their second trimester of pregnancy.<sup>[8]</sup> Just like the study, they also found that 12.7% of people have thyroid diseases.

In our study, we found that 42.5% of people had a mild form of underactive thyroid. Sahu MT et al. found that the prevalence was 6.47%, which is the same as what we discovered.<sup>[8]</sup> The prevalence was 2.3% in the study by Casey BM et al., which is quite high and not consistent with the current study.<sup>[9]</sup>

The new study found that 10.5 out of 100 people have hypothyroidism, which is similar to a study by Sahu MT et al. where 458 out of 1000 people had it.<sup>[8]</sup>

In our study, 38% of people had mild hyperthyroidism, and 9% had more severe hyperthyroidism. The research by Sahu MT and others found that 0.9% of people had subclinical hyperthyroidism and 0.7% had overt hyperthyroidism.<sup>[8]</sup> In Stagnaro Green A's study, 0.5% of people had mild hyperthyroidism and 0.4% had more severe hyperthyroidism.<sup>[10]</sup> The prevalence of subclinical hyperthyroidism is comparable with other studies.<sup>[11]</sup> Our results show that more patients over the age of 30 have overt, overt, and subclinical hypothyroidism, while more patients under the age of 30 have subclinical hyperthyroidism.

The new discoveries match what Sahu MT et al. found They showed that patients with too much thyroid hormone (hyperthyroidism) were more common in people younger than 30 years old. And patients with too little thyroid hormone (hypothyroidism) were more common in people older than 25 years old.<sup>[11]</sup>

Furthermore, our results show that there was a big difference in education between the groups we looked at. The people who knew the most about thyroid problems had the most patients with hypothyroidism and hyperthyroidism. The people who knew the least had the least patients with these problems.

Our research was different from Green A. 's Green A found that most pregnant women with thyroid issues had low levels of education.<sup>[10]</sup>

Problems with pregnancy could happen because people might not seek the right medical help or they might not notice the early signs.

Our research found that women having their first baby were more likely to have a mildly overactive thyroid or a clearly overactive thyroid than a mildly underactive or clearly underactive thyroid. Most women with underactive thyroid were those who had already had a baby before. This was found by Dhanwal and their team. show the same.<sup>[12]</sup>

Our findings indicate that there was a big difference in BMI between the groups we studied. Also, we found that overweight and obese patients were more likely to have thyroid problems.

This result is different from what Pop and others found before. Gowachirapant and others. In a study about pregnancy, 1035 women took part. 470 of them were overweight. The study found no connection between body mass index (BMI) and thyroid-stimulating hormone (TSH) levels during the 12th week of pregnancy.<sup>[13]</sup>

Similarly, Gowachirapant did a study with 131 overweight pregnant women who were around 11 weeks pregnant on average. The study did not find that having a high BMI was a risk for high TSH levels in 514 pregnant women.<sup>[14]</sup>

In addition, Haddow et al. studied 9351 pregnant women who were in their 11th to 20th week of pregnancy. They found that there is no link between TSH level and body weight.<sup>[15]</sup> On the other hand, Bestwick and others contradict that argument. The research showed that weight had an impact on TSH levels in 21846 pregnant women between the 7th and 16th weeks of pregnancy.<sup>[16]</sup>

The reason why weight and BMI might not be related to TSH could be because there were different numbers of people and they were at different stages of pregnancy in the study. The hormone hCG made by the placenta can make the thyroid hormone go up a little bit.

There isn't much advice on how to find thyroid problems in pregnant women right now. Pregnant women with a history of thyroid problems or a family history of thyroid issues should get tested. But recent guidelines say that all pregnant women don't need to be tested for thyroid

problems. Our study found that many pregnant women have thyroid issues, so we think it's important to test all pregnant women, especially in India, and make sure they know about the risks for themselves and their babies.

## CONCLUSIONS

Thyroid diseases were common, with most people having subclinical hypothyroidism (42.5%), overt hypothyroidism (10.5%), and subclinical hyperthyroidism (38%). We think it's important for pregnant women to get their thyroid checked regularly to help keep them and their baby healthy.

