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ORAL COMMUNICATIONS

OP01

SYSTEMATIC REVIEW AND META-ANALYSIS OF AUTOMATED INSULIN DELIVERY SYSTEMS IN PREGNANCIES COMPLICATED BY TYPE 1 DIABETES

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Background/Aims: pregnancies complicated by type 1 diabetes (T1D) remain at increased risk for adverse pregnancy outcomes. Although randomized controlled trials (RCT's) have shown that automated insulin delivery (AID) systems can improve glycemic control during pregnancy, these trials were not powered to assess pregnancy outcomes. A meta-analysis is therefore needed to address this evidence gap.

Materials and methods: A systematic search was performed in accordance with PRISMA 2020 guidelines using PubMed, Embase, Web of Science, Scopus, Cochrane, CINAHL, ClinicalTrials.gov and ICTRP until 17 March 2026, only including RCT's comparing AID use with standard of care (SoC) in pregnant women with T1D. The pooled effect estimates were obtained using the Restricted Maximum Likelihood method (REML). Odds ratios are used as effect measures for binary outcomes, and mean differences for continuous outcomes. Heterogeneity was calculated by the I^2 (95% CI).

Results: From 1310 papers identified, 849 papers remained after deduplication. After abstract and full text screening, four RCT's (AIDAPT,CRISTAL,CIRCUIT,PICLS) met inclusion criteria, enrolling 333 pregnant women with T1D. No significant differences were observed between AID and SoC for most maternal and neonatal outcomes, including large-for-gestational-age infants (OR 0.69, 0.44-1.08), preeclampsia (OR 0.64, 0.28-1.44), gestational hypertension (OR 0.55, 0.20-1.49), preterm birth (OR 1.53, 0.81-2.91), neonatal hypoglycemia requiring intravenous dextrose (OR 1.06, 0.64-1.77), and NICU admission (OR 1.19, 0.73-1.96). Gestational weight gain was significantly lower in the AID group compared with SoC (-1.8, -3.2 to -0.4).

Conclusions: In this preliminary analysis, no significant differences in pregnancy outcomes were observed between AID and SoC, except for significantly less gestational weight gain in AID users.

OP02

IMPACT OF PRE-MEAL AND POST-MEAL EXERCISE ON GLUCOSE EXCURSIONS DURING EARLY-MIDDLE AND LATE GESTATION IN WOMEN WITH TYPE 1 DIABETES

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Background and aims

There is an urgent need for exercise recommendations that contribute to optimising glycaemic control in pregnancies complicated by type 1 diabetes (T1DM). For instance, it remains unknown which timing of exercise, before or after a main meal (i.e., lower vs. higher insulin on board), is more effective to optimize glycaemic control. We aimed to determine which timing of exercise (before or after lunchtime) is more effective to optimize glycaemic control (18-h, 4-h, and night periods) in women with T1DM at early-middle and late gestation.

Materials and methods

Randomised crossover trial: 13 women with T1DM (n=9 early-middle gestation; n=9 late gestation) completed two experimental conditions on non-consecutive days within a 10 day-period: pre-lunch and post-lunch exercise. On day 1, participants underwent a resting energy expenditure (REE) test followed by an incremental walk test using gas analysis to standardise meal energy content and exercise intensity on experimental days. On the pre-lunch and post-lunch exercise days, participants consumed a milkshake providing 30% of their REE and performed 35 minutes of walking at an intensity corresponding to the first ventilatory threshold. Glucose excursions were monitored using Dexcom G7 continuous glucose monitoring systems.

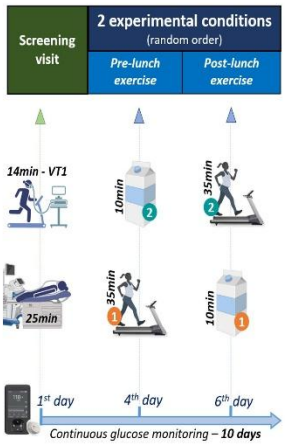
Results

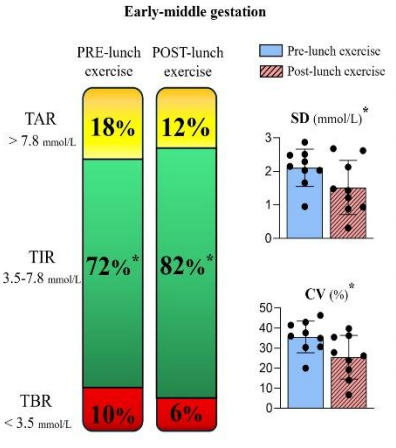
In early-middle gestation, over the 18-h period, women spent 10% more time in euglycaemia (p=0.01) and 6% less time in hyperglycaemia (p=0.07) and exhibited lower glycaemic variability (p<0.01) when exercising after lunch compared to before lunch. Similar trends were observed over the 4-h period. Overnight, post-lunch exercise was associated with 15% higher time in euglycaemia (p=0.02) and 11% lower time in hypoglycaemia (p=0.01). In late gestation, glucose responses were similar between experimental conditions.

Conclusion

Exercising after lunch is more effective than exercising before lunch for optimizing glycaemic control in women with T1DM at early-middle gestation. In late gestation, pre-lunch and post-lunch exercise have similar effects on glucose excursions.

