

GESTATIONAL DIABETES IN WOMEN PRESENTING TO TEACHING HOSPITALS IN KHYBER PAKHTUNKHWA

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ABSTRACT

Objectives: To find out the frequency of Gestational Diabetes Mellitus (GDM) in the female population of Khyber Pakhtunkhwa.

Material and Methods: Two hundred pregnant women with impaired blood glucose level were included in this cross sectional study conducted in Department of Gynaecology and Pathology Khyber Teaching Hospital and Nasir Teaching Hospital, Peshawar, Pakistan from January 2016 to December 2016. Participants included were women with gestational age up till 28 weeks, with positive family history for diabetes mellitus, signs and symptoms of Diabetes, obesity and bad obstetrical history. Women above the age of 40 years and known diabetics were not included in this study. In accordance to inclusion criteria fasting, random blood sugar levels and OGTT was done.

Results: Minimum age was 16 years and maximum age was 40 years with mean age of 28 years (SD \pm 6.1). The number of female with positive family history for diabetes mellitus was 136 and mostly women of gravida 1 and gravida 2 were affected. Out of total 200 patients, 10% of the participants showed raised sugar level on OGTT.

Conclusion: The frequency of Gestational Diabetes Mellitus (GDM) is high amongst the women of KPK in gravida 1 and 2.

Key Words: Gestational diabetes mellitus, Hyperglycemia, Gravida.

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INTRODUCTION

Diabetes Mellitus is defined by the American Diabetic Association (ADA) as a condition of altered metabolism that is due to insulin resistance or insulin deficiency which leads to hyperglycemia¹. More than 190 million people are suffering from DM. The prevalence of diabetes is estimated to be more than 300 million by 2020². GDM is common not only in developing countries but also in developed countries. The prevalence of GDM is 1-14% in the US.³ In Sri Lanka it is 5.5%⁴ and it is 4.5% in Iran⁵. A study done in Iran showed that 1 out of every 20 women will develop GDM⁶. Its prevalence is 2.3% in China⁷. The prevalence of GDM is different in different

ethnic groups. The risk of GDM in Hispanic women is 2-4 times more than Non-Hispanic white women.⁸ In Caucasian women its prevalence is 7%⁹. In Australia it ranges between 3-10%¹⁰. Its frequency ranges from 10.6-14.5% in the United Arab Emirates in accordance to ADA criteria. In Southeast Asian population its risk is 2-3 times more than population across the world.¹¹ It is 3.2-3.5% in Pakistan¹². Obesity and GDM both are on the rise worldwide¹³. In view of this increasing GDM, all pregnant women should be screened¹⁴. Screening for GDM is normally suggested at around 28 weeks of pregnancy¹⁵. Out of the existing methods of diagnosis for GDM glucose tolerance test is the standard. The patient when diagnosed can either be treated with diet control or insulin therapy in order to maintain normal glucose levels during pregnancy and to avoid any complication¹⁶. The risk for GDM increases with high pre-gravid weight is independent of age, parity and ethnicity¹⁷. If pre gravid BMI is between 25-29 per kgm² it increases the risk for GDM. A 5 year increase in age increases the risk for GDM by 1.6 after controlling all other factors.¹⁸ A study carried out in a multi ethnic clinic in London showed that women in Indian subcontinent

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had a highest risk for GDM which was followed by women from Southeast Asia, then Middle East and then Africa¹⁹.

Studies of similar nature have not been conducted in KPK, therefore there is a need for identifying the frequency of GDM in our population. This study will help the obstetricians in describing the magnitude of the problem.

MATERIAL AND METHODS

Two hundred pregnant women with impaired blood glucose level were included in this cross sectional study conducted in the Department of Pathology and Gynaecology, Khyber Teaching Hospital and Nasir Teaching Hospital, Peshawar from January 2016 to December 2016.

Participants included were women with gestational age up till 28 weeks, with positive family history for Diabetes Mellitus, signs and symptoms of Diabetes, obesity and bad obstetrical history. Women above the age of 40 years and known diabetics were not included in this study. In accordance to inclusion criteria, fasting, random blood sugar levels and OGTT was done after the informed consent of the participants. All the data was collected and relevant information was noted on a proforma designed for this study.

