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Original Article

Diabetes Mellitus and Associated Risk Factors among Pregnant Women in a Hospital

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***ABSTRACT*:**
To determine the prevalence of diabetes mellitus and its risk factors among pregnant women in a Hospital. The data collection was done with designed inventory performa that included socio demographic information and medical history. Diabetes was confirmed by consulting the treating doctors. Patient's previous exposure to Gestational diabetes mellitus (GDM), family history of diabetic patient, Body mass index (BMI) and gestational age was also determined. Fasting blood sugar level of every patient was obtained. GDM was diagnosed if two or more abnormal values were obtained. GDM was measured at 0, 1, 2, and 3 hours interval using glucose oxidase method by (Randox, United Kingdom). Total 50 patients were examined and most of them showed headache and fatigue were the most common symptoms that were seen among pregnant women, while nausea and increased thirst were secondary causes among pregnant women who attended antenatal clinic. 32% had no etiological factors involved for their diabetes whereas very few of them had high body mass index, overweight, and family history. About 25-26% of these pregnant women usually do regular exercise and were on healthy diet. The range of average blood sugar level was 60 to 115mg/dl. The study showed high incidence rate of diabetes mellitus that is 9 out of 50 pregnant women. All the 9 cases examined positive for diabetes were of gestational diabetes. This could be as a result of high body mass index, family history and over body weight.
Key Words: Pregnant women, diabetes mellitus, Gestational diabetes.

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INTRODUCTION

Diabetes is a serious disease in which your body cannot properly control the amount of sugar in your blood because it does not have enough insulin. As the incidence of diabetes continues to rise and increasingly affects individuals of all ages, including young adults and children, women of childbearing age are at high risk of diabetes during pregnancy.[1]

Diabetes is the most common medical complication during pregnancy, representing 3.3% of all live births.[2]

Types of diabetes mellitus:-

1. Type 1 diabetes is an autoimmune disease that requires daily use of insulin. Symptoms of Type 1 may include increased thirst and urination, constant hunger, weight loss, blurred vision, and extreme fatigue.
2. Type 2 diabetes is most common types of diabetes. Symptoms of Type 2 include bladder or kidney infections that heal slowly, increased thirst and urination, constant hunger and fatigue. This form of diabetes is often associated with older age, obesity, family history, previous history of gestational diabetes.
3. Gestational diabetes mellitus is defined as glucose intolerance of variable degree with onset or first recognition during pregnancy.

The hallmark of GDM is increased insulin resistance. Insulin resistance is a normal phenomenon. Emerging in the second trimester of pregnancy, which progresses thereafter to levels seen in non pregnant patients with type 2 diabetes.[3] The estimated lifetime risk of diabetes was higher at birth and throughout life for ethnic and racial minority groups than for Non- Hispanic whites and for women when compared to men.[4]

The epidemic of diabetes is not limited to western countries, but reaches worldwide affecting individuals in countries such as India and China. The increased prevalence is attributed to the aging population structure, urbanization, the obesity epidemic and physical inactivity.

In 2030, the prevalence will be 4.4%, translating into 366 million individuals with diabetes worldwide.[5]

Risk factors for developing gestational diabetes include growth abnormalities and chemical imbalances after birth, previous diagnosis of gestational diabetes, maternal age, Overweight, impaired glucose tolerance. Smokers are also at high risk for developing GDM.

Infants born to mothers with GDM are at risk.GDM interferes with maturation, causing dysmature babies prone to respiratory distress syndrome due to incomplete lung maturation and impaired surfactant synthesis.Offspring of women with GDM develop congenital malformations.

These risks can be reduced by better detection and control of GDM. A large case-control study found that gestational diabetes was linked with a limited group of birth defects, and that this association was generally limited to women with a higher body mass index. All these complications are preventable as they are related to the degree of maternal glycaemic control. Hence present study was conducted to assess the prevalence of different types of diabetes among pregnant ladies.

MATERIAL & METHODS

This cross-sectional study carried out on women who attended antenatal clinic of Mata Kaushalya Hospital, Patiala, Punjab. The target population includes all pregnant women between the age 20-35 year and the study population was composed of 50 women.

The instrument for the data collection was designed inventory performa that included socio demographic information and medical history. Diabetes was confirmed by consulting the treating doctors. Patient's previous exposure to GDM, family history of diabetic patients, BMI and gestational age was also determined. Fasting blood sugar level of every patient was obtained. GDM was diagnosed if two or more abnormal values were obtained. GDM was measured at 0, 1, 2, and 3 hours interval using glucose oxidase method by (Randox, United Kingdom). No pregnant woman was excluded from the research rather all that attended the clinic were screened for GDM.