When is exercise (before or after lunch) more effective to optimise daily glycaemic control in women with type 1 diabetes (T1DM) at early-middle and late gestation?





- Randomized crossover trial
- Main outcome: Time in pregnancy range (TIR) over an 18-h period.
- Main results: Post-lunch exercise is associated with a 10% higher 18-h TIR, a 15% higher overnight TIR, and lower glucose variability compared to pre-lunch exercise during early-middle gestation.
- Conclusions:
  -Exercising after lunch is more effective than exercising before lunch for optimising daily glucose responses in women with T1DM during early-middle gestation. Professionals could recommend to patients: "Walk at a brisk pace for 35 minutes after lunch on most days".

  -In late gestation, pre- and post-lunch exercise have similar effects.

OP03

SOCIOECONOMIC DISPARITY IN PRETERM BIRTH AMONG WOMEN WITH TYPE 1 DIABETES: A TEMPORAL ANALYSIS OVER 25 YEARS

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Background/Aims

The rates of preterm delivery have declined among women with type 1 diabetes (T1D). Whether there is a potential impact of educational level as a marker of socioeconomic position remains unknown. Therefore, we examined the importance of maternal educational level on the trends of preterm delivery over time.

Materials and Methods

A nationwide, register-based study of Danish singleton births from 1997 to 2021, evaluating preterm delivery using logistic regression analyses. Interaction was allowed between T1D (yes/no), educational attainment (low (≤primary school at delivery) vs. higher), and time (five five-year periods). Estimates were adjusted for maternal age, immigration status, smoking, and income. In a 2017–2021 subgroup, we tested whether the association between preterm delivery and education was independent of prepregnancy HbA_{1c}

Results

We included 1,552,647 births, hereof 5,567 (0.4%) with maternal T1D. Low education was present in 17.9% of women with T1D, similar to the general population. Preterm delivery was more common in women with T1D than in the general population (32.4% vs 5.1%, p<0.001). Among women with T1D, preterm delivery remained stable from 1997-2001 to 2017-2021 for those with low education (aOR 0.93 (95% CI 0.59; 1.47)) but declined for those with higher education (aOR 0.63 (95% CI 0.50; 0.79))

Women with low educational level had a greater risk of preterm delivery than women with higher education in 2017–2021 (aOR 1.61 (95% CI 1.13; 2.30)). In subanalyses, low educational level remained a risk factor of preterm delivery, independent of prepregnancy HbA_{1c}.

In the general population, women with low education had consistently greater risk of preterm delivery.

Conclusions

From 1997 to 2021 preterm delivery rates were stable for women with T1D and low education but decreased for the remaining women. Thus, socioeconomic disparity in preterm delivery among women with diabetes may have increased during these 25 years.

OP04

TEMPORAL TRENDS IN MAJOR CONGENITAL MALFORMATIONS AMONG PREGNANCIES WITH MATERNAL TYPE 1 DIABETES: A NATIONWIDE REGISTER-BASED STUDY.

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Background/Aims

Type 1 diabetes (T1D) is associated with an increased risk of major congenital malformations, yet it remains unclear whether advancements in diabetes management influence this risk over time in a Danish population. Further the influence of maternal education among women with T1D is unknown.
We examined time trends in the risk of major congenital malformations and the effect of socioeconomic disparity by evaluating the association with maternal education among women with T1D over a 25-year period.

Materials and methods

A nationwide, register-based study including all singleton live- and stillbirths among women with T1D from 1997 to 2021. Major congenital malformations were assessed across five 5-year calendar periods and by maternal educational attainment (low (≤primary school at delivery) vs. higher). Logistic regression analyses allowed for interaction between calendar time and maternal education. Estimates were adjusted for age, smoking and immigrant status. In 2017–2021, we examined whether the risk of major congenital malformations by maternal education varied by pregestational HbA1c levels (≤53 vs. >53 mmol/mol).

Results

We included 5,257 deliveries with T1D. The overall prevalence of major congenital malformations was 7.6%. Prevalence was 6.7% in 1997–2001, 9.1% in 2012–2016, and 7.2% in 2017–2021. Compared with 1997–2001, the adjusted odds ratio was 1.95 in 2012–2016 (95% CI, 1.12–3.41) and 1.40 in 2017–2021 (95% CI, 0.75–2.59). Low maternal education at delivery was present in 18.0% of pregnancies and was associated with a higher risk of major congenital malformations compared with higher education (aOR 1.44 (95% CI 1.11-1.87)), with no significant change over time. This association did not differ by pregestational HbA1c groups.

Conclusions

Among deliveries with T1D, the prevalence of offspring major congenital malformations in 2017-2021 was similar to 1997-2001. Low maternal education was persistently associated with higher risk of congenital malformations.

OP05

MATERNAL EARLY-PREGNANCY FATTY LIVER INDEX (FLI) IS ASSOCIATED WITH BOTH EARLY- AND LATE-ONSET GDM – A FINNISH POPULATION-BASED STUDY

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Background/Aims

Metabolic dysfunction -associated steatotic liver disease (MASLD) is common in type 2 diabetes. Our aim was to investigate the relationship between fatty liver index (FLI), early-onset GDM (E-GDM), and late-onset GDM (L-GDM), and describe clinical and metabolic features that characterize different degrees of MASLD in early gestation.

