

A CROSS-SECTIONAL STUDY OF PREVALENCE OF THYROID DYSFUNCTION AND PRE-GESTATIONAL DM AND GDM IN PREGNANT WOMEN ATTENDING OPD IN A TERTIARY CARE CENTRE

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ABSTRACT:

OBJECTIVES:

Thyroid dysfunctions and diabetes mellitus during pregnancy are two commonly seen endocrinal diseases, which lead to unavoidable consequences both for mother and child. Pregestational diabetes mellitus (PGDM) and gestational diabetes mellitus (GDM) are associated with various risks, including preeclampsia, preterm birth, fetal development problems, and neonatal metabolic disorders. Thyroid dysfunctions during pregnancy could influence maternal metabolism, fetal brain development, and result in some pregnancy-related disorders. The rates of these disorders have been growing all around the world because of the influence of different lifestyles factors and obesity in later reproductive years. The purpose of the current study is to find out the prevalence of thyroid dysfunctions, pregestational diabetes mellitus, and gestational diabetes mellitus among pregnant women who attend the OPD of the tertiary healthcare institution. It is also necessary to assess the correlation between demographic and clinical characteristics and endocrinal disorders in pregnancy.

METHODOLOGY

A cross-sectional study will be undertaken among pregnant women attending the OPD at a tertiary health institution. Pregnant women of varying gestational ages willing to take part in the study will be selected. Information such as age, gravida, parity, gestational age, Family history, body mass index (BMI), and past medical history will be obtained through a standardized questionnaire and hospital records.

Tests or laboratory investigations will include thyroid profile investigations (TSH, T3, T4) as well as blood glucose tests (fasting blood sugar, postprandial blood sugar, HbA1c, OGTT). Pregnant women affected by thyroid dysfunction, pregestational diabetes mellitus, and gestational diabetes mellitus will be selected depending on their diagnoses based on specific diagnostic criteria. Analysis will be done based on descriptive statistics and inferential statistics.

RESULTS

A total number of 100 pregnant females were used for the experiment through non-probability sampling. Prevalence of thyroid disorders, pre-gestational diabetes mellitus, and gestational diabetes mellitus among the subjects was measured. Results showed that there is a higher prevalence of thyroid disorders and gestational diabetes mellitus among pregnant females who are old, have a high

BMI, Amily history, and co-morbid conditions. Biochemical results, which include thyroid-stimulating hormone (TSH) and blood sugar, significantly varied from one another.

CONCLUSION

rom the above analysis, it can be concluded that thyroid disorders, pre-gestational diabetes mellitus, and gestational diabetes mellitus are common conditions in the group of pregnant women seeking treatment at the outpatient department of a tertiary care hospital. Proper diagnosis and treatment of these conditions will help avoid any complications or the mother and baby during and after delivery.

KEY WORDS: Thyroid Dysfunction, Pregestational Diabetes Mellitus, Gestational Diabetes Mellitus, Pregnancy, TSH, GDM, PGDM.

INTRODUCTION

Pregnancy is a special physiological condition marked by Signiant changes in metabolism and hormone levels needed to support the growth and development of the oecus. The thyroid gland and glucose metabolism are key in keeping both mother and baby stable. Thyroid problems and diabetes, especially pregestational and gestational diabetes, are some of the most common hormone-related issues during pregnancy. When these conditions occur together, they increase risks or both mother and baby. Therefore, early detection and proper treatment are crucial in prenatal care. Thyroid hormones play an important role in regulating metabolism, neurodevelopment, and energy homeostasis. Pregnancy is a period characterized by an increased need or thyroid hormones due to an increase in human chorionic gonadotropin, an increase in thyroid-binding globulin, and increased renal clearance of iodine. Imbalances in thyroid hormone levels, whether hypothyroidism or hyperthyroidism, may result in complications such as miscarriage, preeclampsia, anemia, low birth weight, and impaired neurocognitive development in the oecus. Likewise, glucose metabolism also undergoes Signiant changes in pregnancy. There is increased insulin resistance in pregnancy, especially in the second and third trimesters. This is a physio logical adaptation that ensures that glucose is supplied in adequate amounts to the oecus. However, in cases where this adaptation is not scient, gestational diabetes mellitus ensues. In pregestational diabetes, which comprises type 1 and type 2 diabetes mellitus that existed before pregnancy, the risk is even greater due to hyperglycemia-induced alterations in organogenesis.

