ORIGINAL ARTICLE

COMPARATIVE STUDY OF EFFICACY OF DIPSI AND O'SULLIVAN'S METHOD OF SCREENING FOR GDM

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ABSTRACT: OBJECTIVE: 1. To compare screening and diagnosis of gestational diabetes mellitus by Diabetes In Pregnancy Study Group of India (DIPSI) recommended 75g oral glucose challenge test with O'Sullivan's 50 g oral glucose challenge test. 2. To note the prevalence of gestational diabetes in antenatal population. 3. Fetal Outcome of pregnancy with impaired and abnormal glucose tolerance. **METHODS:** A detailed history from antenatal patients was taken to reveal all risk factors. The procedure of the study was explained and required consent for the study was taken. Examination of the patients was done and all relevant data was obtained. Fasting blood glucose was taken of all antenatal patients at their first visit. Pregnant women at 24-28 weeks were tested with 50g oral glucose load or 75g oral glucose load, at random. Patients were give 50g glucose irrespective of the meal and 1 hour venous blood sample was collected. Patients of 75 g of oral glucose were asked to come in fasting state, 75g of glucose was given, following which 2 hour venous sample was collected. Blood glucose was tested by GOD-POD method. Diagnosis of GDM was made when the plasma glucose of >140mg/dL.
KEYWORDS: Gestational diabetes mellitus, dipsi, o'succivan's method.

INTRODUCTION: There is an increasing trend of making Diabetes one of the most common non-communicable diseases globally. Gestational Diabetes Mellitus (GDM) is defined as "carbohydrate intolerance variable severity that is first diagnosed during present pregnancy, regardless of the need for insulin or persistence of the diabetic state after delivery".[1,2] Diabetes Mellitus is the most common disorder of pregnancy, although the prevalence is usually reported as 2 to 5% of pregnant women, [1, 2] it can be as high as 14% in high risk groups. The earlier studies by Langer et al (1989)[3] and Vambergue et al (2000)[4] reported that even mild gestational hyperglycaemia, if untreated, is associated with higher incidence of large infants and other metabolic complications occurring in patients with frank gestational diabetes. Women with GDM are also more likely to undergo caesarean section and to develop diabetes later in life.[5] It has also been reported that between 35% and 50% of women with GDM will go on to develop type 2 diabetes within 5 years of giving birth.[6,7] When the implications of untreated GDM are considered, including the peripartum risks (of macrosomia, hyperbilirubinemia, operative delivery, shoulder dystocia and birth trauma) the higher incidence of childhood obesity and longer term risk of type 2 diabetes in mother and offspring, a strong case can be made for effective screening and diagnostic tests in Indian population. The Fifth International Conference on GDM recommended grouping of pregnant women based on risk factors and two step or one step testing for diagnosis of GDM.

The testing for GDM at the earliest and by appropriate method identifies those women who need treatment with either diet alone or a combination of diet and insulin therapy. This results in prevention of maternal and neonatal morbidity and mortality. The epidemiology of diabetes in pregnancy is changing every day. The evidence for clinical management, and the consequences on how to detect, manages and follow up diabetes in pregnancy should receive top priority in future.

The prevalence of GDM in a population is reflective of the prevalence of type 2 diabetes in that population. In low-risk population, such as those found in Sweden, the prevalence in population-based studies is lower than 2% even when universal testing is offered,[8,9,10] while studies in high-risk populations, such as the Native American Cree, Northern Californian Hispanics and Northern Californian Asians, reported prevalence rates ranging from 4.9% to 12.8%.[11,12,13,14,15]

By whatever test or criteria used for diagnosis, the prevalence of GDM in the Indian population is high when compared to that reported in the western countries. Several studies have documented increasing trends in the prevalence of GDM from 2% in 1982[16] and 7.62% in 1991[17] to 16.55% in 2001.[18] A recent national survey reported the prevalence of Impaired Glucose Tolerance (IGT) in the age group of 20-29 years and 30-39 years as 12.2% and 15.3% respectively.[19]

RESULTS: A total of 200 antenatal patients were studied. In our study it was found that the impaired and deranged values of glucose tolerance was found maximum in 21-24 years age group; 48% impaired and 43 % deranged. The incidence of impaired glucose tolerance was found to be on the higher side in the multiparous women when compared to primigravidas.

