



Comparison of DIPSI and WHO Criteria for Diagnosing GDM: A Prospective Study

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Background:

In India, every year about 27 million pregnancies occur, considering the wide gap between the target and reality, a practical, cost-effective, easy, and convenient screening test is required so that the women can be tested during their initial visit even in a non-fasting state as many may not return subsequently in a fasting state. To address this, the Diabetes in Pregnancy Study Group of India (DIPSI) has recommended a one-step glucose challenge test involving 75 g of oral glucose for both screening and diagnosing GDM among pregnant women in India

Research question: How effective is the DIPSI criteria when compared to the globally acknowledged WHO 2013 criteria for diagnosing GDM

Primary Objective: To compare DIPSI with WHO 2013 criteria for diagnosis for GDM.

Secondary objective: To assess maternal and fetal outcome in patients diagnosed as GDM

Study design:

Prospective cohort Study. Study duration: One year. Study setting: Department of Obstetrics & Gynecology, King George's Medical University, Lucknow. A sample of 202 pregnant women, less than 20 weeks of gestation, were recruited from the antenatal outpatient department and wards. Participants underwent both DIPSI and WHO 2013 tests for GDM diagnosis.

Inclusion Criteria: Patients giving written informed consent were taken. Pregnant women 18-40 years of age.

Pregnant women < 20 weeks of gestation. Pregnant women willing to come in fasting state in our hospital.

Exclusion Criteria: Not giving consent. Pregnant women with Pre gestational diabetes, or already diagnosed with GDM.

According to the results of DIPSI and 75-gram OGTT patients were divided into 4 groups and followed for maternal and foetal/neonatal outcome.

- Patients with Normal glucose tolerance
- DIPSI positive only
- WHO 2013 criteria positive only
- Both WHO 2013 and DIPSI positive

Data Analysis: Data was analysed using SPSS version 24.0. A receiving operating characteristic curve was constructed for DIPSI criteria predicting GDM and area under the curve, sensitivity, specificity, NPV and PPV was estimated

Result:

Out of 202 participants, 82.7% exhibited normal glucose tolerance, 5.0% were positive only by DIPSI criteria, 6.9% were positive only by WHO 2013 criteria, and 5.4% were positive by both criteria. 14 out of 35 (6.9%) patients diagnosed with GDM had WHO criteria positive only and were missed by DIPSI test.

