

ORIGINAL ARTICLE

Thyroid Dysfunction in Pregnancy and its Outcomes

ZAKIA ZAHEEN¹, RUKHSANA SABOOR², ZUBAIDA MUJTABA³, SANOBAR ASHFAQ SIDDIQUI⁴, SHAHLA CHANNA⁵¹Assistant Professor, ⁵Associate Professor, Department of Obstetrics & Gynaecology Unit IV, Liaquat University of Medical & Health Sciences, Jamshoro²Assistant Professor, Department of Pathology, Ghulam Muhammad Mahar Medical College, Sukkur³Senior Lecturer, Department of Physiology, United Medical & Dental College Karachi⁴Assistant Professor, Department of Obstetrics & Gynaecology, Indus Medical College, Tando Muhammad KhanCorrespondence to Dr. Zakia Zaheen, E-mail: drzakiakhk@gmail.com Cell: 0333-2655411

ABSTRACT

Aim: To evaluate thyroid dysfunction in pregnancy and its outcomes.**Study design:** Descriptive study**Place and duration of study:** Department of Obstetrics & Gynaecology, Unit IV, Liaquat University of Medical & Health Sciences, Jamshoro from 1st January 2021 to 31st December 2021.**Methodology:** Two hundred females between 18-41 years were registered in the outdoor patient in their 10th week of pregnancy. A 2cc blood was withdrawn, serum separated and stored at -20°C until analysis.**Results:** The mean age was 26.9±2.6 years. The women who were having hypothyroidism or hyperthyroidism had various complications during their pregnancy with 100% of them presenting depression and fatigue. There were 6.6% pregnant women suffering from hypo or hyperthyroidism who suffered miscarriages.**Conclusion:** Hypothyroidism/hyperthyroidism is prevalent in South Asian women and related with pregnancy complication and negative pregnancy outcomes in females.**Keywords:** Thyroid dysfunction, Pregnancy, Outcome

INTRODUCTION

Thyroid hormones have a significant role in keeping metabolic balance of the body. These are the hormones which released from thyroid under the influence of pituitary gland. The thyroxine (T4) and thyronine (T3) is released from the thyroid gland.¹ There are two main types of these hormones one which is in bounded form with the liver proteins and known as total T4 and Total T3, while the other is unbound and biologically active forms known as free T4 and T3. The thyroid stimulating hormone (TSH) is released from the pituitary gland and plays vital role in managing the normal levels of thyroid hormones in the human body.²⁻⁴

Pregnancy requires proper management of hormonal balance in body for the optimal growth of foetus as well as maternal health. Any endocrinal disturbances presented in the pregnancy can lead into miscarriages, intra uterine death, still birth or preterm labour in addition to lifelong abnormalities in the neonates.^{5,6} During the normal phases of gestation important alterations are occurring in the thyroid hormones balance. Ascended T3, T4, TBG and iodine clearance is required for healthier pregnancy.

Global data confirms that there are 5% risk of miscarriages due to thyroid dysfunction⁷ with incidence of hypothyroidism as 2-3% as subclinical and 0.3-0.5% overt hypothyroidism.⁸ Total rate of hypothyroidism is estimated around 0.2-0.4 percent.⁹ Developing countries have low nourishment status and are having food low in iodine resulting in iodine deficiency in pregnant women.^{10,11} Thyroidal dysfunction in pregnant women can lead into serious outcomes of pregnancy including mortality and chronic abnormalities in new born.¹²

The present study detailed the outcome of thyroid dysfunction during pregnancy. The study was meant to provide substantial data for better understanding of thyroid dysfunction effects on pregnancy outcomes for improved maternal and neonatal health.

MATERIALS AND METHODS

This descriptive study was conducted at Department of Obstetrics & Gynaecology, Unit IV, Liaquat University of Medical & Health Sciences, Jamshoro from 1st January 2021 to 31st December 2021. A total of 200 females between the age of 18-41 years were registered in the outdoor patient in their 10th week of pregnancy. The sample size was calculated on taking the prevalence of

thyroidal dysfunction in pregnancy as 2%. Patients who were included in the study already had a history of miscarriages and IUD. The patients were followed up until 3 months after completion of their gestation to measure the outcomes of pregnancy. The neonatal heel prick blood TSH screening through blood spot test was also done in women having thyroidal disorders. Patients having autoimmune diseases other than related with thyroidal glands were excluded from the study. History of each patient's including cousin marriages, delayed pregnancy, BMI, miscarriage history, thyroid hormone status, parity and gravida were documented on a well-structured questionnaire. Informed consent was taken from each participant. A 2cc blood was withdrawn, serum separated and stored at -20°C until analysis. In each pregnant patients and FT3, FT4 and TSH were measured by using ELISA kits. Data was analysed by using SPSS version 25.