MATERIALS AND METHODS

SOURCE O DATA:

Clinical complaints and demographic information o pregnant women visiting the OPD. Laboratory reports including:

Thyroid prole (TSH, ree T3, ree T4)

asting blood sugar (BS), postprandial blood sugar (PPBS), HbA1c Oral glucose tolerance test (OGTT)

Obstetric and medical history records.

Body mass index (BMI) measurements (age, weight, height).STUDY DESIGN &

DURATION

This is a cross-sectional observational study among pregnant women visiting the OPD o a tertiary care hospital to determine the prevalence of thyroid dysfunction and diabetes mellitus.

STUDY DURATION: 6 months

SAMPLE SIZE:

80 pregnant women presenting at the antenatal OPD will be recruited in the study over the study duration of 6 months.

STUDY CENTRE:

The study will be undertaken at the Department of Obstetrics and Gynecology, Kamineni hospitals, LB nagar

Data will be obtained from pregnant women presenting at the ante natal OPD.

INCLUSION CRITERIA:

Pregnant women presenting at the OPD over the study duration. Women at any trimester of pregnancy.

Women providing informed consent or being included in the study.

STUDY SITE:

The research will take place at the Outpatient Department (OPD) of the Tertiary Care Centre (Department of Obstetrics & Gynecology and related Endocrinology/Laboratory services),

Kamineni Hospital, LB Nagar, Hyderabad. Antenatal clinics and the laboratory facilities o the hospital will be used or recruitment and data collection.

METHODS O COLLECTION O DATA

A cross-sectional hospital-based design. Pregnant women presenting to the OPD over the study period who satisfy inclusion criteria will be approached or participation. Data will be collected by:

Structured interview and examination of antenatal cards or demographic, obstetric and medical history.

Clinical examination (weight, height, blood pressure).

Laboratory tests done on the same visit or within the same antenatal episode (see study tools). Data captured onto a pre-designed case report form by experienced investigators.

STUDY TOOLS:

Informed consent form and information sheet to participant.

Pre-tested Case Report form (CR)/structured questionnaire (obstetric history, socio-demographic data, medical history, risk actors).

Clinical measuring tools (calibrated weighing scale, stadiometer, sphygmomanometer). Laboratory investigation:

Thyroid function tests (free T4, TSH; anti-TPO when appropriate) and diabetes screening investigations (50 g GCT and 75 g OGTT according to protocol, random blood glucose / BS, HbA1c if appropriate).

Medical record abstraction form or history of pregestational diabetes or thyroid disease. Standard data collection manual and trained data collectors to provide consistent procedures.

STUDY PROCEDURE

Potential study subjects meeting the determined inclusion and exclusion criteria will be dentied by the investigator during Inpatient and Outpatient visits. The investigator will collect demographic and surgery- related data using a customized case report form. Eligible subjects will be normed about the study and their willingness to participate will be confirmed. The selected scale will gather data on Pregnant women presenting at the OPD over the study duration. The collected data will then be recorded on an Excel spreadsheet and subjected to statistical analysis to draw relevant conclusions.

STATISTICAL ANALYSIS:

Descriptive statistical analysis was performed using Statistical Package or Social Sciences (SPSS) software to determine frequency, percentage, mean, and standard deviation of the collected data.

frequency and percentage distribution were used to analyze demographic characteristics, trimester distribution, prevalence of thyroid dysfunction, diabetes mellitus, and gestational diabetes mellitus among pregnant women.

Independent t-test was performed to compare the mean age between participants with diabetes mellitus and thyroid dysfunction.

Chi-square test was applied to determine the association between:

Age groups and diabetic status

Age groups and thyroid dysfunction

Prior obstetric history and diabetic status

Prior obstetric history and thyroid dysfunction

Trimester pregnancy and diabetic status

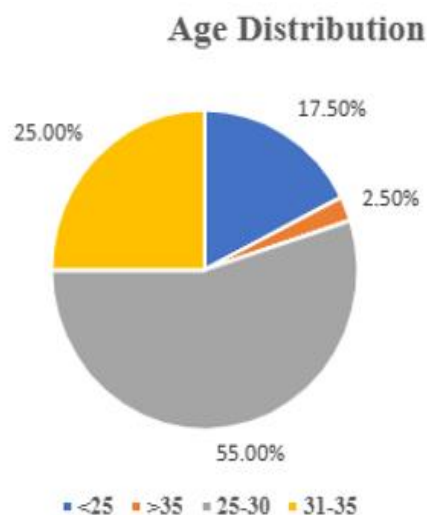
Trimester pregnancy and thyroid dysfunction

