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FREQUENCY OF THYROID DYSFUNCTION AMONG ANTENATAL PATIENTS WITHOUT KNOWN THYROID DISEASE, PRESENTING AT FAROOQ HOSPITAL WESTWOOD, LAHORE

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ABSTRACT

INTRODUCTION: *Thyroid disease is the second most common endocrine disorder after diabetes in pregnancy. Thyroid disease poses a substantial challenge to the physiology of pregnant women and has significant maternal and foetal implications.*

OBJECTIVE: *To determine the frequency of thyroid dysfunction among antenatal patients presenting at Farooq Hospital Westwood, Lahore*

STUDY DESIGN: *Descriptive, Cross-sectional study*

SETTING: *Department of Obstetrics & Gynaecology, Farooq Hospital Westwood, Lahore.*

DURATION OF STUDY: *Six months from the date of acceptance of synopsis. From 21-7-2022 to 18-1-2023.*

METHODOLOGY: *After approval from the institutional ethical review committee, a total of 124 women presenting to the outpatient department, fulfilling the inclusion criteria were selected. A thorough general physical examination was done. Patients were subjected to systemic and obstetric examination. Along with routine blood investigations, specifically serum levels of free T3 and T4 as well as TSH levels were also determined. The presence or absence of thyroid dysfunction was noted.*

RESULTS: *In this study, mean age was 27.63+3.88 years, 84(67.7%) were primiparous and 40(32.3%) were multiparous, and 19(15.3%) had thyroid illness, whereas 105(84.7%) did not, 5 (4%) had overt hypothyroidism, 9(7.3%) had subclinical hypothyroidism, 3(2.4%) had overt hypothyroidism, 2(1.6%) had preclinical hyperthyroidism, and 105(84.7%) had no thyroid illness.*

CONCLUSION: *We concluded that the frequency of thyroid dysfunction is not very high but considerable among antenatal patients presenting at Farooq Hospital Westwood, Lahore.*

KEYWORDS: *Pregnancy, thyroid dysfunction, antenatal*

INTRODUCTION

Thyroid hormone is necessary for fetal development and maturation. Until the fetus synthesises its own thyroid hormones, it is dependent on the T4 hormone that passes through the placenta from the mother [1]. The need for iodine increases during pregnancy because of increased maternal fetal metabolism and glomerular filtration rate. To meet the increased metabolic needs of the mother and the fetus during pregnancy, physiological changes take place in the thyroid gland. These changes should be considered when evaluating thyroid function tests during pregnancy [2]. Thyroid diseases are the second most common endocrine disorders affecting women in the reproductive period [3]. Women are likely to experience thyroid-related problems during pregnancy. Early diagnosis and treatment of thyroid diseases before and during pregnancy is important for maintaining the health of the mother and the baby [4]. In a study, prevalence of thyroid disorder in pregnant women was 11.6% [6]. In another study conducted by Dulek H et al.6 , the prevalence of thyroid disorder in pregnant women was found to be 13.2%. Dieguez M et al.[7] have found the frequency of thyroid disorder in pregnant women as 16.6%. A study done in India has shown the prevalence of thyroid disorders among patients attending the antenatal clinic as 14.2% [8]. In a local study, prevalence of thyroid disorders among patients attending the antenatal clinic was found in 29.35% of women [9]. Evaluation of thyroid disease in pregnancy is important for gestational maternal health, obstetric outcome, and subsequent development of the child. The most frequent thyroid disorder in pregnancy is maternal hypothyroidism. It is associated with fetal loss, placental abruptions, preeclampsia, preterm delivery, and reduced intellectual function in the offspring. As routinely thyroid functions in pregnancy are not assessed in our general practice and failure to recognise the presence of abnormal thyroid hormone levels in pregnancy may be a primary cause of adverse pregnancy outcome and fetal development, there is a need for such a study in the local population. Thus, this study is designed and directed to investigate the prevalence of thyroid dysfunctions in pregnancy and to provide the health planner with fundamental data necessary for appropriate intervention.

OBJECTIVES:

To determine the frequency of thyroid dysfunction among antenatal patients presenting at Farooq Hospital Westwood, Lahore.

MATERIALS AND METHODS:

STUDY DESIGN:

• Descriptive, Cross-sectional study

SETTING:

• Department of Obstetrics & Gynaecology, Farooq hospital Westwood,Lahore.

