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# GESTATIONAL DIABETES MELLITUS;
## STILL A GREAT PROBLEM

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**ABSTRACT… Objectives:** The present study was designed to find the importance of proper screening and early diagnosis of gestational diabetes mellitus. **Study Design:** A prospective/ descriptive study **Place of Study:** tertiary care hospital Hyderabad. **Duration of Study:** from September 2014 to November 2014. **Materials and Methods:** A total of 168 pregnant females between the ages of 20-40 years & in their 24th to 28th week of gestation were enrolled for the study. Oral Glucose Tolerance Test of all the participants was done after an overnight fasting of 10-12 hours. All the participants were given 75gm of glucose per 100 ml of distilled water. The blood samples were collected after two hours time for serum glucose levels. **Results:** Most of the participants were below 26 years of age 47(27.9%) with the mean age of 30.2±5.83 years. However the highest prevalence of GDM was observed in age group 31-35 years (36%). Among the 25 cases of gestational diabetes mellitus the highest number of patients with GDM were multipara (40%) followed by parity of 3-4 gravida (32%). Twenty seven women (16%) women had family history of diabetes mellitus. Among these 12/27 (44.4%) women were found with GDM, compared to 15/141 (10.6%) who have no family history of diabetes mellitus. Total 14 (8.33%) women were found obese, out of these 8 (57%) women had GDM while only 6 (42.8%) women had no GDM. **Conclusion:** The prevalence of GDM in the present study is found to be 14.8%. A prevalence of GDM was higher in the elderly multiparous females who were overweight and had family history of diabetes mellitus.

**Keywords:** Gestational diabetes mellitus, multiparous, obesity.

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## INTRODUCTION

Gestational Diabetes Mellitus (GDM) refers to clinical presence of diabetes mellitus in a pregnant lady which remits following the termination of delivery. Thus the elevated levels of serum glucose levels in a pregnant lady who has no any evidence of diabetes in the past years is termed as gestational diabetes mellitus. It predicts risk for overt diabetes in women.[1,2] GDM affects the health of pregnant females and results. About 3-10% of all pregnancies are complicated by diabetes.[3]

The prevalence of GDM is increasing worldwide. Yearly 21 million of the world (7% of the population) is reported.[4] It is more common in developing countries including India and Pakistan. The increasing prevalence in developing countries is related to decreasing levels of physical activity, changes in dietary patterns and increasing prevalence of obesity.[5] In Pakistan it is difficult to foretell any uniform prevalence levels because of variations in the living standards, differences in the economic conditions and dietary habits. Zargar et al found the prevalence of GDM to be 3.8% in kashmiri women.[5]

In a random survey performed in various cities in Pakistan, it is found that rates of GDM in Pakistan range from 3.2-3.5%.[6] Another small hospital based studies have given figure of 3.2% for GDM.[7] Although plenty of factors contribute to the development of GDM which includes young age, high parity and family history; however the major risk factor for the GDM is obesity making about 20% higher risk as compared to non obese females.[6]

GDM may result in the maternal as well as fetal complications that can increase the fetal mortality

and morbidity.[8] Therefore early diagnosis is the key that may allow proper measures to be taken in time to make satisfactory outcome of pregnancy.[8]

This implies that universal screening and care of GDM is of paramount public health priority, than risk factor screening.[9] To standardize the diagnosis of GDM, the World Health Organization (WHO) has proposed using a hour 75 gm OGTT with a threshold plasma glucose concentration of greater than 140 mg/dl at 120 minutes.[9]

Due to increase number of females affected it is important to permit for rational planning and allocation of resources and the preventive strategies that may be undertaken in future and special attention ought to be paid to the population in developing countries.

This study was conducted to choose the importance of proper screening and early diagnosis of gestational diabetes mellitus.

## MATERIALS AND METHODS

This was a prospective study conducted at a tertiary care hospital in Hyderabad from September 2014 to November 2014. A total of 168 pregnant females between the ages of 20-40 years & in their 24th to 28th week of gestation were enrolled for the study. After taking relevant history, complete information regarding age, parity, obesity, family history, earlier obstetric complications was collected from the registered ladies on well-designed questionnaire. The ladies with diabetes before pregnancy & ladies having earlier history of medical illness like hypertension, cardiac or renal diseases were excluded from the study.

The participant females were asked to undergo for Oral Glucose Tolerance Test (OGTT) after an overnight fasting of 10-12 hours. All the participants were given 75gm of glucose per 100 ml of distilled water. The blood samples were collected after two hours' time for serum glucose levels. The glucose value exceeding 140mg/dl was declared as a case of GDM. Consents from the selected pregnant ladies were obtained.

Statistical analysis was done by using SPSS computer application version 16. Information was introduced as a percentage and mean $\pm$ standard deviation. The P value $< 0.05$ was considered as significant.

## RESULTS

A total of 168 women were enrolled during the study period and their baseline characteristics are shown in Table-I. GTT was performed on selected pregnant women. GDM was diagnosed in 25(14.8%) women shown in Table-II.

| Age (years) | Number of Cases | Percentage |
|---|---|---|
| 20-25 | 47 | 27.9 |
| 26-30 | 41 | 24.4 |
| 31-35 | 39 | 23.3 |
| 36-40 | 41 | 24.4 |
| Total | 168 | 100 |
| **Parity** | **Number of Cases** | **Percentage** |
| 0-2 | 88 | 52.3 |
| 3-4 | 50 | 29.8 |
| Multipara | 30 | 17.9 |
| Total | 168 | 100 |

**Table-I. Baseline characteristics of the study population (n = 168)**

| Months | Sep-14 | Oct-14 | Nov-14 | Total |
|---|---|---|---|---|
| **Total** | **60 (35.7%)** | **51 (30.3%)** | **57 (33.9%)** | **168 (100%)** |
| GDM | 10 (5.9%) | 6 (3.57%) | 9 (5.35%) | 25 (14.8%) |

**Table-II. Prevalence rate of GDM**

Most of the participants were below 26 years of age 47(27.9%) so the highest number of participants were in the age group 20-25 years with the mean age of 30.2$\pm$5.83 years. The highest prevalence of GDM was observed in age group 31-35 years (36%).