Material and methods

All women booking for an early-pregnancy sonography at South Karelia Central Hospital, Finland, were invited to participate in the Early Diagnosis of Diabetes in Pregnancy (EDDIE) study in 2013–2016. A total cohort of 1606 participants completed an OGTT at 12–16 weeks gestation. FLI was calculated using the formula defined by *Bedogni et al. (2006)*, which includes BMI, waist circumference, triglycerides, and GGT. These data were available for 1276 participants. Low risk for MASLD was defined as FLI≤20, intermediate risk 20<FLI<60, and high risk FLI≥60.

Results

Participants were categorized according to FLI: low risk n=825 (67%), intermediate risk n=301 (24%), and high risk n=150 (12%). The high-risk group was older, had higher fasting insulin concentration, atherogenic lipid profile, and higher HbA1c at 12–16 weeks gestation (p for all <0.001). The incidence of E-GDM increased from 9% to 21% to 40% with increasing FLI categories, and similar trend was observed for L-GDM. There was a positive linear correlation between risk of developing any GDM, E-GDM, or L-GDM and FLI (figure). Analyses of the individual variables contributing to FLI established waist circumference and triglyceride concentrations as the strongest independent predictors of GDM.

Conclusion

At 12–16 weeks gestation, FLI strongly predicts both E- and L-GDM. Therefore, FLI analysis could be clinically useful in early-pregnancy GDM risk assessment.

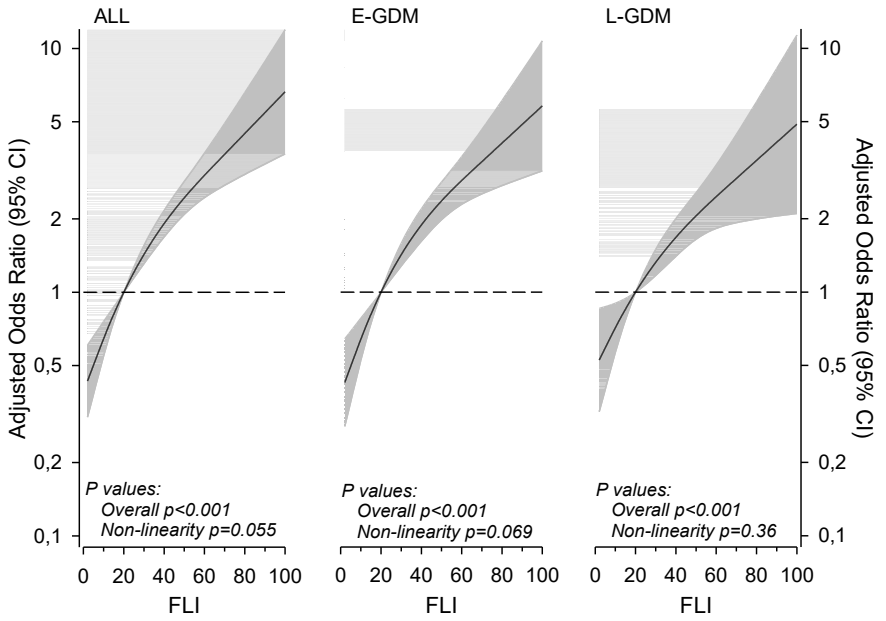

Figure: Adjusted odds ratio (OR) for risk of any GDM, E-GDM, and L-GDM as function of FLI when compared to FLI<20. The curves were adjusted by age, smoking status, and parity.

OP06

FIRST TRIMESTER PREDIABETES OR IADPSG GESTATIONAL DIABETES AND RISK OF HYPERGLYCEMIA-ASSOCIATED NEONATAL MORBIDITY

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Background/Aims: Management of pregnancies with first-trimester dysglycemia that does not meet criteria for overt diabetes remains controversial. We evaluated whether meeting prediabetes or IADPSG gestational diabetes (GDM) criteria in the first trimester is associated with an increased risk of neonatal morbidity.

Materials and Methods: In the US-based GO MOMs study, participants without preexisting diabetes underwent a masked 2-hour 75-gram oral glucose tolerance test (OGTT) and HbA1c measurement at 10-14 weeks' gestation. All participants underwent a 100-g OGTT at 24-28 weeks' gestation and were treated for GDM if Carpenter-Coustan criteria were met. In this analysis, the primary exposure was first-trimester prediabetes (HbA1c 5.7-6.4%, fasting 100-125 mg/dL, or 2-hour 140-199 mg/dL). Secondary exposures were meeting IADPSG criteria (fasting 92-125 mg/dL, 1-hour ≥180 mg/dL, or 2-hour 153-199 mg/dL) and "higher glycemic range" IADPSG criteria (fasting 95-125 mg/dL, 1-hour ≥191 mg/dL, or 2-hour 162-199 mg/dL) in first trimester. The primary outcome was a composite of stillbirth, birth injury, treated neonatal hypoglycemia, treated hyperbilirubinemia, respiratory morbidity, or perinatal death. We used logistic regression to estimate associations with the composite outcome after adjustment for age, BMI, income, race/ethnicity, nulliparity, and study site.