DURATION OF STUDY:

Six months from the date of acceptance of synopsis. From: 21-7-2022 to 18-1-2023

SAMPLE SIZE:

The calculated sample size was 124 with a 95% confidence level, a 6% margin of error, and taking the percentage of thyroid dysfunction in pregnancy as 13.3% [6].

SAMPLING TECHNIQUE:

Non-probability, consecutive technique.

SAMPLE SELECTION:

Inclusion criteria:

- All women with singleton pregnancy (assessed on USG) of gestational age >6 weeks to 36 weeks (assessed on LMP) presenting at an antenatal clinic.

- Age 20-40 years.
- Both primiparous and multiparous.

Exclusion criteria:

• Patients with known thyroid disorders assessed on history and medical record.

• Patients taking medication that can affect thyroid functions (dopamine antagonists, antiepileptics, oral contraceptives, lithium, glucocorticoids) as assessed on history and medical record.

• Previous history of thyroid surgery or use of radioiodine therapy.

DATA COLLECTION PROCEDURE:

After approval from the institutional ethical review committee, a total of 124 women presenting to the outpatient department of Obstetrics & Gynaecology, Farooq Hospital, Westwood Colony, Lahore, fulfilling the inclusion criteria were selected. Informed consent was taken from each patient. A thorough general physical examination was done. Patients were subjected to systemic and obstetric examination. Along with routine blood investigations included in our antenatal profile, a complete blood picture, blood grouping and Rh typing, random blood sugar, liver function test, kidney function test, HBsAg, VDRL, HIV, complete urine examination, serum levels of free T3 and T4, as well as TSH levels, were also determined. The presence or absence of thyroid dysfunction was noted as mentionethe operationalional definition. All the data obtained from patients (age, gestational age, parity (primiparous/multiparous), family history of thyroid dysfunction (yes/no), place of living (rural/urban), monthly income (<20000/20000-40000/>40000), thyroid dysfunction (present absent), and type of thyroid dysfunction) were recorded on the predesigned proforma.

DATA ANALYSIS:

Data was entered and analyzed using computer program SPSS version 25.0. mean and standard deviation were calculated for age, gestational age, height, weight and BMI. Frequencies and percentageswere calculated for parity (primiparous/multiparous), family h/o thyroid dysfunction (yes/no), place of living (rural/urban), monthly income (<20000/20000-40000/>40000), thyroid dysfunction (present absent) and type of thyroid dysfunction. Stratification was done for age, gestational age, BMI (≤27 kg/m2) parity (primiparous/multiparous), family history of thyroid dysfunction (yes/no), place of living (rural/urban), monthly income (<20000/20000-40000/>40000), and chi square test was applied post stratification, and a p-value ≤ 0.05 was considered significant.

RESULTS:

A total of 124 cases fulfilling the selection criteria were enrolled to determine the frequency of thyroid dysfunction among antenatal patients presenting at Farooq Hospital Westwood, Lahore. In our study, the mean age was calculated as 27.63 + 3.88 years, with a minimum of 20 and a maximum of 36 years of age. The mean gestational age was calculated as 26.24 + 5.19 weeks, with a minimum of 11 and a maximum of 35 weeks of gestational age. The mean BMI was calculated as 26.04 + 2.88, with a minimum 21 and maximum 32 BMI. The frequency of parity shows 84 (67.7%) were primiparous and 40 (32.3%) were multiparous. Frequency of family history shows in 88 (71%), whereas 36 (29%) had no family history of thyroid disease. The frequency of living places shows in 52 (41.9%) from urban areas, whereas 72 (58.1%) were rural residents. Monthly income of the patients shows that 18 (14.5%) had <20,000, 80 (64.5%) had 20,000 to 40,000, whereas N > 40,000 was recorded in 26 (21%). The frequency of thyroid dysfunction shows that 19 (15.33%) had thyroid disease, whereas 105 (84.7%) had no thyroid disorders. Frequency of type thyroid dysfunction shows 5 (4%) had overt hypothyroidism, 9 (7.3%) had subclinical hypothyroidism, 3 (2.4%) had overt hypothyroidism, 2 (1.6%) had subclinial hyperthyroidism, and 105 (84.7%) had no thyroid disease. The data was stratified for thyroid disorder by age, gestational age, BMI, parity, family history of thyroid disease, living place, and monthly income.