Among 25 cases of gestational diabetes mellitus the highest number of patients with GDM were multipara (40%) followed by parity of 3-4 gravida (32%). While in the non GDM group highest number of cases was of 0-2 gravida 88(52.3%) cases showing a positive correlation of increasing

parity with the occurrence of GDM (Table-II).

| Age (years) | Number of Cases | Percentage |
|---|---|---|
| 20-25 | 5 | 20 |
| 26-30 | 6 | 24 |
| 31-35 | 9 | 36 |
| 36-40 | 5 | 20 |
| Total | 25 | 100 |
| **Parity** | **Number of Cases** | **Percentage** |
| 0-2 | 7 | 28 |
| 3-4 | 8 | 32 |
| Multipara | 10 | 40 |
| Total | 25 | 100 |

**Table-III. Age and parity of GDM patients (n = 25)**

Twenty seven women (16%) women had family history of diabetes mellitus. Among these 12/27 (44.4%) women were found with GDM, compared to 15/141 (10.6%) who have no family history of diabetes mellitus. This association was found to be significant (P<0.002), shown in Table-IV.

Total 14 (8.33%) women were found obese, out of these 8 (57%) women had GDM while only 6 (42.8%) women had no GDM (Table-IV). This association was found to be significant (P<0.0001).

| Variables | Total | Percentage | GDM | No GDM |
|---|---|---|---|---|
| Family History | 27 | 16 | 12 | 15 |
| Obesity | 14 | 8.35 | 8 | 6 |
| No any risk factor | 127 | 81.5 | 5 | 122 |
| **Total cases** | **168** | **-** | **25** | **143** |

**Table-IV. Patients with GDM and associated risk factors**

## DISCUSSION

The present study was conducted to evaluate the prevalence of GDM in our society and its association with the different risk factors. The routine antenatal visits and monitoring of serum glucose levels can reduce the prevalence of GDM and thus help in decreasing the maternal complications as well as neonatal morbidity and mortality.

According to our study 25 (14.8%) were found to have GDM who participated in the GTT measurements in the OPD clinics. None of these had diabetes previously. This is much similar in some studies done in India.[10] They also used 75 gm OGTT for screening pregnant ladies coming in OPD. In other study, the prevalence of GDM was found to be 4.2%.[1] In a study conducted in Services Hospital Lahore the prevalence of GDM was found to be about 1%.[11]

A general awareness regarding the dietary modifications, effects of healthy diet on physical and mental health are the main factors along with poverty for the increasing incidence of GDM. This is more aggravated in the pregnancy by obesity due to imbalanced dietary habits. This leads to regrettably as a major risk for developing diabetes.[12,13,14]

In a study conducted at India by Zargar et al 2004 reported GDM as 3.8% prevalent. Also the increasing age has been reported to have significant association with prevalence of GDM.[15] In the present study prevalence of GDM increased significantly with increasing age and 9 (36%) pregnant females of GDM group were seen in the age group 31-35 years. A similar association has been seen in earlier studies.[15,16,17]

Higher numbers of our patients presented with gestational diabetes were multipara 10/25 (40%). In accordance to our findings Seshiah et al[10] and Zargar et al[15] have reported similar findings. Higher parity has also been present in a study by Kanikaet al.[18]

The association between parity and diabetes is strongly linked to obesity and age. Ladies with higher parity often are older and fatter. Obesity is an intermediate outcome in the causal pathway between parity and GDM, probably a mediating

factor. Adjustments for BMI, on the other hand could diminish the strength of this.[16,19] In our study 8 (9.6%) pregnant females with GDM were found obese out of 25 cases. Saldana et al also evaluated the association between obesity and the risk of glucose intolerance and GDM, finding higher risks than in the earlier analysis.[20]

Family history of diabetes is reported to be correlated with increased prevalence of gestational diabetes mellitus.[17,21] Similarly in the present study significant association was found between cases with GDM and family history of diabetes mellitus.

## CONCLUSION

The prevalence of GDM in the present study is found to be 14.8%. A prevalence of GDM was higher in the elderly multiparous females who were overweight and had family history of diabetes mellitus.

This study has highlighted the importance of screening of serum glucose levels in pregnant females. Preventive measures should be adopted and awareness of pregnant females for healthy diet along with physical activity can reduce the obesity. Early screening of pregnant females gives an early diagnosis of GDM & it is the necessity of an hour.



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"Everyone falls down.
Only the best get back up."

Unknown

## AUTHORSHIP AND CONTRIBUTION DECLARATION

| Sr. # | Author-s Full Name | Contribution to the paper | Author=s Signature |
|---|---|---|---|
| 1 | Dr. Afsheen Qazi | Conception and design, Writing the article, Final approval of the article | |
| 2 | Dr. Amin Fahim | Writing the article, Data collection Analysis and interpretation, Statistical analysis | |
| 3 | Dr. Aneela Qureshi | Analysis and interpretation, Critical revision of the article, Statistical analysis, | |
| 4 | Dr. Mazhar ul Haque | Final approval of the article. Obtained funding, Writing the article, Overall responsibility | |