Results: At 10-14 weeks' gestation, 372 (18%) of 2051 participants met prediabetes criteria, 563 (27%) met IADPSG criteria, and 320 (16%) met IADPSG "higher glycemic range" criteria. The composite outcome occurred in 249 (12%). Neither prediabetes (absolute risk of composite outcome 16% vs 11%, aOR [95% CI]: 1.26[0.88,1.77]) nor first-trimester GDM by IADSPG criteria (15% vs 11%, 1.34[0.98, 1.81]) were associated with the composite outcome. However, there was an association between meeting IADPSG "higher glycemic range" criteria and the composite outcome (17% vs 11%, 1.47[1.02,2.09]).

Conclusion: Meeting prediabetes or IADPSG criteria in the first trimester was not associated with neonatal morbidity in gravidas universally tested for GDM at 24-28 weeks' and treated if diagnosed.

OP07

DIAGNOSING GESTATIONAL DIABETES MELLITUS (GDM) IN UNDERNOURISHED POPULATIONS: IS THERE A DIFFERENCE?

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Background/Aims

The definition of GDM is based on the association of maternal hyperglycemia with 'big baby syndrome' (HAPO-IADPSG). India (>25 million births every year) was not included in the HAPO study. India is called the world's GDM capital, but Indian babies are reputedly the smallest in the world.

Materials and methods

We compared maternal and neonatal characteristics in the HAPO study with those of pregnancies (n=1488) in Pune, India. Women with 'overt diabetes' (HAPO definition) were excluded. We examined the association between maternal glycemia at 28th week of gestation and offspring birth weight using multivariable regression analyses.

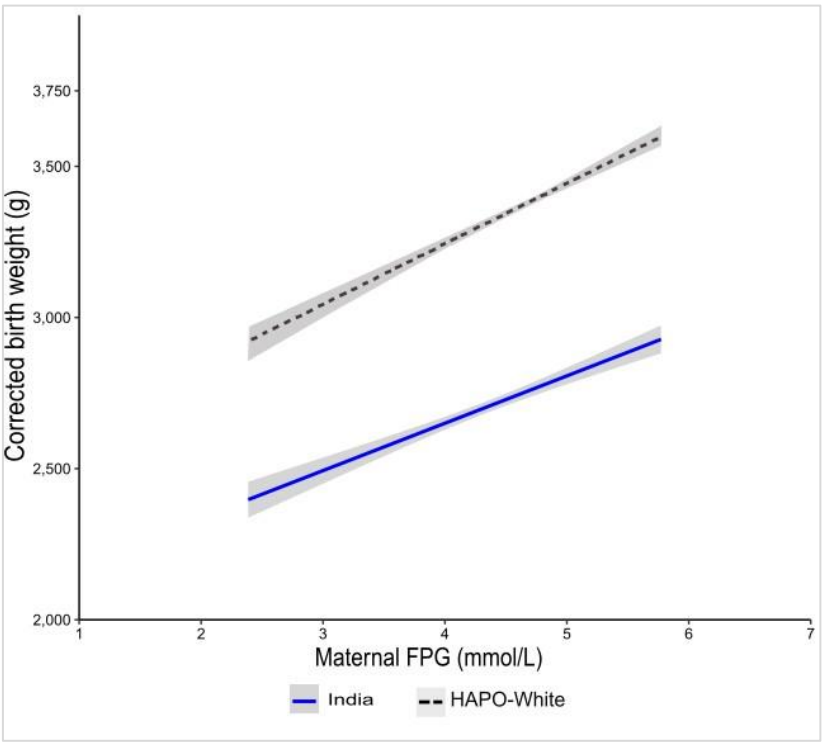
Results

HAPO study mothers were 30 years, 162 cm tall, with a BMI 28.1 kg/m^2, and fasting plasma glucose (FPG) 4.5±0.4 mmol/L. Indian mothers were 24 years, 154 cm, BMI 22.6 kg/m^2, FPG 4.3±0.7 mmol/L, and included 384 (25.8%) mothers classified as GDM. Babies born in HAPO weighed 3348 ± 430g. Indian babies weighed 2696 ± 477g; 28% were LBW (<2.5 kg), 0.6% had macrosomia (>4 kg), 45% were small for gestational age (SGA) and 0.2% large for gestational age (LGA) (INTERGROWTH-21st). One SD increase in FPG was associated with 239g increase in birth weight in the HAPO study, but only 22g (all pregnancies) in the Pune studies (37g for GDM only). The ORs for LGA associated with maternal FPG were 1.57 (95% CI:1.46-1.69) in the HAPO study
and 1.68 (95% CI:1.35-2.10) in India.

Conclusions

Indian mothers and babies are much smaller than the HAPO participants, and the effect of maternal glucose on the offspring's birthweight is much smaller. Pune data is comparable to the Indian National Family Health Survey data; 'Big Baby' outcomes are relatively rare and growth restriction fairly common in India. Intensive control of mild hyperglycemia may aggravate growth restriction. A recent report from Uganda raised similar issues. There is an urgent need to reconsider the basis and criteria for diagnosis of GDM in chronically undernourished populations.

Figure 1 Association between maternal glycemia and offspring birth weight adjusted for gestational age and sex



Pune, blue solid line, HAPO-White, black dotted line. Grey shading reflects the 95% CI around the regression line. HAPO, Hyperglycaemia and Adverse Pregnancy Outcome.