RESULTS

Minimum age was 16 years and maximum age was 40 years with mean age of 28 years (SD ± 6.1). Maximum number of participants fall in the age range of 21 to 25 years. More than 80% of the study group fall in the category of G1, G2 and G3. The possible explanation for this is that we did not include known diabetic patients and also gestational diabetes is diagnosed in the first and second pregnancies. Out of 200 participants 136 had positive family history for DM. Fasting blood

glucose levels are shown in Table 1. 200 participants were subjected to OGTT, the result of which is shown in Table 2. Out of 200 participants, 20 participants showed raised first and second hour blood glucose levels. So in this study the frequency of GDM is 10%.

DISCUSSION

The frequency of GDM is high in our region and is comparable with both developed and developing countries. Attempts to identify maternal risk factors such as maternal age, previous history of GDM, family history of diabetes and parity revealed mixed results.

Maternal age in this study ranges from 16-40 years, with mean age of 28 years and standard deviation ± 6.1 . Age has an independent effect on GDM. Dorn horst et al reported a relative risk of developing GDM of 2.9 and 5.2 among women of 25-34 years and above compared to women with age less than 25 years¹⁶. Bertowitz et al mentioned that 5 years increase in age increases the risk of GDM 1.6 times after controlling for the effects of ethnicity, pre-pregnancy weight, prenatal care and family history of diabetes^{17,18}.

In this study 136 females had positive family history of diabetes that is 68%. In a study carried out by Langer O et al reported 45% of the women with GDM had paternal history of diabetes. In a study conducted in India, women who had higher level of blood glucose during pregnancy had a higher prevalence of diabetes later in life as compared to women with normal level of glucose during pregnancy¹⁹.

Results of this study are a bit higher than the studies done in other countries²⁰. It could be higher in this population because of the fact that diabetes is on rise in Asian and African countries as mentioned by Cheung NW et al that by the year 2030 most of the Asian population will be diabetic. This is also attributable to the rapid urbanization and life style changes in our society. Lack of physical activity, changed food habits and sedentary life style add to the cause.

A study conducted in Iran revealed the incidence to GDM to be 8.4%²⁰. The incidence of GDM is on increase among the women with previous bad obstetrical history. Women with previous history of abortion and still birth have increased chance of GDM and later diabetes for reasons not very clear. It has been reported that GDM is strongly associated with high risk of serious maternal and paternal abnormalities²¹ GDM mother should be examined regularly during pregnancy and during post-partum period for early diagnosis and management of complications²².

In this study 34% of the participants were obese with BMI $>25\text{kg/m}^2$. Moshe MD et al in his study doc-

Table 1: Fasting blood glucose levels

| Glucose level in blood | No. of patients with percentages |
|------------------------|----------------------------------|
| <130mg/dl | 180 (90%) |
| >130mg/dl | 20 (10%) |

Table 2: Glucose levels based on OGTT

| Time | Glucose Level | No. of Patients with percentages |
|----------|---------------|----------------------------------|
| 1st Hour | <200mg/dl | 180 (90%) |
| | >200mg/dl | 20 (10%) |
| 2nd Hour | <140mg/dl | 180 (90%) |
| | >140mg/dl | 20 (10%) |

umented that gestational diabetes is much higher in overweight and obese pregnant women. Weight gain of more than 10 kg during pregnancy prone the person towards obesity and later development of diabetes.

There is a significant relation of GDM with socio-economic status including literacy level, age of the mother, nutritional status and even ethnicity²⁵. Lower socio-economic status is well documented risk factor for developing chronic diseases in developing and under developed countries. Socially deprived GDM women have less opportunity to get pre-natal care and thus are prone to complications during pregnancy²⁶.

Increased maternal age and BMI are of great importance as risk factors for developing GDM in South Asian and Black African women as compared to white European women²⁷. In the study conducted in China the prevalence of GDM has substantially increased from 2.3% in 1999 to 9.3% in 2015 in parallel to huge increase in pre-pregnancy BMI and increased maternal age²⁸. Keeping in view of this fact it is advisable that the South Asian and black African women should have healthy eating habits and weight control strategies to avoid developing GDM.

CONCLUSION

The frequency of GDM (gestational diabetes mellitus) is high amongst the women of KPK.

RECOMMENDATIONS

Based on the results of this study it is suggested that pre-natal health care should be available to every woman. Screening should be made mandatory around 24 to 28 weeks of pregnancy. Woman with altered level of glucose during pregnancy should be assessed regularly for developing DM in later years of life.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Ali A: Contributed to concept ,design ,acquisition of date final approval

Munir AH: Drafting of manuscript

Rafiq A: Bibliography & proof Reading

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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