## REFERENCES

1. van Raaij JM, Vermaat-Miedema SH, Schonk CM, Peek ME, Hautvast JG. Energy requirements of pregnancy in The Netherlands. *Lancet*, 1987; 2: 953-5.
2. Stagnaro-Green A, Abalovich M, Alexander E, Azizi F, Mestman J, Negro R, et al. Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. *Thyroid*, 2011; 21: 1081-125.
3. Ghassabian A, Bongers-Schokking JJ, de Rijke YB, van Mil N, Jaddoe VW, de Muinck Keizer-Schrama SM, et al. Maternal thyroid autoimmunity during pregnancy and the risk of attention deficit/hyperactivity problems in children: The generation R study. *Thyroid*, 2012; 22: 178-86.
4. Männistö T, Väärasmäki M, Pouta A, Hartikainen AL, Ruokonen A, Surcel HM, et al. Perinatal outcome of children born to mothers with thyroid dysfunction or antibodies: A prospective populationbased cohort study. *J Clin Endocrinol Metab*, 2009; 94: 772-9.
5. Stagnaro-Green A. Thyroid antibodies and miscarriage: Where are we at a generation later? *J Thyroid Res*, 2011; 2011: 841949.
6. LeBeau SO, Mandel SJ. Thyroid disorders during pregnancy. *Endocrinol Metab Clin North Am*, 2006; 35: 117-36.
7. Nambiar V, Jagtap VS, Sarathi V, Lila AR, Kamalanathan S, Bandgar TR, et al. Prevalence and impact of thyroid disorders on maternal outcome in AsianIndian pregnant women. *J Thyroid Res*, 2011; 2011: 4290-7.
8. Sahu MT, Das V, Mittal S, Agarwal A, Sahu M. Overt and subclinical thyroid dysfunction among Indian pregnant women and its effect on maternal and fetal outcome. *Arch Gynecol Obstet*, 2010; 281: 215-20.
9. Casey BM, Dashe JS, Wells CE, McIntire DD, Byrd W, Leveno KJ, et al. Subclinical hypothyroidism and pregnancy outcomes. *Obstet Gynecol*, 2005 Feb; 105: 239-45.
10. Stagnaro-Green A, Pearce E. Thyroid disorders in pregnancy. *Nat Rev Endocrinol*, 2012 Nov; 8(11): 650-8.

11. Vaidya B, Anthony S, Bilous M, Shields B, Drury J, Hutchison S, et al. Detection of Thyroid dysfunction in early pregnancy. Universal screening or high risk targeted case finding? *J Clin Endocrinol Metab*, 2007; 92: 203-7.
12. D. Dhanwal, S. Prasad, A. Agarwal, V. Dixit, A. Banerjee. High prevalence of subclinical hypothyroidism during first trimester of pregnancy in North India *Indian J Endocrinol Metabol*, 2013; 17(2): 281.
13. V. J. Pop, B. Biondi, H. A. Wijnen, S. M. Kuppens, and H. Lvader, "Maternal thyroid parameters, body mass index and subsequent weight gain during pregnancy in healthy euthyroid women," *Clinical Endocrinology*, 2013; 79(4): 577–583.
14. S. Gowachirapant, A. Melse-Boonstra, P. Winichagoon, and M. B. Zimmermann, "Overweight increases risk of first trimester hypothyroxinaemia in iodine-deficient pregnant women," *Maternal and Child Nutrition*, 2014; 10(1): 61–71.
15. J. E. Haddow, W. Y. Craig, G. E. Palomaki et al., "Impact of adjusting for the reciprocal relationship between maternal weight and free thyroxine during early pregnancy," *Thyroid*, 2013; 23(2): 225–230.
16. J. P. Bestwick, R. John, A. Maina et al., "Thyroid stimulating hormone and free thyroxine in pregnancy: expressing concentrations as multiples of the median (MoMs)," *Clinica Chimica Acta*, 2014; 430: 33–37.