STATISTICAL ANALYSIS

Data was analyzed using SPSS version 16.0. Descriptive statistics were obtained and frequency distribution, means, standard deviation were calculated. Student's T-test and ANOVA test were used for comparison in mean scores of study subjects. The p-value of 0.05 or less was considered as statistically significant.

RESULTS

Total 50 patients were examined and most of them show headache and fatigue as the most common symptoms, while nausea and increased thirst were secondary causes among pregnant women who attended antenatal clinic as shown in Figure 1.

Figure 2 showed that majority of the pregnant women that is 32% had no etiological factors involved for their diabetes whereas very few of them had high body mass index, overweight, and family history as reason for diabetes.

About 25-26% of these pregnant women usually do regular exercise and were on healthy diet and 18% of them take less sugar intake as shown in Figure 3.

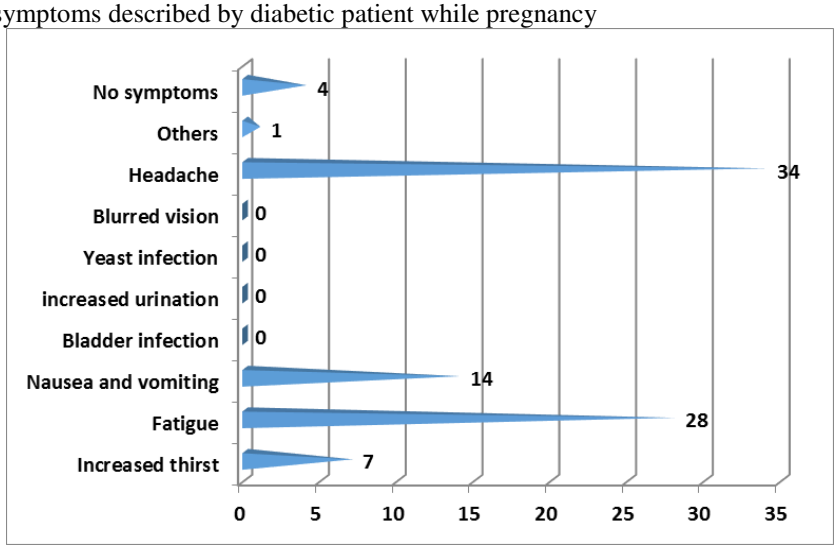
Table 1 showed a total of 50 pregnant women aged between 20-35 years were assessed with pregnancies between 1-9 months of gestation. Out of total sample around 9 women were diagnosed with diabetes whereas 41 women were found healthy. All these 9 pregnant women that were diagnosed positive were having gestational diabetes.

More than half of the women belong to rural areas (28), who attended antenatal clinic. Mostly women from rural areas are facing with health problems due lack of various facilities and poor health education as shown in Table 2.

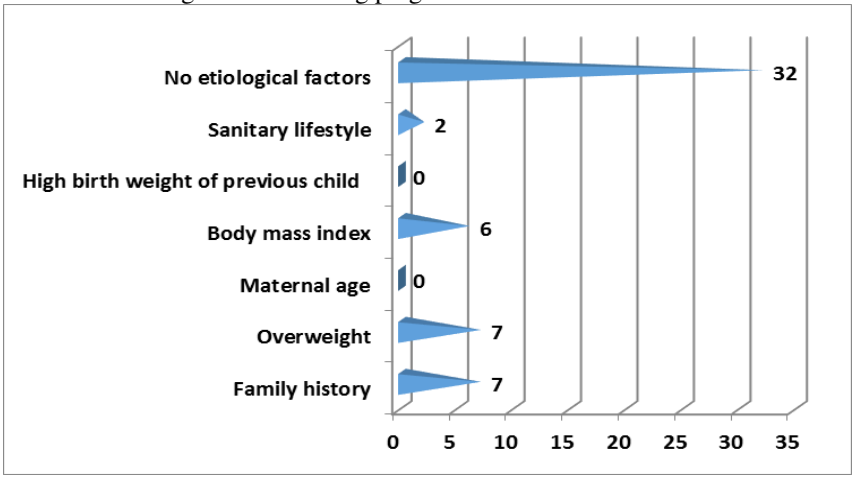
Table 3 showed the different age groups who were diagnosed for diabetes mellitus and among them age group of 20-25 presented the highest number of patient attending the clinic, followed by 25-30 and 30-35.