OP08

IMPACT OF NEW NATIONAL GDM CRITERIA ON GDM PREVALENCE AMONG HIGH RISK WOMEN IN THE TOBOGM STUDY

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Background

Several countries changed their GDM diagnostic criteria after the Treatment of Booking Gestational-Diabetes-Mellitus (TOBOGM) trial showed major benefits of treating early gestational diabetes mellitus (eGDM) using higher diagnostic criteria than the WHO-2013 criteria. The aim of this secondary analysis was to compare the reduction in numbers with eGDM and late GDM at 24-28 weeks (LGDM) using different new criteria.

Methods

Pregnant women with GDM risk factors completed an OGTT before 20 weeks'. Non-European ethnicity was considered a risk factor. Those without eGDM diagnosed repeated the OGTT at 24-28 weeks'. GDM diagnosis followed WHO-2013 criteria.

GDM prevalence was compared using WHO-2013, Swedish (5.3, 10.0, 8.5), ADIPS-2025 (5.3, 10.6, 9.0) and New Zealand (NZ: 5.3, 10.6, [omitted]), fasting, 1h, 2h time point mmol/l criteria respectively. Women with eGDM were excluded from the LGDM numbers. Prevalence was compared using chi squared. Simple proportions diagnosed with 95% Confidence intervals (95%CI) were calculated for comparison.

Results

Among the 3672 women, 857(23.3%), 658(17.9%), 522(14.2%) and 450(12.3%) women were classified as having eGDM using WHO-2013, Swedish, ADIPS-2025 and NZ criteria respectively (p<0.001). Among the remaining 2541 women at 24-28 weeks', 449 (17.7%), 369(14.5%), 253 (10.0%) and 205(8.1%) were classified as having LGDM respectively (p<0.001). Proportions remaining with eGDM were similar between high-risk Europeans (0.72, 0.60, 0.54) and non-Europeans (0.80, 0.61,0.51) across the 3 new criteria. Proportions remaining with LGDM were similar between Europeans (0.77, 0.40) and non-Europeans (0.85, 0.49) across Swedish and NZ criteria, but lower in Europeans (0.47(95%CI:0.39-0.55)) than non-Europeans (0.62(95%CI:0.56-0.68)) using ADIPS-2025 criteria. Proportions remaining with any GDM were significantly higher among Māori/Pasifika (0.66(95%CI:0.54-0.77)) than Europeans (0.49(95%CI:0.45-0.54)) or East/South Asians (0.47(95%CI:0.43-0.51)) using NZ criteria.

Conclusions

Changes in diagnostic criteria disproportionately reduced numbers diagnosed with GDM among Europeans and East/South Asians, particularly using the NZ criteria with its omission of the 2h glucose.

OP09

NORMATIVE DATA USING CONTINUOUS GLUCOSE MONITORING SYSTEM FOR GLYCEMIA IN PREGNANCY AT 24 TO 32 WEEKS OF GESTATION IN INDIAN WOMEN DEFINED AS NORMAL BY IADPSG CRITERIA

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Background: We lack normative data for glycaemic measures measured by the Continuous glucose monitoring system (CGMS) at 24-32 weeks in the South Asian population. With newer criteria for diagnosis of gestational diabetes mellitus (GDM), i.e., IADPSG (International Association of Diabetes and Pregnancy Study Groups), previous studies fail to reflect normal or abnormal glycemic status as determined by IADPSG criteria.

Objective: To generate normative data for glycemia in pregnancy for Indian (South Asian) women defined as normal by IADPSG criteria at 24-32 weeks period of gestation

Methodology: We conducted this prospective observational study from 2022-2024 at All India Institute of Medical Sciences, New Delhi, India (tertiary care setting) after ethics approval and informed written consent. Women were identified from Obstetrics and Endocrinology clinics during their antenatal visits and scheduled for the study visit. 75-g OGTT was done and interpreted as per IADPSG criteria. A Freestyle Libre 2 sensor was inserted on the arm for a continuous glucose monitoring system for two weeks. Data was acquired on their natural diet.

Results: We enrolled 265 women at 28.8 years and 25.3 weeks of gestation. 36.5% of the women were first-time pregnant, 66.9% were educated till graduation/postgraduation, and 18.4% were employed. Family history of diabetes was present in 29.0%, PCOS in 4.9%, and 93.6% had spontaneous conception. The data was captured for all participants for at least ten days. Mean glucose was 89.8 (9.1) mg/dl. Only 4.5% of the women had mean glucose above 105 mg/dl. The mean time above range (>140 mg/dl) was 1.0 %. Only 3.7% of the women had TAR >5%. The mean time below range (<70 mg/dl) was 10.9%. Minimum glucose was seen between 4 to 6 am (80 mg/dl) and maximum between 4 to 6 pm (95.6 mg/dl).

Conclusion: We report for the first time the normative data for glycemia measures captured through freestyle libre-2 at 24-32 weeks of gestation among South Asian women evaluated using IADPSG criteria. This data will help in clinical decision-making when dealing with women with hyperglycemia during pregnancy.