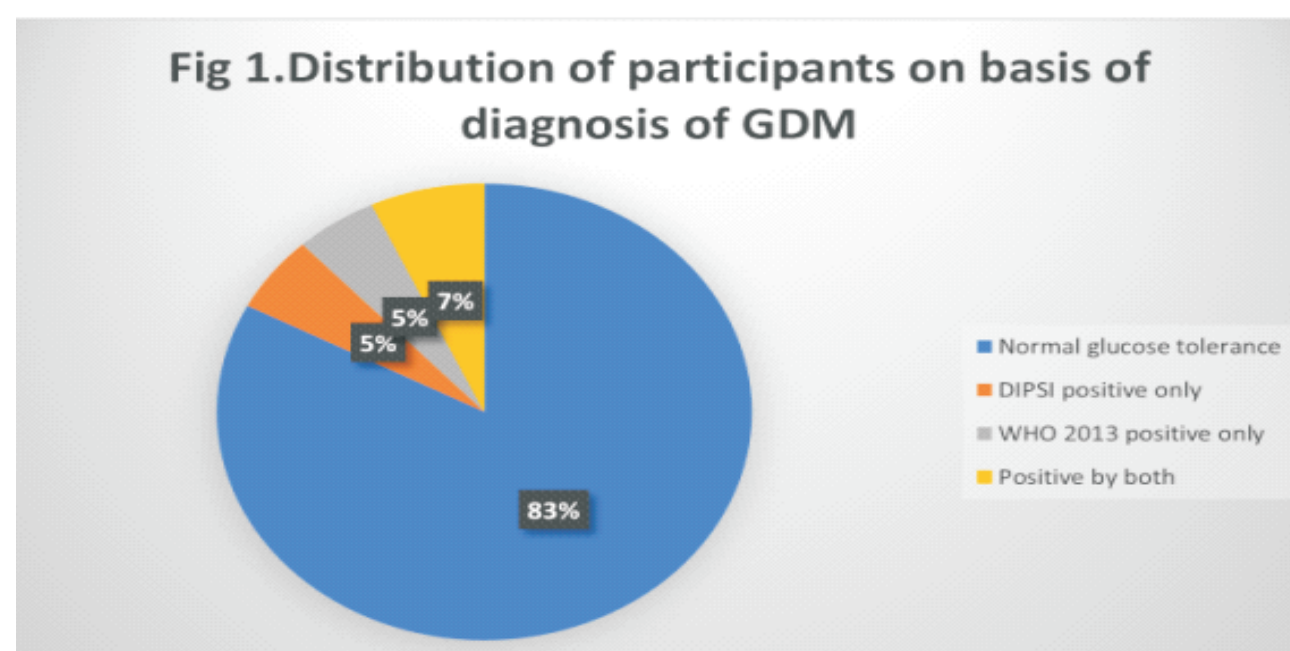
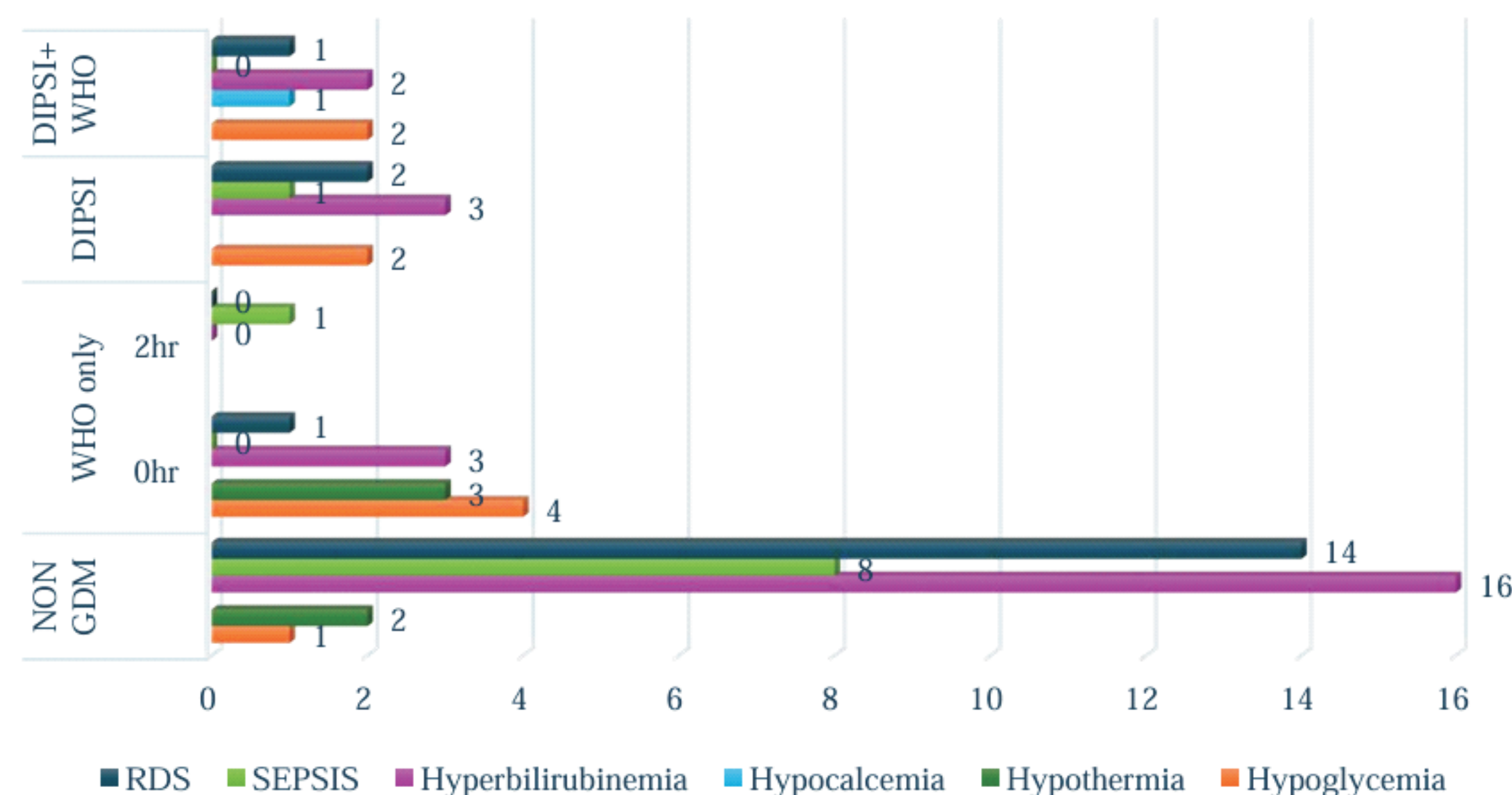


Table 1: Correlation of Antenatal complication in present pregnancy among study population with GDM (n=202)

