

Universal screening for gestational diabetes mellitus in twin pregnancies

OBJECTIVES

- To report on the prevalence of gestational diabetes mellitus (GDM) in a cohort of twin pregnancies with universal screening in a single maternity hospital in East London.
- To describe demographics and glycaemic characteristics of this cohort by chorionicity.

METHODS

- This retrospective audit included all the twin pregnancies receiving antenatal care in the Multiple Birth Clinic at the Royal London Hospital between January 2016 and December 2021 with complete demographic and GDM screening data.
- All patients were offered screening for GDM with a one-step approach (75g oral glucose load after overnight fasting). GDM was diagnosed if glycaemia at time 0 (G0) and/or at 2 hours (G2) were ≥ 5.6 and 7.8 mmol/L, respectively.
- Data were extracted from the hospital electronic records and transferred on an Excel sheet for statistical analysis.
- Statistical analysis was performed with SPSS version 11.0. Data were expressed as means $\pm$ standard deviation (SD). Chi-square test was used to compare categorical variables and t-test to compare continuous variables. A value of $P < 0.05$ was considered statistically significant.

RESULTS

- During the study period, 378/397 (95%) twin pregnancies had complete data, including 302 dichorionic (DC), and 76 mono-chorionic (MC) (Figure 1).
- Overall prevalence of GDM in twins was 24%. GDM prevalence in DC twins was more than double that in MC (27% vs 12%; $P < 0.01$).
- East Asian ethnic origin was more common in mothers of MC twins (7% vs 2%; $P < 0.05$). Mothers of DC twins had greater BMI (27.0 vs 25.4 kg/m²; $P < 0.01$) and significantly higher rates of IVF conception compared to mothers of MC twins (30% vs 9%; $P < 0.001$).
- Mothers of DC twins had worse glucose tolerance compared to MC twins as shown by higher rates of abnormal 2-hour glycaemia at GTT (73% vs 67%; $P < 0.05$).

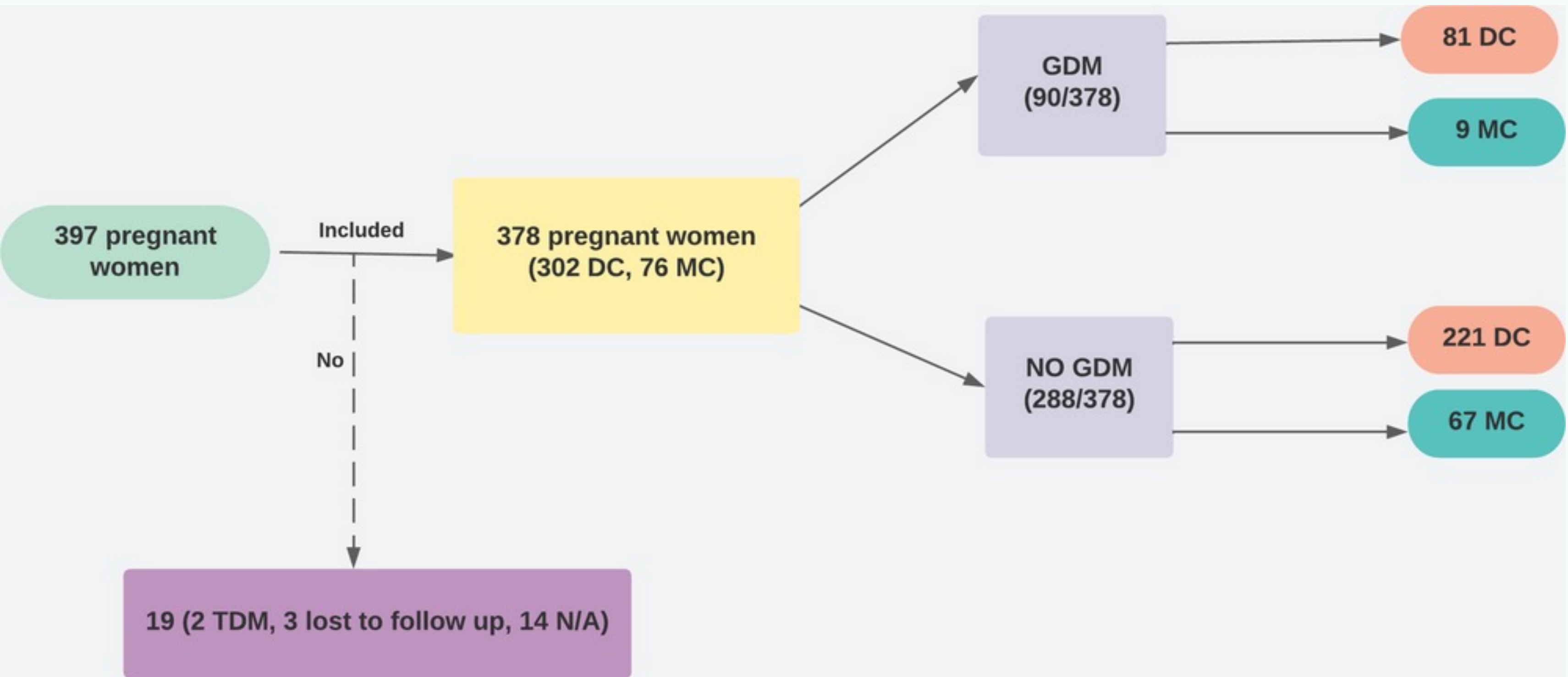


Figure 1. Study flowchart

	DC twins (n= 302)	MC twins (n= 76)	P-value
Age, years mean (range)	33 (19-53)	32 (17-48)	NS
Ethnic origin, n (%)			
- South Asian	136 (45)	29 (38)	NS
- White	102 (34)	26 (34)	NS
- Black	55 (18)	15 (20)	NS
- East Asian	6 (2)	5 (7)	<0.05
- Mixed	3 (1)	1 (1)	NS
Conception			<0.001
- Natural	211 (70)	69 (91)	
- ART	91 (30)	7 (9)	
Parity, n (%)			NS
0	159 (53)	35 (46)	
>0	143 (47)	41 (54)	
BMI, Kg/m ² mean (range)	27 (16.2-52)	25 (16.7-39)	<0.001
G0, mmol/l mean (range)	4.5 (2.7-9.5)	4.3 (3.1-7.3)	
G2, mmol/l mean (range)	6.7 (3.0-15.2)	6.0 (3.3-12.3)	
GDM prevalence, n (%)	81 (27%)	9 (12.5%)	<0.01
GDM diagnosis			
Only G0 abnormal, n (%)	5 (6)	1 (1)	NS
Only G2 abnormal, n (%)	59 (73)	6 (67)	<0.05
Both abnormal, n (%)	10 (12)	2 (22)	NS

P value <0.05; NS = Non-significant

CONCLUSIONS

- In this cohort of twins with universal screening, the prevalence of GDM in mothers of DC was more than double that of MC twins.
- DC and MC pregnancies are characterized by different placental mass which has been hypothesized to be a critical determinant of glucose uptake/consumption thus leading to different prevalence of GDM.
- Future studies evaluating pregnancy outcomes between MC and DC twins are warranted to confirm or refute this hypothesis and guide optimal management.