**Risk Factors for Type 2 Diabetes following Gestational Diabetes in a Population-based Cohort**

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**Background**

Gestational diabetes (GDM) affects 4% of UK pregnancies and those affected are estimated to be seven times as likely to develop subsequent type 2 diabetes (T2DM).

This study used routinely-available healthcare data in a regional UK population-based cohort to determine T2DM incidence and risk factors following a GDM-affected pregnancy.

**Methods**

This was a longitudinal population-based cohort using the Hampshire Health Record, a healthcare database covering around 1.2 million residents in Hampshire, UK. All women diagnosed with GDM between 30/9/2007 and 30/9/2015 were identified. If women had multiple GDM-affected pregnancies during the study period, only the first pregnancy was included. Multivariable Cox proportional hazards regression modelling assessed clinically-significant risk factors, based on previous evidence, that were available in the dataset including pre-pregnancy body mass index (BMI), ethnicity, family history of diabetes, GDM treatment type, age (at time of GDM diagnosis), area deprivation level, hypertension, hyperlipidaemia, cardiovascular disease and a previous history of GDM. T2DM diagnoses within the study period were used to calculate incidence of T2DM following GDM.

**Findings**

3033 women were identified with GDM. 6.6% (95% confidence interval (CI) 5.6- 7.5%) of those tested for T2DM during the study period (n= 171) were diagnosed with T2DM (mean length of follow up 4.1 years (range 0.5 to 8.5). Obesity was the strongest risk factor with adjusted hazard ratios (aHR) 2.8 (95% CI 1.5, 5.3) and 3.4 (95% CI 1.5- 7.8) for obesity (body mass index (BMI) 30.0 to 35.0 kg/m2) and severe obesity (BMI above 35.0 kg/m2) respectively (p<0.0001 for trend). Other significant risk factors included Asian ethnicity- aHR 2.9 (95% CI 1.6, 5.3), previous GDM- aHR 1.7 (95% CI 1.1, 2.6) and pharmacological treatment for GDM- aHR 2.9 (95% CI 2.0, 4.2) for insulin and 1.9 (95% CI 1.2, 3.1) for oral medications.

**Interpretation**

Routinely-collected electronic healthcare data can be utilised to assess ‘real-life’ risk factors for T2DM following GDM. Challenges include missing data and inaccurate coding which can impact validity of findings. However, this study provides a basis to develop and test a regional risk-scoring system for prioritising referrals to diabetes prevention interventions following GDM.

*\* 347 words.*

Contributors

NAA developed the study concept. NAA and JB developed the specific research questions. NAA, JB and FS decided which variables to include in the analysis. FS extracted the data and prepared the database for analysis. JB analysed and interpreted the data, and wrote the abstract. NAA provided supervision for the analysis and interpretation of data. All authors contributed to subsequent drafts of the abstract and approved the final version.

Declaration of interests

We declare that we have no conflicts of interest.

Funding

MSc funded by Health Education England (Wessex).

Competing interests:

None