Antenatal Complications		Groups					p value	
		No GDM (n=167)	WHO Only (n=14)		DIPSI Only (n=10)	DIPSI +WHO (n=11)		TOTAL (N=35)
			0 hour	2 hours				
Polyhydramnios		0(0%)	2(5.7%)	0(0%)	0(0%)	0(0.0%)	2 (5.7%)	1.782; 0.029
Hypertensive disorder of pregnancy		29 (17.5%)	3 (8.5%)	0(0%)	1(2.8%)	3 (8.5%)	7 (20%)	0.1372; 0.711
Congenital Anomaly in fetus		0 (0%)	0 (0%)	0(0%)	1 (2.8%)	0 (0%)	1 (2.8%)	2.341. 0.173
Cholestasis		18(10.7%)	1 (2.8%)	0(0%)	0 (0%)	0(0%)	1 (2.8%)	0.312; 0.231
Hypothyroidism		22 (13.3%)	4 (11.4%)	1(2.8%)	1 (2.8%)	2 (5.7%)	8 (22.8%)	0.598; .089
Infection	Vaginal Candidiasis	9(5.4%)	7 (20%)		3 (8.5%)	3 (8.5%)	13 (37.1%)	12.021 .0001
	UTI	1 (0.6%)	3 (8.5%)	0	0 (0%)	1 (2.8%)	4 (11.4%)	11.712 .003
Anemia		39 (23.5%)	4 (11.4%)	1(2.8%)	2 (5.7%)	1 (2.8%)	8 (22.8%)	0.629 .709
APH		19(11.1%)	2(2.8%)	0 (0%)	2.8(0%)	0 (0%)	3 (8.1%)	0.772 0.32
FGR		8 (4.7%)	1 (2.8%)	0(0%)	1 (2.8%)	1 (2.8%)	3 (8.5%)	0.921 0.317
PROM PPROM		15(8.9%)	1 (2.8%)	1(2.8%)	2 (5.7%)	1 (2.8%)	5 (14.2%)	0.223 .021
Oligohydramnios		4 (2.3%)	2 (5.7%)	0(0%)	1 (2.8%)	0 (0%)	3 (8.5%)	0.119 .053
Skin infection		1 (0.6%)	3 (8.5%)	0(0%)	0 (0%)	1 (2.8%)	4 (11.4%)	8.132 .003

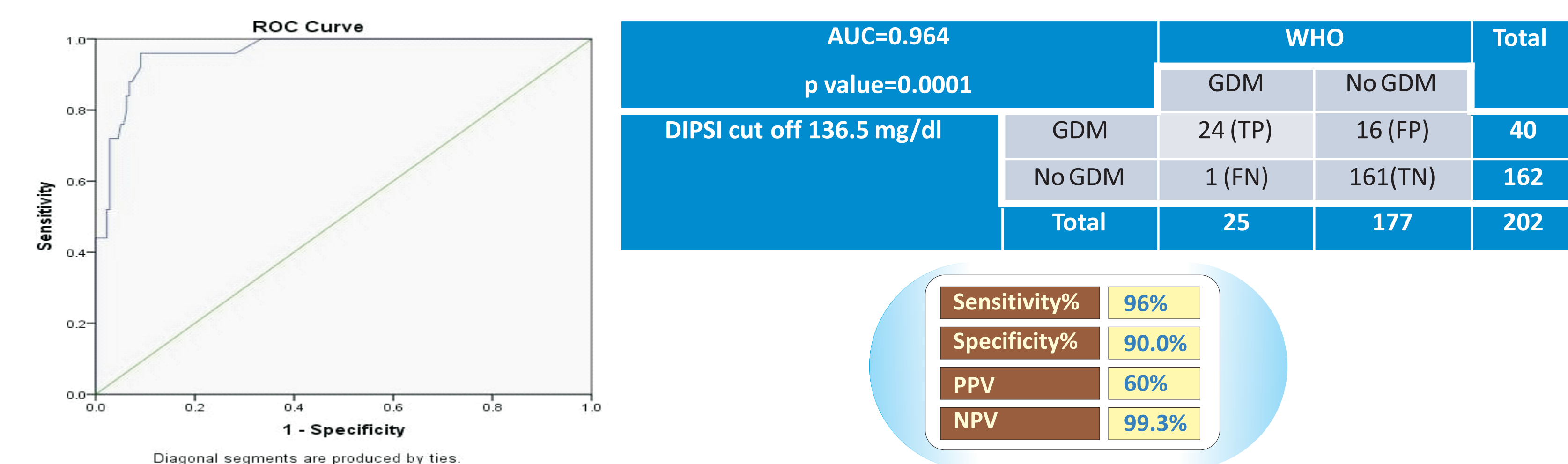
Polyhydramnios, Vaginal candidiasis, UTI, skin infections, PPRom/PROM, were found significant antenatal complications for GDM in our study.

Figure 2. Neonatal Complications among the newborn of the Study group (n=199)



Hypoglycemia was the most common complication observed in the newborn of the GDM mother. Out of 9 neonates who reported hypoglycemia, 8 were born to GDM mothers. Hypothermia, hyperbilirubinemia and RDS was also found significantly higher among GDM, with maximum neonates born to mother with deranged WHO fasting values.

Table 2: ROC curve for comparing DIPSI with WHO for GDM diagnosis.



Sensitivity of DIPSI when compared with gold standard WHO OGTT was comparable and high but due to low PPV, it tends to miss out the true positive cases of GDM. So, we conclude from our study that since DIPSI would miss substantial number of patients, WHO 2013 is better for screening of GDM. GDM has good sensitivity at cut off 136.5 mg/dl, and can be used in low resource setting, as it is one step method is more feasible and cost effective. But institution where facility for testing is available WHO should be preferred. The limitation with DIPSI is that it ignores fasting blood glucose levels.

Conclusion:

We conclude from our study that since DIPSI would miss substantial number of patients, WHO 2013 is better test for screening of GDM.

References:

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