

CHALLENGES AND CONSEQUENCES OF BLOOD GLUCOSE MONITORING IN PREGNANT WOMEN WITH TYPE 2 DIABETES: AN OBSERVATIONAL COHORT STUDY

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BACKGROUND

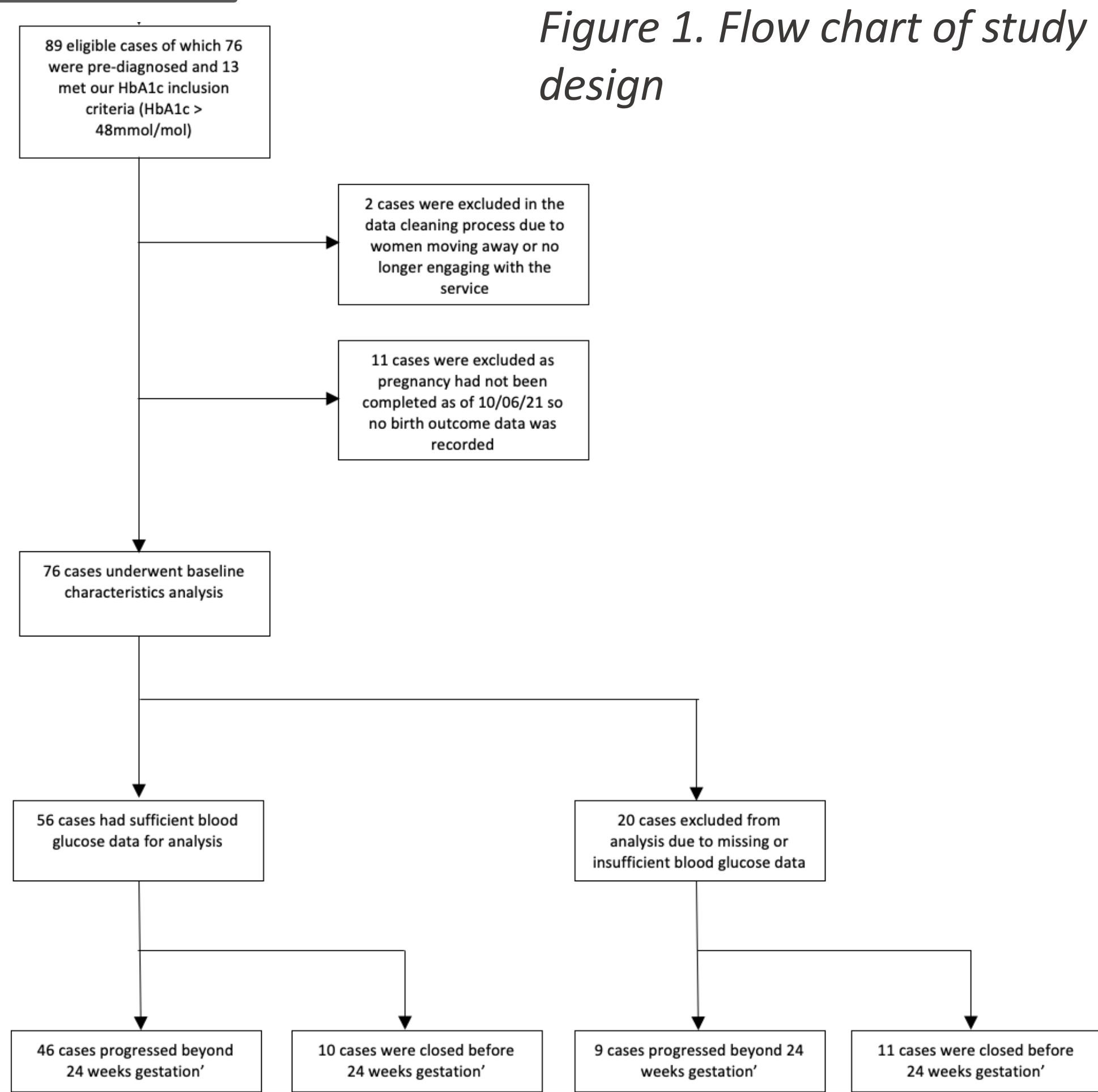
- There are now more pregnant women with type 2 diabetes than type 1 diabetes in the UK
- Pregnancies complicated by type 2 diabetes have significantly worse outcomes than pregnancies in women without diabetes, yet little research to date has been targeted specifically at this high risk group
- Mainstay clinical management for pregnancies complicated by type 2 diabetes is fingerstick blood glucose tests; NICE recommends a minimum of 4 readings per day for women not taking insulin and 6 readings per day for women who are taking insulin¹