RESULTS:

Table 1: Age Distribution

AGE CATEGORIES	Frequency	Percentage
<25	14	17.50%
>35	2	2.50%
25-30	44	55.00%
31-35	20	25.00%

Fig 01: Age Distribution

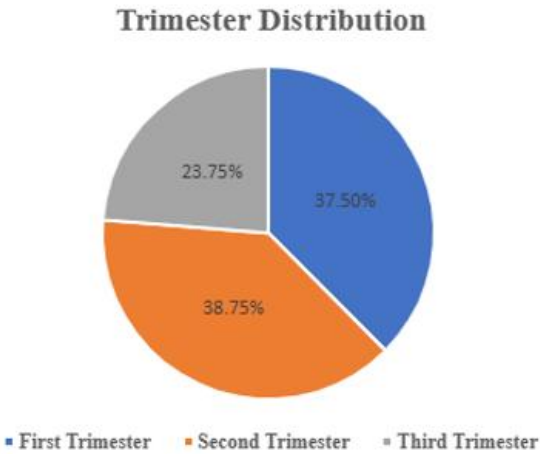


The data represents the distribution of pregnant women according to different age categories. Among the total study participants, the majority belonged to the 25–30 years age group, accounting for 44 participants (55.0%), indicating that most women attending the antenatal OPD were in the common reproductive age range. The 31–35 years age group included 20 participants (25.0%), making it the second most common category. Younger women aged below 25 years constituted 14 participants (17.5%) of the study population. Only 2 participants (2.5%) were aged above 35 years, showing that advanced maternal age pregnancies were less common in the study. Overall, the findings suggest that the study population was predominantly composed of women between 25 and 35 years of age.

Table 02: Trimester Distribution

Trimester	Frequency	Percentage
First Trimester	30	37.50%
Second Trimester	31	38.75%
Third Trimester	19	23.75%

Fig, 02: Trimester distribution



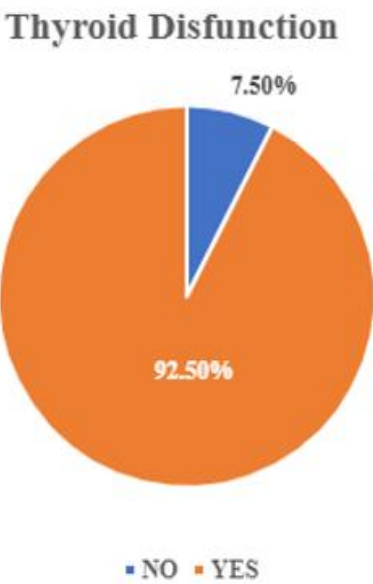
The data represents shows the distribution of pregnant women according to the trimester of pregnancy. Among the study participants, the second trimester constituted the highest proportion with 31 participants (38.75%), indicating that most women attended the antenatal OPD during mid-pregnancy. The first trimester included 30 participants (37.50%), showing a nearly similar proportion of women in early pregnancy. The

third trimester had the lowest representation with 19 participants (23.75%). Overall, the study population was fairly distributed between the first and second trimesters, while fewer women were in the third trimester at the time of data collection.

Table 03: Thyroid Dysfunction Distribution

Thyroid dysfunction	Frequency	Percentage
NO	6	7.50%
YES	74	92.50%

Fig 03: Thyroid Dysfunction Distribution



The data depicts the prevalence of thyroid dysfunction among the study participants. Out of the total pregnant women included in the study, 74 participants (92.5%) were found to have thyroid dysfunction, while only 6 participants (7.5%) had no thyroid abnormality. The findings indicate a markedly high prevalence of thyroid dysfunction in the study population. This suggests that thyroid disorders may be common among pregnant women attending the antenatal OPD and highlights the importance of routine thyroid screening during pregnancy for early diagnosis and management.

Table 04: Independent t Test between Age of Diabetic and Thyroid Dysfunction

	Mean Age	SD	t Value	P value
Diabetes Mellitus	28.25	3.84	0.64	0.52
Thyroid Dysfunction	27.7	3.39		

The calculated t-value was 0.64 with a corresponding p-value of 0.52. Since the p-value is greater than 0.05, the difference in mean age between the two groups was found to be statistically non-significant. Overall, the findings indicate that age did not show a significant association between participants with diabetes mellitus and those with thyroid dysfunction in the present study.

