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# Prevalence of thyroid disorders in Gestational Diabetes mellitus (GDM) : A tertiary centre study

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## ABSTRACT

Gestational diabetes mellitus (GDM) and especially pregestational diabetes mellitus, are known as risk factors for pregnancy complications, effecting both the mother and the fetus. The aim of this study was to determine the prevalence of the thyroid disorders in pregnant women with gestation diabetes mellitus (GDM). A study on the prevalence and possible risk factors associated with gestational diabetes was undertaken on 100 mothers between the age group of 20 and 35 years; among pregnant women recruited from Gynecology and Obstrectics outpatient of S.M.S Medical College, Jaipur, Rajasthan from January 2016 to January 2017. In this study 100 women were divided in two groups, Group I (n=50) were control group (non gestational diabetic) and Group II (n=50) was study group (gestational diabetic). In present study maximum subjects 35 (70%) seen in control group and 31 (62%) in study group in 25-32 years of age group. The prevalence of thyroid disorder (hypothyroidism) in gestational diabetes females was 12%. In comparisons to control group, women with gestational diabetes and hypothyroidism were statistically significant (p=0.229*). Thyroid dysfunction is prevalent in women with GDM so, thyroid function should be evaluated in these patients during pregnancy. Moreover, the lack of information regarding how tight the thyroid function and glucose concentrations were under control and the BMI of the patients may also serve as possible confounding factors.

**Keywords:** Gestational diabetes mellitus, Hypothyroidism, Endocrinopathy

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## INTRODUCTION

The prevalence of hypothyroidism in pregnancy is around 2.5% according to the Western literature[1]. The prevalence of GD is around 0.1–0.4% and that of thyroid autoimmunity (TAI) is around 5–10%[2].

The prevalence of diabetes mellitus during pregnancy is about 7%, most of them are gestational, of note there is a constant increase of the prevalence of diabetes mellitus due to the gradual increase in pregnant women's BMI (Body Mass Index) and the epidemic of obesity during recent decades[3]. Gestational diabetes mellitus (GDM) and especially pregestational diabetes mellitus, are known as risk factors for pregnancy complications, effecting both the mother and the fetus and include among the rest gestational hypertension, cesarean sections, macrosomic fetuses and shoulder dystocia.[4,5] Moreover, maternal diabetes is associated with long term implications on the fetus including increase incidence of future obesity and type II diabetes[3].

Hypothyroidism is the second most common endocrinopathy during pregnancy, and its incidence range from 2% to 5%. Autoimmune thyroiditis (also known as Hashimoto's thyroiditis) and iatrogenic thyroid gland destruction as a therapeutic measure for hyperthyroidism are the most common etiologies for this endocrinopathy in pregnant women.[6]

There is inconsistent evidence regarding the association between hypothyroidism and GDM. Some reports found such an association, while others failed to show this connection, but did show an increased risk for later onset diabetes in women who had hypothyroidism during pregnancy, and women with an increased risk for GDM, especially those with familial history of both DM and hypothyroid disorders, also have an increased prevalence of positive antithyroid autoantibodies[7]. The aim of this study was to determine the prevalence of the thyroid disorders in pregnant women with gestation diabetes mellitus (GDM).

## MATERIALS AND METHOD

A study on the prevalence and possible risk factors associated with gestational diabetes was undertaken on 100 mothers between the age group of 20 and 35 years; among pregnant women recruited from Gynecology and Obstrectics outpatient of S.M.S Medical College, Jaipur, Rajasthan from January 2016 to January 2017. Institutional ethics committee permission was obtained, and subjects were recruited for the study after obtaining written informed consent. They were subjected to clinical evaluation with emphasis on the family history of thyroid disorder and the obstetric history.

In this study 100 women were divided in two groups, Group I (n=50) were control group (non gestational diabetic) and Group II (n=50) was study group (gestational diabetic).