Both impaired and deranged group had Incidence of GDM seen maximum in BMI group of 25- >30kg/m^2 group with 56.4% of cases of impaired and 61% of deranged glucose tolerance.

The percentage of patients with risks factors in present pregnancy with impaired glucose tolerance was 58.9% and 82.9% was seen as deranged glucose tolerance.

Patients with positive family history for diabetes mellitus had an incidence of 30.8% impaired glucose tolerance test results and 53.7% patients had derange glucose tolerance test results.

The average birth weight of babies in both groups was found to be 2.5-3.5 kg, whereas the incidence of birth weight >3.5 kg was 4% lesser in DIPSI when compared to O Sullivan's method.

The common mode of delivery in both groups was normal delivery with next common mode being LSCS with common indications like fetal distress and meconium stained liquor and previous LSCS.

Out of 100 patients in O'Sullivan's study group 83 % had no GDM, whereas 17 % had abnormal glucose challenge test result. Out of 100 patients in DIPSI study group 37 % had no GDM, whereas 24 % had abnormal glucose tolerance and 39 % had impaired glucose challenge test result.

This tests showed strongly significant p value of <0.001, for the screening of GDM by both the methods but DIPSI method detected more number of cases, hence showing better results.

CONCLUSION: In conclusion, as a high prevalence rate was obtained in our study, a simpler, accurate and quicker method of screening and diagnosis like the one step 75 g oral glucose challenge test by the DIPSI method, should be performed in all hospitals as routine antenatal procedure for earlier detection and treatment of patients with GDM.

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kg/m2)	**Final diagnosis**			**Total**
	Normal	**Impaired GT**	**Deranged**	
<18.5	0.8	0	0	0.5
18.5-23	24.2	30.8	17.1	24
23-25	35.8	12.8	22	28.5
25-30	30	48.7	43.9	36.5
>30	9.2	7.7	17.1	10.5
Total	**100**	**100**	**100**	**100**

Table 1: BMI (kg/m^2) with final diagnosis

Risk factors of Present pregnancy	**Final diagnosis**	**Impaired GT**	**Deranged**	**Total**
	Normal			
Absent	52.5	41	17.1	43
Present	47.5	58.9	82.9	57
Total	**100**	**100**	**100**	**100**

Table 2: Risk factors of Present pregnancy with Final diagnosis

P<0.001**,strongly Significant, Chi-Square test
P=0.046*, significant, Fisher Exact test

Family history	Final diagnosis Normal	Impaired GT	Deranged	Total
Absent	65.8	69.2	46.3	62.5
Present	34.2	30.8	53.7	37.5
Total	**100**	**100**	**100**	**100**

Table 3: Family history with Final diagnosis

P=0.053+, Significant, Chi-Square test

Birth weight (kg)	O'Sullivan's Method		DIPSI Method	
	No	%	No	%
Nil	4	4.0	3	3.0
<1.5	1	1.0	0	0.0
1.5-2.5	11	11.0	19	19.0
2.5-3.5	74	74.0	72	72.0
>3.5	10	10.0	6	6.0
Total	**100**	**100.0**	**100**	**100.0**
Mean ± SD	2.91±0.51		2.82±0.46	

Table 4: Birth weight (kg) in two groups studied

P=0.357, Not significant, Fisher Exact test

Outcome	O'Sullivan's Method (n=100)		DIPSI Method (n=100)	
	No	%	No	%
Failed to follow	3	3.0	2	2.0
Yes	97	97.0	98	98.0
• Normal Delivery	52	52.0	47	47.0
• Instrumental deliveries	4	4.0	2	2.0
• Preterm Delivery	1	1.0	2	2.0
• LSCS	40	40.0	47	47.0

Table 5: Outcome in two groups studied

Final diagnosis	O'Sullivan's Method		DIPSI Method		P value
	No	%	No	%	
Normal	83	83.0	37	37.0	<0.001**
Impaired GT	0	0.0	39	39.0	<0.001**
Deranged/Abnormal	17	17.0	24	24.0	0.220
Total	**100**	**100.0**	**100**	**100.0**	**-**

Table 6: Final diagnosis in two groups studied

P<0.001**, strongly significant, Fisher Exact test

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