TABLE 1: FREQUENCY OF THYROID DYSFUNCTION BY PARITY

		Thyroid Dysfunction		Total
		Yes	No	
Parity	Primiparous	14 16.7%	70 83.3%	84 100.0%
	Multiparous	5 12.5%	35 87.5%	40 100.0%
	Total	19 15.3%	105 84.7%	124 100.0%

FIGURE 1: GRAPH SHOWING FREQUENCY OF THYROID DYSFUNCTION BY PARITY

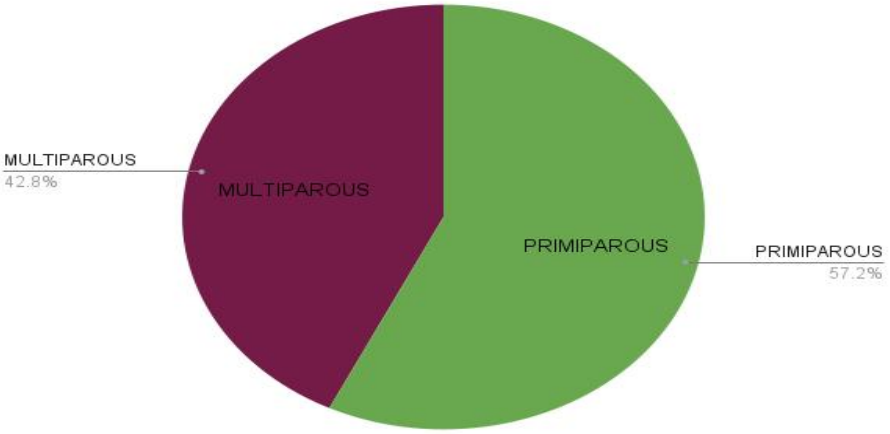


FIGURE 2: DISTRIBUTION OF CASES AS PER AGE.

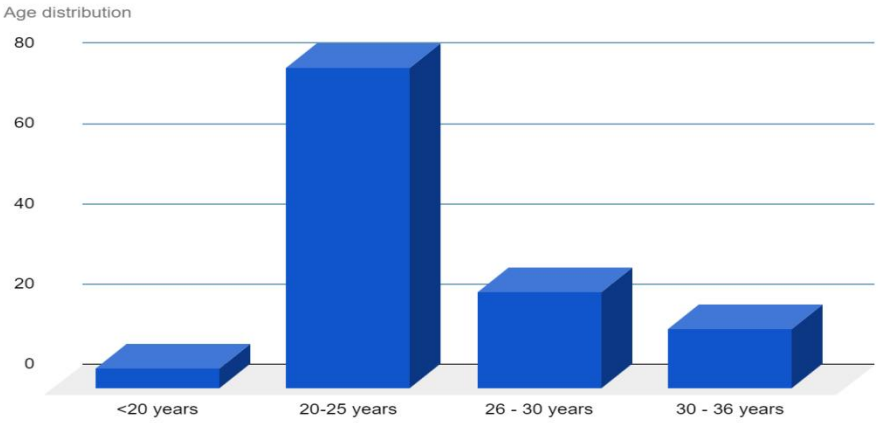
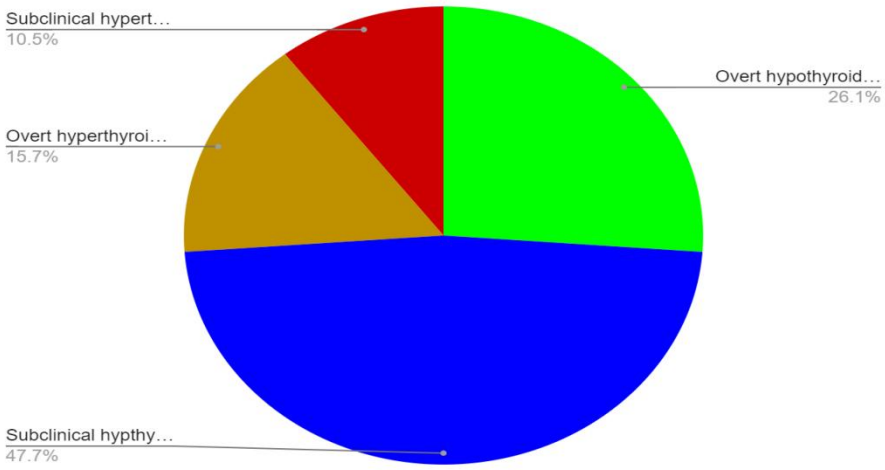


FIGURE 3: DISTRIBUTION OF CASES AS PER PARAMETERS.