Table 05: Chi Square Analysis Between Age groups and Diabetic, Non-Diabetic Patients

Age Groups		Diabetic	Non-Diabetic	Chi Value	P value
<25	Count	12	2	0.55	0.09
	Expected	12.6	1.4		
25–30	Count	40	4		
	Expected	39.6	4.4		
31–35	Count	18	2		
	Expected	18	2		
>35	Count	2	0		
	Expected	1.8	0.2		

The table shows the association between age groups and diabetic status among the study participants using the Chi-square test. The majority of participants in all age groups were non-diabetic. In the 25–30 years age group, 40 participants were non-diabetic and 4 participants were diabetic, which represented the largest proportion of the study population. Among participants aged 31–35 years, 18 were non-diabetic and 2 were diabetic.

DISCUSSION:

The present cross-sectional study was conducted among pregnant women attending the antenatal outpatient department of a tertiary care center to evaluate the prevalence of thyroid dysfunction, pregestational diabetes mellitus, and gestational diabetes mellitus during pregnancy. Pregnancy is associated with several physiological and hormonal changes that significantly influence endocrine function, particularly thyroid hormone regulation and glucose metabolism. These endocrine disorders, if le undiagnosed or inadequately managed, may adversely affect both maternal and fetal outcomes. Therefore, the present study aimed to assess the distribution and associations of thyroid dysfunction and diabetes mellitus among pregnant women. In the present study, the majority of participants belonged to the age group of 25–30 years (55%), followed by 31–35 years (25%). The mean maternal age was 27.8 ± 3.4 years, indicating that most participants were within

the common reproductive age group. This finding is comparable with several previous studies where the majority of pregnant women attending antenatal clinics were between 25 and 30 years of age. The predominance of this age group may be attributed to the fact that women commonly conceive during the peak reproductive years. Women above 35 years constituted only a small proportion of the study population, suggesting comparatively fewer advanced maternal age pregnancies in the present setting. Regarding trimester distribution, the majority of pregnant women were in the second trimester (38.75%), followed closely by the first trimester (37.50%), while fewer women were in the third trimester (23.75%). This distribution suggests that most women seek antenatal care during early and mid-pregnancy, which may facilitate earlier screening and diagnosis of endocrine abnormalities. Early antenatal registration is particularly important for identifying thyroid dysfunction and diabetes mellitus because timely intervention can significantly reduce maternal and fetal complications. One of the most important findings of the present study was the remarkably high prevalence of thyroid dysfunction, which was observed in 92.5% of the participants. Thyroid dysfunction was present across all age groups and trimesters of pregnancy. The prevalence noted in the present study was considerably higher than that reported in many previous Indian and international studies. This unusually high prevalence may be due to regional variations, referral bias in a tertiary care center, increased awareness and screening practices, iodine nutritional status, or the inclusion of subclinical thyroid disorders in the diagnostic criteria.

CONCLUSION:

The present cross-sectional study was conducted to evaluate the prevalence of thyroid dysfunction, pregestational diabetes mellitus, and gestational diabetes mellitus among pregnant women attending the antenatal outpatient department of a tertiary care center. The study findings demonstrate that endocrine disorders, particularly thyroid dysfunction and diabetes mellitus, are important health concerns during pregnancy and require early identification and appropriate management to prevent maternal and fetal complications. The majority of pregnant women in the present study belonged to the reproductive age group of 25–30 years, with a mean

maternal age of 27.8 ± 3.4 years. Most participants were in the first and second trimesters of pregnancy, indicating that antenatal visits commonly occur during early and mid-pregnancy, which provides an opportunity for timely screening and intervention. The prevalence of diabetes mellitus and gestational diabetes mellitus was 10% and 11.25% respectively. Although the majority of pregnant women were non-diabetic, the occurrence of diabetes during pregnancy remains clinically important because of its potential maternal and fetal complications. Maternal age and trimester of pregnancy did not show statistically significant associations with diabetic status, whereas prior obstetric history demonstrated a significant association with diabetes mellitus. This indicates that women with previous pregnancies may have an increased risk of developing diabetes during pregnancy. The study findings highlight the importance of routine antenatal screening for thyroid dysfunction and diabetes mellitus in all pregnant women, particularly in tertiary care settings. In conclusion, thyroid dysfunction and diabetes mellitus are common endocrine disorders during pregnancy and represent significant contributors to maternal and fetal morbidity. Routine screening, early detection, proper management, and continuous follow-up during antenatal care are essential for improving pregnancy outcomes and ensuring maternal and fetal well-being.

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