OP10

GLUCOSE CONTROL AND NEONATAL GROWTH IN CGM-TREATED GESTATIONAL DIABETES: A GRACE SECONDARY ANALYSIS

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Background and aims:
Data from the GRACE study previously demonstrated modest improvements in maternal glucose control — reflected by higher time in range (TIR) — and reduced rates of large-for-gestational-age (LGA) neonates among women with gestational diabetes mellitus (GDM) treated with real-time continuous glucose monitoring (rt-CGM). The present analysis investigated the association between CGM-derived glucose metrics and neonatal growth outcomes, and explored whether improvements in glucose control may mediate the treatment effect of rt-CGM.

Materials and methods:
This secondary analysis was based on the GRACE randomised controlled trial. Pregnant women diagnosed with GDM were randomised at a mean gestational age of 28.6 weeks to either rt-CGM or standard self-monitored blood glucose (SMBG). Women in the rt-CGM group had access to real-time, unblinded CGM data until delivery; the control group wore a blinded CGM device for 10 days post-randomisation and again between 36+0 and 38+6 weeks of gestation. CGM-derived metrics, including pregnancy-specific TIR (65–140 mg/dl), were assessed in relation to birthweight outcomes.

Results:
Among 345 pregnancies (AGA: n=265; LGA: n=24; SGA: n=56), maternal glucose control during 36+0 to 38+6 weeks differed significantly by neonatal growth category. Women delivering LGA neonates had lower TIR compared with those delivering AGA or SGA neonates (both $p<0.001$), and higher time above range (TAR >140 mg/dl). TIR was inversely correlated with birthweight percentile, while TAR showed a modest positive correlation. In multivariable linear regression, lower TIR remained independently associated with higher birthweight percentiles. Logistic regression with LGA as the binary outcome yielded consistent findings. Mediation analysis revealed a significant indirect effect on birthweight percentile via improved TIR, whereas the direct effect of the intervention did not reach statistical significance.

Conclusion:
Late-pregnancy maternal glucose control was associated with neonatal growth outcomes, with lower TIR linked to increased LGA risk. These results underscore the clinical relevance of CGM-derived glucose metrics in women with GDM and suggest that improved glucose control may mediate the effects of rt-CGM on neonatal growth.

OP11

IMPACT OF CONTINUOUS GLUCOSE MONITORING ON MENTAL HEALTH AND TREATMENT SATISFACTION IN WOMEN WITH GESTATIONAL DIABETES MELLITUS

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Background: Gestational diabetes melltius (GDM) is the most common endocrinologic comorbidity in pregnancy. Monitoring glucose through fingerpricks is not optimal neither for diabetes control nor for patient's experience. This study aims to assess impact of continuous glucose monitoring (CGM) vs. fingerpricks on mental health and treatment satisfaction of women with GDM.

Materials and methods: This is a pilot randomized clinical trial including 80 women from a high-risk obstetrics unit of a tertiary hospital in Barcelona with a diagnosis of GDM before 35 weeks. Women with psychological comorbidity or unable to fulfill the questionnaires were excluded. At enrollment, 40 individuals were following a specific diet and 40 were treated with insulin and they were randomized to real time CGM or standard of care with self-monitoring blood glucose. The intervention group used FreeStyle Libre2 from enrollment to delivery. The primary outcome are patient reported outcomes on mental health and treatment satisfaction with the two different methods of glucose control. These were obtained from State-Trait Anxiety Inventory 40, Edimburgh Depression Scale and Diabetes Treatment Satisfaction Questionnaire at baseline and at 33-35 weeks.

Results: Satisfaction with treatment was higher in the intervention group with a significant higher score in DTSQ change (5.6 vs 13.3). A lower score in anxiety scores (in both subscales State and of Trait) was found in women treated with diet using CGM compared to insulin. There were no differences in maternal or neonatal outcomes.

Conclusion: Women with gestational diabetes are more satisfied using CGM during pregnancy than with self-monitoring blood glucose.

OP12

CONTINUOUS GLUCOSE MONITORING FOR MANAGEMENT OF GESTATIONAL DIABETES MELLITUS: A RANDOMISED FEASIBILITY STUDY IN THE UK

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Background/Aims: Gestational diabetes mellitus (GDM) is associated with macrosomia, pre-eclampsia and pre-term delivery. Continuous glucose monitoring (CGM) detects glycaemic excursions, enabling pharmacological or behavioural intervention. The RECOGNISE study assessed the feasibility of a multi-centre Randomised Controlled Trial (RCT) comparing CGM with self-monitored blood glucose (SMBG) in women with GDM to reduce macrosomia and improve maternal and neonatal outcomes.
Material & Methods: Randomised feasibility study in two English maternity units with qualitative study to explore acceptability. Inclusion: singleton pregnancy, diagnosis of GDM per NICE guidelines, 12^{+0}–31^{+6} weeks gestation, able to use CGM. Participants were randomised 2:1 to CGM (Freestyle Libre2) versus usual care (SMBG-finger-prick). Primary outcome: absolute recruitment and recruitment rate. Secondary outcomes: completeness of glucose, maternal, fetal and patient-reported outcome measures (PROMs).
Results: 60 participants were randomised to CGM (n=38) or SMBG (n=22). 58% of eligible participants consented. Data completeness at baseline and follow-up were: ≥95% at both timepoints for clinical perinatal, 90% reducing to 82% for HbA1c and ≥87% reducing to ≥70% for PROMS. Randomisation was acceptable and CGM was acceptable and favourable to women, providing greater glucose oversight, increased convenience and reduced discomfort compared with SMBG. Staff perceived equipoise and that the trial was important.
In the CGM versus SMBG group there were lower rates of preeclampsia (0/38(0%) vs. 4/22(19%)), low birthweight (2/37(5%) vs. 4/22(18%)), macrosomia (>4kg; 3/37(8%) vs. 4/22(18%)) large for gestational age (>90th centile; 4/38(11%) vs. 4/22(18%)) preterm birth (<37 weeks; 8/37(22%) vs. 9/22(41%)) and Neonatal Intensive Care Unit admission (23/37(22%) vs. 9/22(41%)).
Conclusions: A multi-centre trial comparing CGM with usual care is feasible. CGM is acceptable and favoured by women with GDM. A larger, adequately powered trial is required to evaluate impact on glycaemic control and adverse perinatal outcomes. The UK RECOGNISED multi-centre trial commences in 2026 and will address these aims.