RESULTS

The mean age was 26.9±2.6 years. Majority of the females were within the age of 26-35 years with their mean age as 25.6±2.9 years (Table 1). The results of TSH, T3 and T4 showed that TSH was raised in 4% of cases with declined T4 and T3 inferring towards hypothyroidism while it was vice versa in 3.5% showing as hyperthyroidism in them (Table 2).

The women who were having hypothyroidism or hyperthyroidism had various complications during their pregnancy with 100% of them presenting depression and fatigue. While depending upon their hypo or hyper status of thyroid either they had reduced weight or became obese. In both cases their new born were affected in their optimal growth. Heat sensitivity was seen in 71.4% cases out of total thyroid dysfunctional pregnant women (Fig. 1). There were 6.6% pregnant women suffering from hypo or hyperthyroidism who suffered miscarriages while one woman (6.6%) had intra uterine death of her neonate in third trimester. Still birth was not presented in any case (Table 3).

Table 1. distribution of age of enrolled participants (n=200)

Age (years)	No.	%age
18-25	70	35.0
26-35	106	53.0
36-41	24	12.0

Table 2: Frequency of TSH, T4 and T3 levels in pregnant females

Thyroid status	No.	%age
Hypothyroidism	8	4.0
Hyperthyroidism	7	3.5
Euthyroid	185	92.5

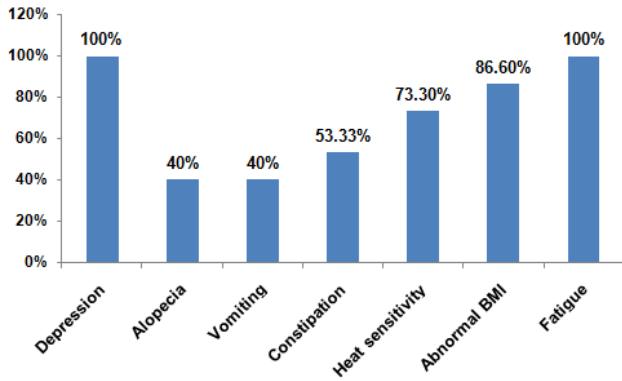
Received on 03-01-2022

Accepted on 27-04-2022

Table 3: Comparison of gestational age and pregnancy loss in hypo/hyper thyroid pregnant women

Pregnancy loss	Gestational Age			Total
	1 st Trimester	2 nd Trimester	3 rd Trimester	
Miscarriage	2(13.3%)	--	-	2(13.3%)
IUD	-	--	1 (6.6%)	1 (6.6%)
Still birth	-	--	--	-

Fig1: Frequency of pregnancy complication in thyroidal dysfunction pregnant women



DISCUSSION

Thyroid disorders are common over global level leading to pregnancy complications as well as fatal loss in a significant population. The current study found the mean age of pregnant women as 29.49 years which is similar to the mean age reported in other studies on pregnant women where the mean age of pregnant women is documented as 29 years.^{13,14}

Majority of the women enrolled were euthyroid with normal thyroid levels however there were 7.5% those women having either hyperthyroidism or hypothyroidism. A study on Tunisian pregnant women had reported 1.9% hyperthyroidism.¹⁵ An Indian study reported an incidence of 4% hyperthyroidism and 0.3% of hypothyroidism among pregnant women which is similar to the present study findings. These findings and also of the present study relates with the fact that hypothyroidism is more commonly reported than hyperthyroidism in pregnant females^{16,17} which is similar to findings of current study.

Complications in pregnancy in women with hypothyroidism and hyperthyroidism are found to be high and mentioned as 10.9% overall higher than normal healthy women with controlled thyroidal levels.¹⁸

A sufficient level of iodine is required in high risk women as well as those women who are insufficient of iodine for healthier outcomes and low complication levels during pregnancy.¹⁹⁻²¹

CONCLUSION

Hypo/hyperthyroidism is prevalent in South Asian women and are related with pregnancy complication and negative pregnancy outcomes with increased risk of miscarriages and IUD in them.

Conflict of interest: Nil

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