Exclusion criteria included: chromosomal abnormalities or structural defects of the fetus, and multiple pregnancies. The diagnosis of diabetes or thyroid disorder and the data on demographic characteristics, medical and obstetric history, pregnancy outcomes, including maternal and neonatal morbidity and mortality, were obtained from the computerized database.

## RESULTS AND DISCUSSION

In present study maximum subjects 35 (70%) seen in control group and 31 (62%) in study group in 25-32 years of age group (table 1). The prevalence of thyroid disorder (hypothyroidism) in gestational diabetes females was 12%. In our study the mostly subclinical hypothyroidism (8%) with gestation diabetes followed by overt hypothyroidism (4%) (Table 2). In comparisons to control group, women with gestational diabetes and hypothyroidism were statistically significant (p=0.229*) (table 3).

**Table 1: Shows the age wise distribution of pregnant women in control and study group**

| Age (years) | Control Group | Study Group |
|---|---|---|
| 18-24 yrs | 13 | 10 |
| 25-32 yrs | 35 | 31 |
| >32 yrs | 2 | 9 |

**Table 2: Shows the distribution of pregnant women with thyroid disorder in control and study group**

| Thyroid disorder | | Study group | Control Group |
|---|---|---|---|
| Hypothyroid | Overt | 2 (4%) | 1 (2%) |
| | Subclinical | 4 (8%) | 1 (2%) |
| Hyperthyroid | | 0 | 0 |

**Table 3: Shows the Comparison of Thyroid disorder in pregnant women in Between groups**

| Thyroid disorder | Study group | Control Group | Chi-square test | P-value |
|---|---|---|---|---|
| Euthyroid | 44 | 48 | 1.223 | 0.269* (<0.5) |
| Hypothyroid | 6 | 2 | | |

Diabetes and thyroid disorder are the two most common endocrinopathies during pregnancy. Both conditions have been previously shown to be associated with various pregnancy complications affecting both the mother and the neonate. The association between thyroid disorder and metabolic syndrome including DM and insulin resistance is a subject of extensive studies.[8] reported that among diabetic patients 2.7% had also overt hypothyroidism, while the prevalence of subclinical hypothyroidism reached up to 30% in these patients[8]. Other studies reported a prevalence of 10.8–13.4% of thyroid diseases (mostly hypothyroid disorders) in

diabetic patients, and the highest rates were recorded among type I diabetes patients and in females.[9]

In recent years there has been ongoing research exploring the connection between hypothyroidism and insulin resistance[10] found that overt hypothyroidism during pregnancy increases one's risk to develop diabetes (OR of 7) later in life[11]. A supportive evidence for this association is the finding that treatment with metformin suppresses TSH secretion[10]. It has been proposed to screen diabetic patients or patients at risk for GDM, for thyroid dysfunction, especially those with DM type I, positive thyroid antibodies, and with TSH concentrations in the upper limits of normal range[10].

In our study the prevalence of gestational diabetes mellitus & thyroid disorder in our population was 12%. In our study the mostly subclinical hypothyroidism (8%) with gestation diabetes followed by overt hypothyroidism (4%). Agarwal et al study reported that thyroid dysfunction rate is similar in GDM and non-diabetic pregnant women,[12] but Velkoska Nakova et al reported higher prevalence of hypothyroxinemia in GDM than non-diabetic controls.[13]

The study reported herein is the first study to explore the epidemiology of the combined pathology of hypothyroidism and DM during pregnancy. The prevalence of this combined pathology in our population is 12% of all women with GDM. However, the differences in the prevalence of the disease in the different ethnic groups of our region suggest that the prevalence of the disease may be higher and there is under diagnosis of this combined pathology among the rural and nomadic population of our region.

## CONCLUSION:

Thyroid dysfunction is prevalent in women with gestational diabetes mellitus (GDM) so, thyroid function should be evaluated in these patients during pregnancy. Moreover, the lack of information regarding how tight the thyroid function and glucose concentrations were under control and the BMI of the patients may also serve as possible confounding factors.

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