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SHORT COMMENTARY

# Prevalence of Gestational Diabetes Mellitus Utilizing Two Definitions

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Significance of abnormal glucose tolerance in pregnancy is known to every obstetrician. During pregnancy, an antenatal mother with normoglycaemia in early months can develop glucose intolerance of varying severity after midpregnancy (true gestational diabetes) [1]. International Association of Diabetes in Pregnancy Study Group (IADPSG) and Diabetes in Pregnancy Study Group India (DIPSI) are two well-known criteria for the detection of gestational diabetes mellitus (GDM).

Indian women are known to have 11-fold higher risk of developing GDM compared to Caucasian women [1]. This single-center cross-sectional study was conducted at S.C Das Memorial Medical and Research Center, Kolkata, which is a nonteaching private hospital, after obtaining approval from the Ethical Committee of the institute.

Aim of this study was to note the prevalence rate of GDM in a cohort of pregnant women attending the antenatal clinic at the above-mentioned center. Women with multiple pregnancies and preexistent diabetes mellitus were excluded from the study. Verbal consent was taken from every woman because glucose-tolerance testing was a part of routine antenatal tests in the clinic.

Assuming a confidence level of 95% with the allowable error of 5%, requisite sample size calculated was 384. We studied 416 women presenting to the antenatal clinic in the first trimester of pregnancy from Aug 2016 to July 2018. All women underwent complete history taking and clinical examination. BMI was calculated based on the weight and height measured in the first trimester ($\leq 8$ weeks). Fasting sugar was measured (to exclude preexisting diabetes) along with the usual antenatal tests, and they were followed up monthly with usual antenatal advices. After 24 weeks of gestation, all women were advised to take 75 g glucose load orally in water within 10 min in the fasting state and blood by venepuncture was collected in the fasting state then after 1 h and 2 h of glucose intake, as recommended by IADPSG. Diagnosis of GDM (IADPSG criteria) was made if any one of the three values exceeds as follows: fasting—92 mg%; 1 h—180 mg% and 2-h—153 mg%. From the same data set, we calculated separately the prevalence rate of GDM as per the DIPSI criteria (blood sugar $\geq 140$ mg% 2 h the glucose intake). Though, as per DIPSI, the test can be done at any time in pregnancy irrespective of food intake. True GDM develops in the second half of pregnancy. Thus, the blood report of every woman was utilized separately to calculate the prevalence of true GDM as per the two proposed definitions. Glucose was measured by glucose oxidase method.

Table 1 shows the prevalence rates of GDM in the studied cohort by the two definitions and the average values of age (years), BMI (kg/m$^2$) and first trimester fasting sugar level of the two groups (GDM positive and negative).

GopalKrishnan et al. [2] in their study on 332 women utilizing IADPSG criteria, among North Indians, predominantly belonging to lower- and middle-income socioeconomic status reported a prevalence rate of 41.9% (95% CI 36.6–47.2%). Pulkit et al. [3] in their study (IADPSG criteria) done after 24 weeks found the prevalence rate of GDM

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**Table 1** Comparison of different studied parameters. Total number of cases studied: 416

| | IADPSG criteria GDM present (%) | IADPSG criteria (GDM absent) | | DIPSI criteria GDM present (%) | DIPSI criteria (GDM absent) | | $p$ value[#] |
|---|---|---|---|---|---|---|---|
| GDM prevalence $n$ (%) | 155 (37.3)[#] | 261 | | 130 (31.3)[#] | 286 | | 0.67 |
| Age (years)* | 30.01 (3.5) | 28.90 (3.81) | $p=0.003$ | 29.95 (3.47) | 28.99 (3.82) | $p=0.007$ | |
| BMI (kg/m$^2$)* | 26.36 (4.24) | 27.95 (2.21) | $p=0.73$ | 25.79 (3.97) | 26.40 (4.40) | $p=0.007$ | |
| Fasting sugar in first trimester (mg%)* | 94.82 (15.19) | 83.51 (6.83) | $p=0.06$ | 87.45 (8.62) | 84.21 (7.11) | $p=0.07$ | |

Significance level at 5%

*GDM* gestational diabetes mellitus

*Mean (SD)

[#]Percentage

as 45.3%. They had also stressed the importance of more studies from different parts of India in order to determine the applicability of the two guidelines (IADPSG and DIPSI). Our study shows that by IADPSG criteria, 49 women (31.6%) had fasting sugar value above 92 mg%; 82 women (52.9%) had 1-h value above 180 mg% and 91 women (58.7%) had 2-h value above 153 mg%. DIPSI criteria has been recommended by the Ministry of Health Government of India [4].

Recent Women in India with Gestational Diabetes Mellitus Strategy (WINGS) [5] done in Chennai, India, had reported that despite constraints in low- and middle-income countries at the present time, IADPSG criteria appear to be the best. It has also been suggested that these criteria will help to bring out a uniform criteria for screening and diagnosis of GDM worldwide.

Our analysis shows that there is significant difference in the average age of women with GDM compared to non-GDM cases but no difference in BMI values, irrespective of definitions used. It has been suggested that lower threshold of the sugar value in IADPSG criteria may be the reason of getting relatively higher prevalence [6] but our study did not find any significant difference between the prevalence rates of GDM among the two criteria.

This study shows that DIPSI being simple in execution and patient friendly is close to the international consensus. Keeping in the mind the diversity and variability of Indian population, authors of the present study also feel that more studies from different centers of India with a much larger cohort are urgently needed to develop a national consensus for the identification of GDM cases under the Indian scenario.

## Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical Statement** Permission was taken from the Ethical committee of S.C.Das Memorial Medical and Research Center where the study was done.

**Human and Animal rights** No experimental study was done. Data generated from the routine checkups in the outpatient antenatal clinic.

**Informed consent** Informed verbal consents were taken from the patients. This study was for academic interest.

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