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Gestational Diabetes Mellitus (GDM) during the Pandemic: an Observational Study of Screening Methods and Maternal & Perinatal Outcomes in Women with First-time GDM

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Objective: To study the impact of national recommendations on the method of screening used for GDM during the SARS-CoV-2 pandemic and evaluate differences in maternal and fetal outcomes among women with first-time GDM (ftGDM).

Design: A retrospective observational study in a single Tertiary London Hospital. During the pandemic, the RCOG recommended an amended GDM screening protocol to reduce hospital attendance and risk of virus transmission (fasting blood glucose level ≥5.3 and/or HbA1c ≥39 at 28 weeks of gestation[1]). Our Trust did not adopt this due to concerns regarding its sensitivity. We utilise a 2-step approach to universal GDM screening using a 50g glucose challenge test and refer those screening positive for a full oral glucose tolerance test (OGTT).

Method: Outcomes were reviewed for women with ftGDM delivering a singleton at ≥24 weeks gestation between 01/04/20-28/05/21. Our primary aim was to determine the impact of the change in SARS-CoV-2 GDM screening policy, had it been implemented. Our secondary outcomes included GDM management method, maternal and perinatal complications. We excluded women with a booking HbA1c ≥42 (indicative of pre-diabetes), and those with a history of bariatric surgery. Demographic and outcome data were obtained from electronic databases. Statistical analysis was performed on SPSSv27 and the Mann-Whitney test was used to analyse non-parametric independent samples. Results were deemed statistically significant when p <0.05.

Results: 247 women were diagnosed with ftGDM using local screening methods. Only 23 of these women had a HbA1c ≥39 at time of diagnosis and a further 17 had FBG ≥5.3. There was no significant difference in age or ethnicity between the two groups. The locally diagnosed group had a statistically significantly lower booking BMI (P<0.001) and were less likely to require pharmacological management of GDM (P<0.001). There were no significant differences in rates of induction of labour, gestation at delivery, birth weight or any perinatal adverse outcome. However, the women in the RCOG SARS-CoV-2 GDM screening group were significantly more likely to be delivered by Emergency Caesarean Section (P=0.03) and have gestational hypertensive disease (p=0.014).

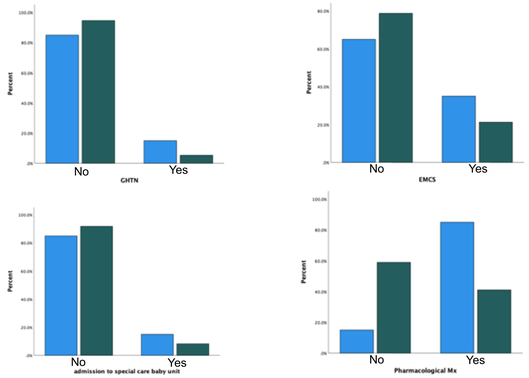
Variable	Pvalue
Maternal age	0.347
Induction of Labour	0.4965
Maternal Complications (Any)	0.1475
Postpartum haemorrhage	0.326
GHTN	0.0135
Spontaneous Vaginal Birth	0.0775
Assisted Vaginal Birth	0.182
Caesarean Section (Any)	0.036
Emergency Caesarean Section	0.0305
Elective Caesarean Section	0.4025
Perinatal Complications (Any)	0.343
Birth Weight	0.076
Admission to SCBU	0.0885
BMI at booking	<.001
HbA1c Value	<.001
Pharmacological Management	<.001

Results Table

Conclusions: If we had implemented RCOG SARS-CoV-2 GDM screening, we would have not diagnosed 207 women with GDM, 41% of whom required pharmacological treatment. Similarly, others have reported a decrease in the rate of GDM diagnosis during the pandemic, when amended protocols were used [2, 3]. HbA1c is a specific test at a cut-off of 39mmol/mol, with a quoted false positive rate of 10%, however sensitivity rates are low at 36% [4]. This is due partly to physiological anaemia in the late 2nd trimester, however also the failure of HbA1c to accurately reflect the more rapidly emerging glucose intolerance seen in GDM[5]. Fasting blood glucose (FBG) is also a poor test alone, as demonstrated by an Australian study noting that only 63.9% of their patients met criteria for GDM diagnosis with this method[6].

It is not surprising that women with higher HbA1c values had higher rates of maternal complications, due to the well-established association between increasing maternal hyperglycaemia and adverse obstetric outcomes[7]. However, we know that even milder GDM is pathological, and associated with potentially avoidable adverse perinatal outcomes if untreated [8, 9]. Furthermore, GDM was more difficult to control with lifestyle measures during population lockdown periods[10], potentially due to lower rates of physical activity, changes in diet and greater psychosocial stress[11, 12].

It is imperative that more sensitive screening protocols such as the 50g screen are considered in any future pandemics, such that women with GDM can be identified and maternal hyperglycaemia treated to benefit in-utero fetal programming as well as maternal health.



Blue bars represent cases diagnosed using RCOG SARS-CoV-2 GDM Screening
Green bars represent extra cases diagnosed using local methods

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