DISCUSSION:

Thyroid disease is the second most common endocrine disorder after diabetes in pregnancy. Thyroid disease poses a substantial challenge on the physiology of pregnant women and has significant maternal and fetal implications. Research shows during pregnancy, the size of the thyroid gland increases by 10% in countries with adequate iodine stores and by approximately 20% to 40% in countries with iodine deficiency. [10] During pregnancy, thyroid hormone production increases by around 50% along with a similar increase in total daily iodine requirements. Thyroid dysfunction in pregnant women, including hypothyroidism and hyperthyroidism requires close monitoring and treatment as warranted. Occasionally, pregnancy may be complicated by thyroid nodules and thyroid cancer requiring further intervention.

This study was designed and directed to investigate the prevalence of thyroid dysfunctions in pregnancy and to provide the health planner with fundamental data necessary for appropriate intervention. In this study, mean age was 27.63 + 3.88 years, ranging from 20 to 36 years, minimum gestational age was 11 weeks and maximum was 35 weeks,minimum BMI was 21 and highest was 32, 84(67.7%) primiparous and 40(32.3%) multiparous, 88(71%) had a family history of thyroid illness, whereas 36(29%) did not, 52(41.9%) were urban dwellers, while 72(58.1%) were rural, 18(14.5%) patients had 20,000, 80(64.5%) had 20,000 to 40,000, and 26(21%) had >40,000, 19(15.3%) had thyroid illness, whereas 105(84.7%) did not, 5 (4%) had overt hypothyroidism, 9(7.3%) had subclinical hypothyroidism, 3 (2.4%) had overt hypothyroidism, 2(1.6%) had preclinical hyperthyroidism, and 105 (84.7%) had no thyroid illness. In a study, the prevalence of thyroid disorder in pregnant women was 11.6%. [5] In another study conducted by Dulek H et al [6] , the prevalence of thyroid disorder in pregnant women was found to be 13.2%. Dieguez M et al. [7] have found the frequency of thyroid disorder in pregnant women as 16.6%. A study done in India has shown the prevalence of thyroid disorders among patients attending the antenatal clinic as 14.2%. [8] In a local study, prevalence of thyroid disorders among patients attending the antenatal clinic was found in 29.35% of women. [9] The findings of our study are within the range of the above-mentioned study's magnitude. In one study, maternal serum free T4 concentrations below the 2.5th percentile (with normal TSH) were not associated with adverse pregnancy outcomes. [11] However, in the First and Second Trimester Evaluation of Risk (FASTER) consortium, among the women with hypothyroxinemia and normal TSH (232 and 247 women in the first and second trimesters, respectively), there was an increased OR for preterm labour (1.62, 95% CI 1.00-2.62), macrosomia (1.97, 95% CI 1.37-2.83), and gestational diabetes (1.70, 95% I 1.02-2.84). 89 In the Generation R study and a subsequent meta-analysis, maternal

hypothyroxinemia was associated with an increased risk of premature delivery (7.1 versus 5 percent in euthyroid women, OR 1.46, 95% CI 1.12-1.90). [12,13] In some studies, infants and toddlers whose mothers had reduced serum free T4 concentrations (with normal TSH) during gestation (12 to 20 weeks) had lower mean intelligence, psychomotor, or behavioural scores compared with children born to women with normal thyroid function during gestation. [14,15] As an example, in one study of 3727 mother-child pairs, the children of mothers whose free T4 was in the lowest 5 percent during the first trimester had IQ scores at six years of age that were 4.3 points lower than the children of mothers with higher free T4 concentrations. [16] Other studies have shown an increased frequency of autism and attention deficit disorder in the offspring of hypothyroxinemic women. [17,18] In contrast, a case-control study that examined children at age two years born to mothers who had second trimester free T4 levels <3rd centile versus those with free T4 levels between the 10th and 90th centile did not find any differences in neurocognitive development. In the Avon Longitudinal Study of Parents and Children, there was also no difference in National Curriculum Test scores between children born to mothers with first trimester free T4 levels <2.5th centile and those with free T4 levels in the 2.5th to 97.5th centile. Being the limitation of our study, we were limited to record the frequency of thyroid disorders in pregnancy, however, our study is helpful to add these recent findings in existing literature.

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