



INCIDENCE OF GESTATIONAL DIABETES.

Obstetrics and Gynaecology

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ABSTRACT

Aims—We evaluated the incidence of gestational diabetes mellitus among pregnant women.

Methods— : It was a cross sectional observational study. All subjects were assessed for inclusion – exclusion criteria, and on qualification they were requested to fill up Socio-demographic data sheet were filled up, and blood collected for estimation of Hb1Ac.

Results— A total of 360 pregnant subjects, with the mean age of 25.95 ± 4.50 years, with 37.7% (n=115) Primigravida, 41.6% (n=127) gravida 2, and 17.7 % Gravida 3 and Their mean duration of pregnancy were 17.63 ± 7.51 weeks. On Hb1Ac cut off of above 6.5, we found 57 subjects consisting 18.7% of the total sample suffering from gestational diabetes mellitus

Conclusions— This study finds an incidence of 18.7 % of gestational diabetes mellitus.

KEYWORDS

Gestational diabetes; Incidence; Pregnancy.

INTRODUCTION

Incidence of gestational diabetes during pregnancy ranges from 2.4 to 21 per cent of all pregnancies [1-3], which may be defined as first recognition of carbohydrate intolerance during pregnancy [4]. The prevalence of Gestational diabetes mellitus (GDM) has a significant trend over rapid increase in the past two decades [5]. Age over 25 years, BMI over 25 and family history of diabetes is considered as risk factors for GDM [1].

Indian data is scanty in this area, and available epidemiological data suggests prevalence of GDM in India during 1982 were quite low as 2% [6], which subsequently found as 16.55% in 2000 [7]. The prevalence of gestational diabetes has been reported very widely across Indian states among various studies to range from 6.2% in Mysore [8], 35% from Punjab [9], 3.8% in Kashmir [10], 17.9% in Tamil Nadu [11], 41% from Uttar Pradesh [12] and 9.5% around Western India [13].

Impact of persistent weight gain and hyperglycemia may leads to many obstetrical and general medical complications. Intrauterine exposure to hyperglycemia during the critical period of fetal development programmes the development of pancreas negatively and affects the insulin secretory function [14]. Whereas the effects of GDM also includes depression and anxiety that may affects birth outcomes and neurodevelopment [15]. Hence we plan this study to explore the incidence of gestational diabetes in ours population.

MATERIALS AND METHOD

The aim of the present study was to assess the incidence of gestational diabetes. This study was conducted during Ante Natal Checkups at out patients department at Mata Gujari medical college, Kishanganj, Bihar, which is a tertiary care medical college hospital of Bihar, India. The study protocol was approved by the institutional review board of Mata Gujari medical college, Kishanganj, Bihar. It was a cross-sectional study carried out over a year period (July 2016 – June 2017). All pregnant women who attended this hospital for antenatal check up during second and third trimester and or confinement were explained about studies and informed consent obtained. The exclusion criteria were, presence of prenatal diabetes, presence of any major co morbid medical or other illness.

All consenting subjects who satisfied the inclusion exclusion criteria for the study were examined clinically after taking detailed history and their socio demographic variables. Details of family history of diabetes, history of previous pregnancies and the socio-economic status were obtained. They were requested to complete a questionnaire about their socio-demographic data sheet and advised for a blood test for Hb1Ac estimation. Their height weight records were updated and noted, thus body mass index (BMI) of the subjects was calculated and expressed in kg/m².

Tools

Socio-demographic Data Sheet: The socio demographic data sheet included age, religion, occupation, education and clinical information like duration of pregnancy and other obstetric history.

Procedure: It was a cross sectional observational study. All subjects were assessed for inclusion – exclusion criteria, and on qualification they were requested to fill up Socio-demographic data sheet or asked verbally and filled up by investigators. The lab reports were recorded in tabulated form.

Statistical Analysis:

The collected data of all patients was statistically analyzed, using Statistical Package for Social Sciences (SPSS, Inc., Chicago, Illinois) version 10.0. Data analysis included means and standard deviations for complete sample. Frequency analysis was used to determine the incidence of GDM.

RESULTS

With the purposive sampling, a total of 360 subjects, who consented, were included for the study, Table 1 summarizes the socio demographic and clinical characteristics of sample. The mean age of the sample was 25.95 years (± 4.50 years) with minimum age of 19 years to a maximum age was 32 years. The mean education years for the sample were found to be 10.73 ± 2.68 years. The mean duration of pregnancy for the whole sample were 17.63 ± 7.51 weeks. The sample consisted of mostly Hindu religion (n=213, 69.8%) and other non Hindu consisted only 30.2% (n=92) (Table -1).