OP13

PANCREATIC BETA-CELL PLASTICITY: TRANS- DIFFERENTIATION OF DELTA- TO BETA-CELLS DURING PREGNANCY

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Background: Insulin (Ins)-secreting β-cell mass (BCM) increases in the maternal pancreas during pregnancy to compensate for insulin resistance. This involves a reinitiation of β-cell proliferation, although transdifferentiation from other islet cell types, such as somatostatin (Sst)-secreting δ-cells, can also occur. It is unclear whether δ-cell mass (DCM) is similarly increased during pregnancy, the extent to which δ- to β-cell transdifferentiation contributes to the increased BCM, or how these change in hyperglycemic pregnancies.

Methods: We used a transgenic mouse model to trace δ-cell lineage fate using a yellow fluorescent protein (YFP) genetic lineage tag. Pancreas sections were collected from non-pregnant (NP) females and from pregnant mice at gestational days (GD) 9, 12, 15, and 18, and processed for immunofluorescence microscopy to detect Ins, YFP, and Sst. Cells positive for Ins and YFP but negative for Sst ($Ins^+YFP^+Sst^-$) represented new δ-cell-derived β-cells. Mice (6–8-weeks age) received either no injection, buffer alone, or streptozotocin (STZ) to induce β-cell loss. Two weeks post-injection, mice were mated and pancreas removed as above.

Results: Both BCM and DCM significantly increased by GD18 compared to NP (GD18, BCM 0.41±0.11 mg (Mean±sem), DCM 0.12±0.04 mg; NP, BCM 0.20±0.04, DCM 0.03±0.01). Lineage tracing showed a 5-6-fold increase in both bi-hormonal (Ins^+ YFP^+ Sst^+) and transdifferentiated ($Ins^+YFP^+Sst^-$) cells by GD18 in normal pregnancy, although transdifferentiated cells were less abundant. STZ-treated mice had an initial 40% reduction in BCM and were glucose intolerant during pregnancy. The adaptive increase in BCM, but not DCM, was impaired in diabetic pregnant mice, although the percentage of bi-hormonal and d-cell-derived β-cells was increased, relative to controls.

Conclusions: Maternal DCM and BCM both increased during pregnancy, associated with d- to β-cell transdifferentiation. The increase in BCM was impaired during hyperglycemic pregnancy. The increased transdifferentiation may be an adaptive response to generate new phenotypic β-cells.

OP14

MATERNAL AND CORD BLOOD PROTEOMIC NETWORKS LINKING GLYCEMIA DURING PREGNANCY TO BIRTH WEIGHT IN A SOUTH ASIAN BIRTH COHORT

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Background/Aims: Maternal BMI and glycemia during pregnancy influence offspring risk of cardiometabolic diseases, but the underlying biological pathways remain incompletely understood. We aimed to identify maternal-fetal proteomic pathways linking maternal metabolic traits to birth weight (BW) in a high-risk South Asian population.
Materials/Methods: Among 207 mother-child pairs with data on pre-pregnancy BMI, gestational weight gain (GWG), and glucose values from a 75-g OGTT at 24-28 weeks' gestation, we measured 366 cardiometabolic protein biomarkers in maternal blood (24-28 weeks) and cord blood (delivery). We applied a four-layer analytical framework linking maternal traits, maternal biomarkers, cord biomarkers, and BW z-score using multivariable linear models adjusted for maternal age, parity, gestational age, and newborn sex, with additional adjustment for maternal BMI when investigating glycemia and GWG. Multiple testing was corrected using false discovery rate (FDR). Significant pathways were defined as those meeting FDR thresholds across all analytical layers.
Results: Network analysis identified 55 pathways linking maternal metabolic traits to BW (35 for BMI, 16 for glycemia, 4 for GWG). Maternal IGFBP2 emerged as the dominant node linking maternal glycemia to BW. Higher fasting glucose was associated with lower maternal IGFBP2 (β=−0.75 [SE 0.28] normalized protein expression [NPX] per mmol/L increase in fasting glucose, P=0.008), which was associated with higher cord leptin (β=−0.65 [0.15] NPX per IGFBP2 increase, $P=1.7\times10^{-5}$), which was associated with higher BW (β=0.30 [0.04] SD per leptin increase, $P=6.3\times10^{-11}$). Cord SDC1 and SSC4D were secondary nodes, associated with lower maternal IGFBP2 (SDC1 β=−0.41 [0.12], P=0.0006; SSC4D β=−0.36 [0.11], P=0.001) and higher BW (SDC1 β=0.21 [0.05], $P=4.1\times10^{-5}$; SSC4D β=0.18 [0.05], P=0.0003).
Conclusions: Maternal glycemia influences BW through a limited set of maternal mediators, particularly IGFBP2, linking maternal glycemic status to cord leptin as well as SDC1 and SSC4D. In contrast, maternal adiposity is associated with a broader maternal-fetal proteomic network influencing BW.