AIMS

1. To describe blood glucose monitoring patterns in women with type 2 diabetes
2. To investigate the association between glycaemic indices and adverse birth outcomes

METHODS

- Observational cohort study of pregnant women with T2DM in Oxford from 2018-2021
- Blood glucose data obtained from GDM-Health (Sensyne Health)
- Eligible women either had type 2 diabetes prior to pregnancy, or an HbA1c>48 mmol/mol during pregnancy and submitted > 40 prandially tagged blood glucose measurements
- Blood glucose monitoring was described in terms of number of daily readings, mean preprandial blood glucose, mean postprandial blood glucose and percentage of readings within the target range (<5.3 fasting and <7.8 mmol/L 1-hour post prandial)
- Regression modelling was used to assess glycaemic indices as independent risk factors of birth outcomes



RESULTS

1. Blood glucose monitoring

- Of 76 cases, 55 had pregnancies progressing beyond 24 weeks; 46 of which had > 40 blood glucose readings
- Duration of blood glucose monitoring varied greatly. Women performed an average of 15 weeks of blood glucose monitoring (range 0.3 to 33.6) (Fig.2)
- 52% of women were below the target level of monitoring, recording <4 readings per day, and this pattern of monitoring was consistent throughout pregnancy (Fig.3)

Figure 2. Duration of blood glucose monitoring during pregnancy

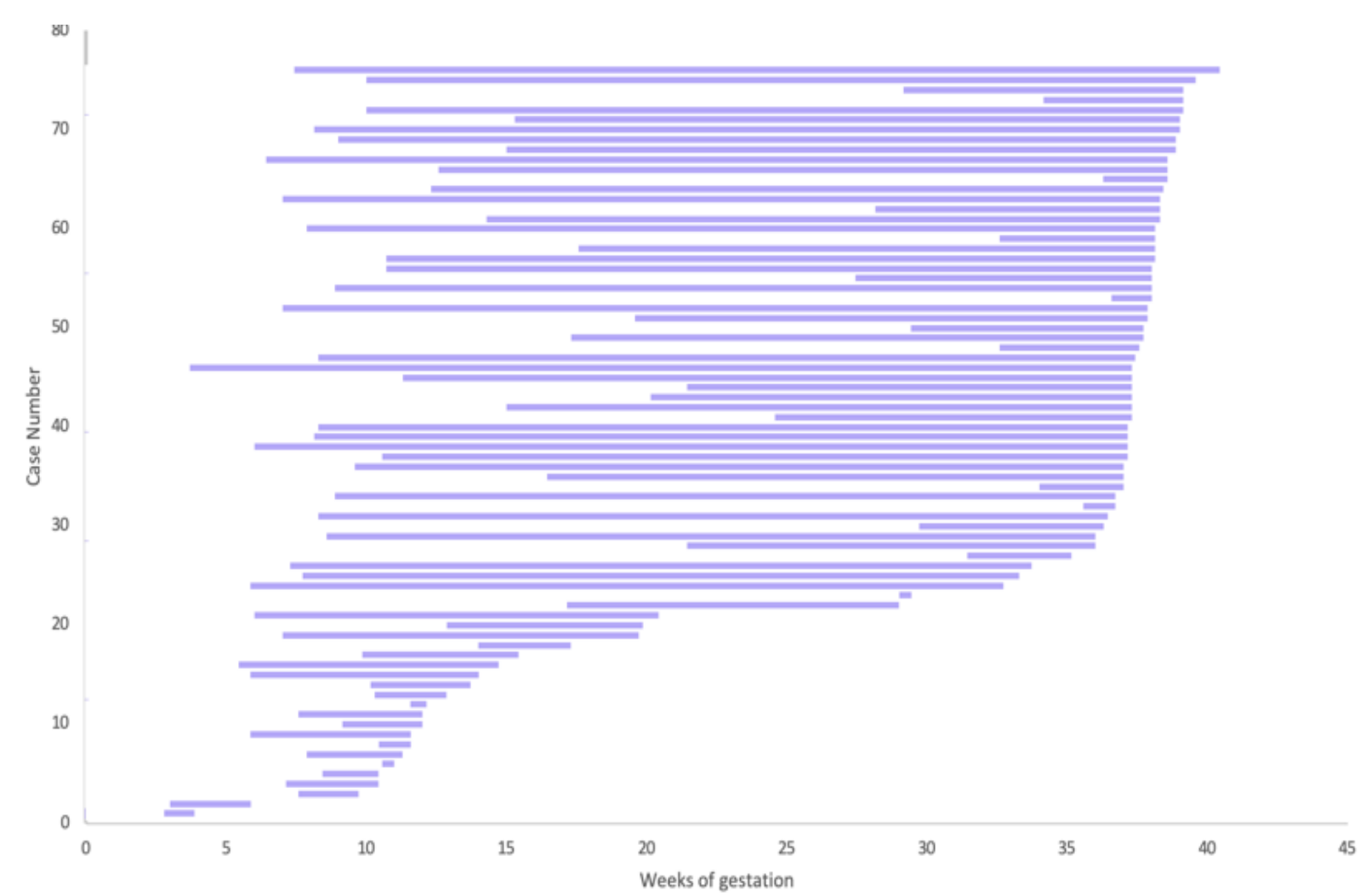
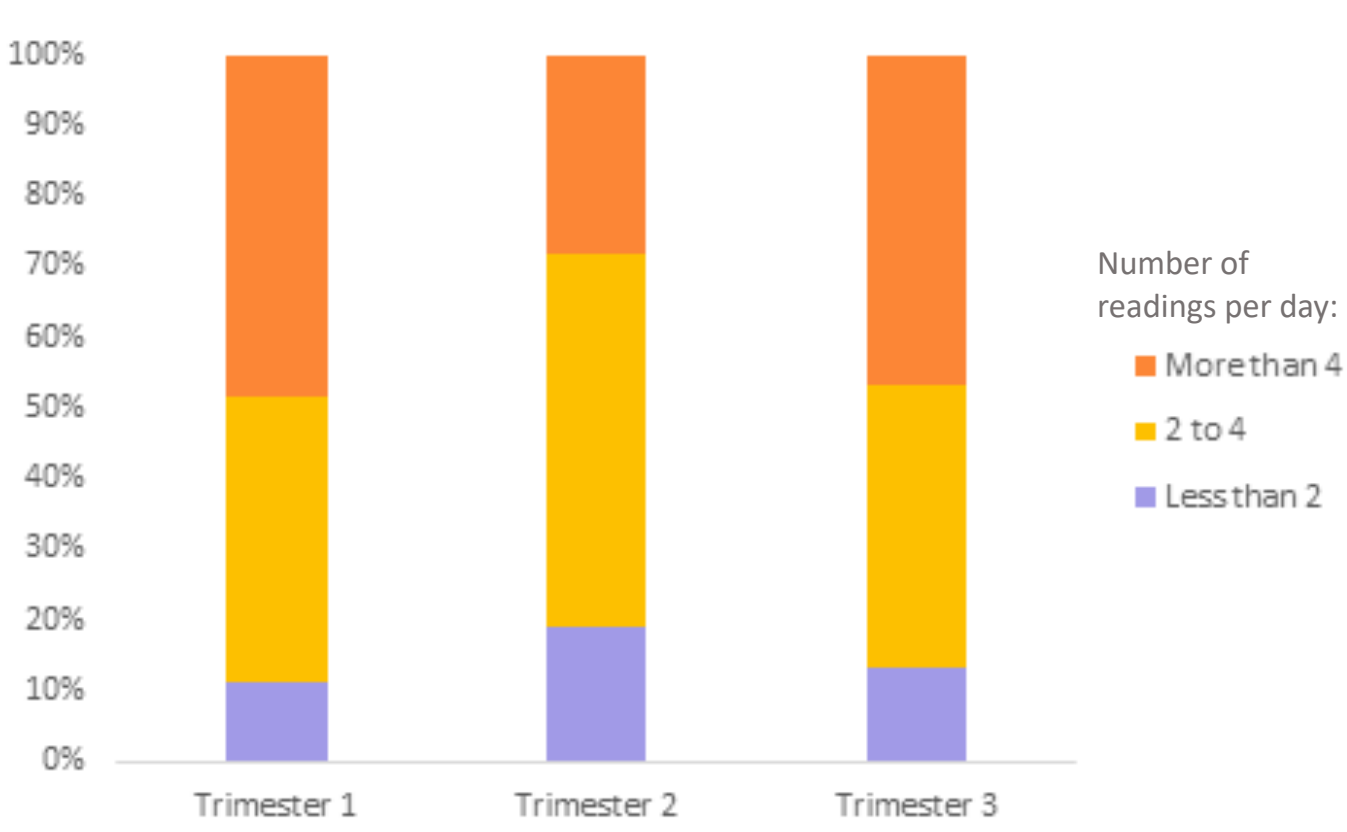