Among the total sample size of 305 patients 202 patients (66.2 %) reported their occupation as housewife, and 33.8 % were working class (n=103). As per obstetrics history, there were 37.7% (n=115) Primigravida females, 41.6% (n=127) gravida 2, and 17.7 % Gravida 3 or more. There were history of abortion among 17.7% (n=54) of the sample and there was family history of diabetes among 22.6 % (n=69) of the sample. The BMI was categorized as underweight (BMI below 18.5) that consisted 33.1% (n=101); normally categorized BMI (18.5 – 24.9) consisted 33.1 % (n=106); Rest of the sample were either overweight or obese 12.5 % (n=38) and 2% (n=6) respectively. Finally based on Hb1Ac cut off of above 6.5 a total of 57 sample size was qualified as GDM, consisting 18.7% of the total sample size. (Table -1)

DISCUSSION

In this indexed study we found an incidence of 18.7 % of GDM, It is found to in accordance with many other studies reporting similar incidence rate for GDM ranges between 2.4 to 21 % [1-3, 8-13]. We found incidence of GDM on slightly higher side of this range of these referenced studies. Usually mild variation in incidence may be attributable to sample selection and different lab test or different

criteria used, as most of the earlier studies used blood sugar estimation fasting state and 2 hr after 75 gm of oral glucose. In most of studies a woman was considered to have GDM if the FPG ≥ 126 mg/dl and/or 2-hr plasma glucose value ≥ 140 mg/dl with the 75 gm oral glucose. There may be certain other transient or immediate dietary or metabolic or psychological factors which may influence and attribute to glucose measurement by these methods. Whereas measurement of Hb1Ac is known to provide average glucose level for previous two to three months. Hence we selected using Hb1Ac for this study, which may have advantage on older technique.

In ours study we also found very high incidence of positive family history of diabetes that is 22.6 %, and this may be one of the important factor that may contribute to the found incidence of GDM in this study. In a large sample of 10283 participants the prevalence of diabetes among individuals who have a first-degree relative with diabetes were found to be 14.3% [16]. It is also noticeable that earlier studies showing higher prevalence are usually carried out at metropolitan background and higher socioeconomic class, where food habits and physical exercise may be compromised. But ours study from small city and middle lower socioeconomic class is alarming that incidence of GDM or DM is spreading across socio demographic boundaries. The postpartum period provides an opportunity for lifestyle intervention to prevent future diabetes; however, this is often obstructed by poor postpartum follow-up rates.

There are several studies that attribute high prevalence of type 2 DM may be linked to poor fetal growth specially in Indian people [17]. In future studies may be planned as longitudinal prospective studies to assess fetal growth monitoring among GDM, cesarean rates, fetal size (macrosomia/obesity), neonatal hypoglycemia, and fetal hyperinsulinism. In future we also need larger samples size, along with a matched control group, simultaneous assessment of quality of life, disability and burden of various other metabolic problems, and follow-up studies to know the longitudinal course of these problems. Also we need some studies for intervention for GDM, and efficacy of lifestyle modification and medication along with a guideline for their appropriate use.

CONCLUSION

This study finds an incidence of 18.7 % of gestational diabetes mellitus among 305 pregnant women.

Table 1. Sociodemographic and Clinical findings

	Mean $\pm$ SD	Min	Max
age	25.95 $\pm$ 4.50	19	32
Years of education	10.73 $\pm$ 2.68	5	15
Duration of pregnancy (Weeks)	17.63 $\pm$ 7.51	8	36
Mean Hb1Ac	6.08 $\pm$ 0.61	5	7
		n	%
Religion	Hindu	213	69.8
	Others	92	30.2
Occupation	House wife	202	66.2
	Working	103	33.8
Gravida	Primi	115	37.7
	G2	127	41.6
	G3	54	17.7
	G4 or more	9	3
History of Abortion	Nil	251	82.3
	Yes	54	17.7
Family h/o Diabetes	No	236	77.4
	Yes	69	22.6
BMI	Under weight below 18.5	101	33.1
	Normal (18.5 – 24.9)	160	52.5
	Over weight (25 – 29.9)	38	12.5
	Obese (over 30)	6	2
GDM	No (below 6.5)	248	81.3
	Yes (above 6.5)	57	18.7

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