Table 4 showed us range between of average blood sugar level from minimum to maximum of 60-115mg/dL.

Graph 1: Showing symptoms described by diabetic patient while pregnancy



Graph 2: Etiological factors inducing diabetes among pregnant women



Graph 3: Showing preventive measures taken during pregnancy to control diabetes

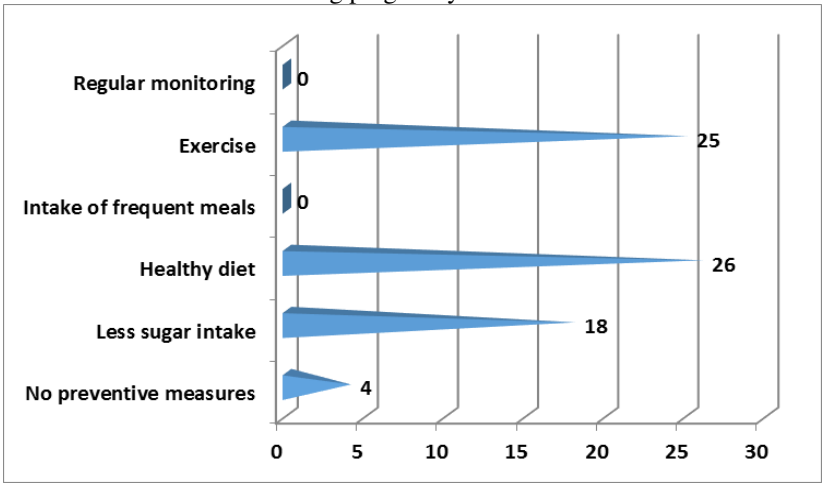


Table 1: Prevalence of diabetic and non-diabetic pregnant women

Groups	Frequency	Percent
No diabetic	41	82.0
Diabetic	9	18.0
Total	50	100.0

Table 2: Prevalence of pregnant women from rural and urban localities

Area	No	Mean	Std. Deviation	p-value
Urban	22	.18	.395	
Rural	28	.18	.390	0.954

Table 3: Different age group among pregnant women

Age	No	Mean	SD	F value	Sig.
20-25	28	.14	.356	.299	.743
25-30	17	.24	.437	.089	.766
30-35	5	.20	.447	.374	.544
Total	50	.18	.388		

Table 4: Range of average fasting blood sugar level from minimum and maximum

	No	Minimum	Maximum	Mean	SD
Average Fasting Blood sugar level(mg/dl)	50	95	112	102.48	9.564

DISCUSSION

Gestational diabetes affects 3-10% of pregnancies, depending on the population studied.[6] Maternal and foetal complications increase with the severity of diabetes but appropriate maternal and prenatal care can prevent dangerous outcomes. In a population based study pregnancy induce diabetes disorders were examined in 9 out of 50 pregnant women in Patiala, Punjab (India). Number of factors influence the prevalence of GDM identified in a population and make it difficult to compare prevalence across population.

Strong association exists between GDM development and advancing maternal age. Our finding also showed that gestational diabetes significantly increases with age of an individual; this further strengthens the evidence that a woman risk factors increases as she gets old.

In this data, 9 out of 50 pregnant women were diagnosed with diabetes and 41 screened negative for diabetes.

The development of pregnancy induce diabetes were cross tabulated to determine the relationship between age and development of pregnancy induced diabetes. The progressive increases in the prevalence of GDM from 4.2% to 18% in 20-40 years of age. These studies were compared with those conducted in Canada .[7] This increase can be due to lack of exercise.

The incidence of diabetes is higher for women coming from rural background than from urban area. This is due to the lack of facilities in area, sanitary lifestyle and improper health care. Incidence rate among rural is 56% as compared to that of urban pregnant women that is 44%.

The authors also observed that overweight and family history played a major role in development of pregnancy induced diabetes. Secondary, cause of pregnancy induced diabetes is higher Body Mass Index. According to Fatema J,Parvin K I.[8] A positive family history in first-degree relatives was present in nearly half the subjects(pregnant women)[9].

There are preventive measures which were observed while studying the pregnant women in order to control pregnancy induced diabetes. Exercise and healthy diet were the most common preventive measure seen among pregnant women who attended the clinic. Secondary to above mentioned preventive measures was less sugar intake.

CONCLUSION

The studyshowed us the high incidence rate of diabetes mellitus that is 9 out of 50 pregnant women. All the 9 cases examined positive for diabetes were of gestational diabetes. This could be as a result of high body mass index, family history and over body weight.

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