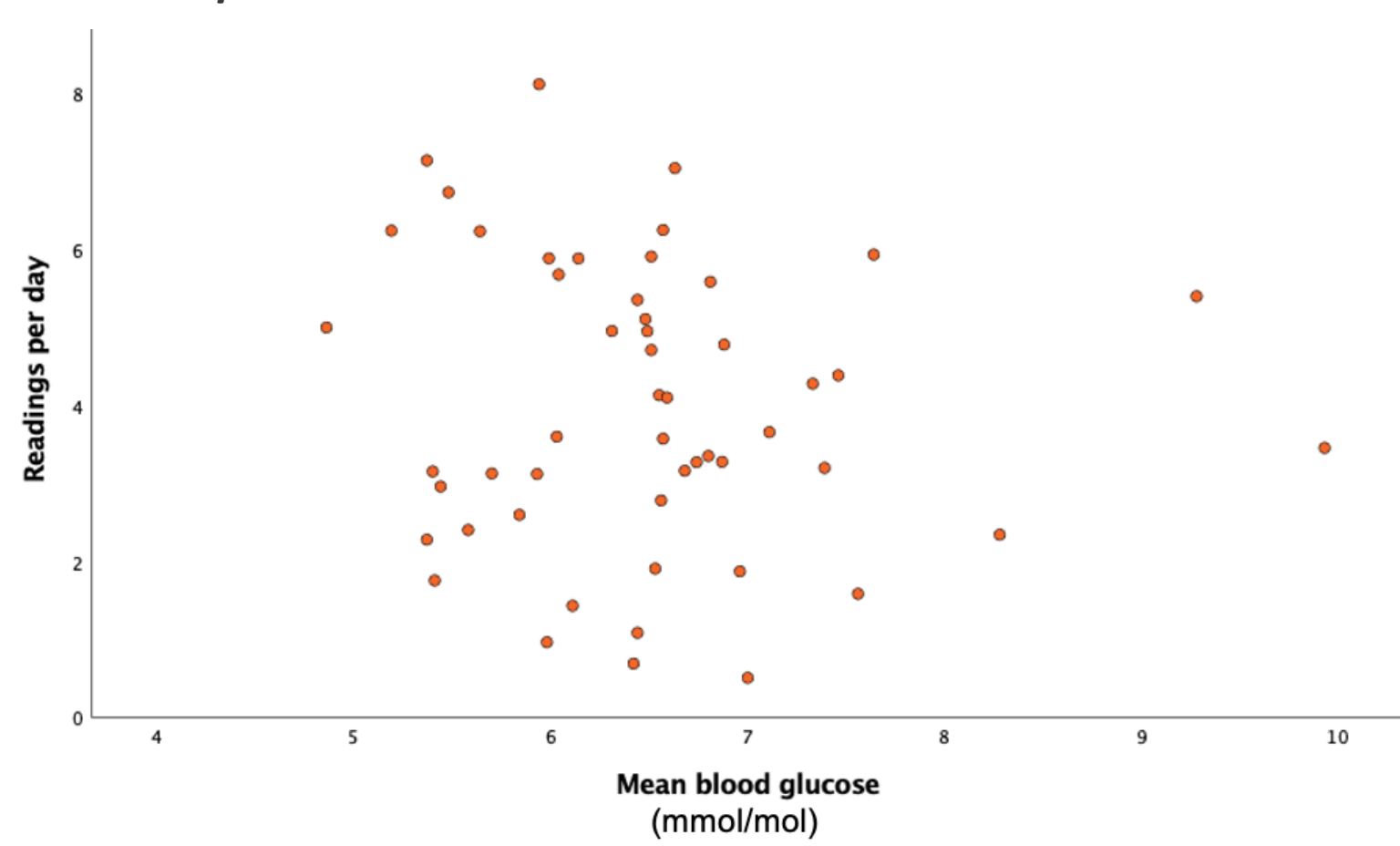
Figure 3. Distribution of readings per day frequencies across trimesters



2. Relationship between monitoring and glycaemic control

- Only a weak association between the number of readings per day and mean postprandial and pre-prandial blood glucose was demonstrated ($r=.17$, $r=.13$). (Fig.3)

Figure 4. Mean blood glucose against compliance



3. Glycaemic indices and birth outcomes

- No glycaemic indices were found to be independent predictors of adverse birth outcomes likely due to the study being underpowered

CONCLUSIONS

- Pregnant women with type 2 diabetes show poor compliance with blood glucose monitoring and inconsistency in registering with a specialist diabetes service which presents a significant challenge to the optimisation of diabetes care during pregnancy in type 2 diabetes
- Strategies to improve available blood glucose data such as continuous glucose monitoring and the identification of barriers associated with accessing and engaging with care are necessary to improve outcomes for these women

1. NICE. Diabetes in pregnancy: management from preconception to the postnatal period. In: National Institute for Health and Care Excellence; 2015