OP15

CORD BLOOD TXNIP DNA METHYLATION ASSOCIATIONS WITH MATERNAL GLYCEMIA AND CHILDHOOD GLUCOSE OUTCOMES

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Background: *TXNIP* encodes thioredoxin-interacting protein and is a key regulator of glucose sensing. DNA methylation (DNAm) at the *TXNIP* locus has been implicated with type 2 diabetes in adults and in cord blood (cb) following exposure *in utero* to maternal hyperglycemia. This analysis examined whether maternal glycemia during pregnancy is associated with cord blood DNAm at *TXNIP*, and whether cb DNAm at *TXNIP* is associated with offspring glucose outcomes in childhood.
Methods: Data from 3,008 participants in the Hyperglycemia and Adverse Pregnancy Outcome Study and its Follow-Up Study were analyzed. Maternal sum of glucose z-scores from the pregnancy oral glucose tolerance test (OGTT) was used to reflect overall glucose exposure. Associations between maternal glycemia and cb DNAm M-values at 11 *TXNIP* CpG sites and between cb DNAm M-values and child OGTT outcomes at 10–14 years of age were assessed using linear regression models. Unadjusted P-values are reported due to the exploratory nature of this analysis ($p<0.05$).
Results: Higher maternal glucose by 1 SD during pregnancy was significantly associated with lower cb DNAm at three *TXNIP* CpG sites: cg02988288 ($\beta=-0.039$, $p< 0.001$), cg19693031 ($\beta=-0.011$, $p<0.001$), and cg26974062 ($\beta=-0.035$, $p< 0.001$). In childhood follow-up analyses, cb DNAm was significantly associated with higher 1-hour glucose levels (by 1 mg/dL) at cg19389852 ($\beta=3.91$, $p=0.026$) and cg17175624 ($\beta=5.71$, $p=0.034$). Additionally, cb DNAm at cg19389852 was associated with higher child glucose sum of z-scores (by 1 SD) ($\beta=0.34$, $p=0.03$), lower disposition index ($\beta=-0.47$, $p= 0.04$), and lower insulinogenic index (by 1 µu/mL/mg/dL) ($\beta=-0.02$, $p=0.03$).
Conclusions: Maternal hyperglycemia during pregnancy is associated with lower cb DNAm at the *TXNIP* locus. Differential methylation in cb at *TXNIP* is associated with offspring glucose outcomes 11.5 years later, supporting a potential role for *TXNIP* DNAm as an early-life epigenetic marker linking in utero glycemic exposure to later metabolic risk.

OP16

CLINICAL USEFULNESS OF GENETIC RISK SCORES IN THE PREDICTION OF GESTATIONAL DIABETES

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1. **Background/Aims:** Genetic risk scores (GRS) have been proposed to be useful in the prediction of gestational diabetes mellitus (GDM). We tested whether GRS adds predictive value to clinical risk factors for GDM, especially among primiparous and normal-weight women, where clinical risk estimation can be challenging.

2. **Material and methods:** GRS was calculated from 14 GDM-associated SNPs in 998 women with GDM and 973 controls, using genome-wide data from the Finnish Gestational Diabetes study. Data were randomly divided into the training and the validation sets. In the training set, multivariable logistic regression was used to create predictive models for the combination of clinical variables, including maternal age, pre-pregnancy body mass index (BMI), family history of type 2 diabetes, and GDM in an earlier pregnancy, and to further combine them with GRS. The area under the receiver operating characteristic (ROC) curve (AUC) was calculated to analyze the added value of GRS for all women, primiparous women, or women with pre-pregnancy BMI < 25 kg/m2.

3. **Results:** In the GDM group, standardized GRS was higher than in the controls (0.21, SD 0.98, vs 0.21, SD 0.97; odds ratio 1.56, 95% confidence interval, CI, 1.42 – 1.71). The AUC values for each group are presented in *Table 1*. No differences were observed between the AUC values.

Table 1.	Clinical risk factors	Clinical risk factors + GRS
Group	AUC (95% CI)	AUC (95% CI)
All women (n = 1971)	0.773 (0.744 – 0.802)	0.798 (0.770 – 0.825)
Primiparous (n = 889)	0.748 (0.794 – 0.792)	0.782 (0.740 – 0.823)
Pre-pregnancy BMI < 25 kg/m^2 (n = 1039)	0.701 (0.653 – 0.748)	0.733 (0.688 – 0.778)

4. **Conclusions:** The clinical usefulness of the GRS composed of 14 genome-wide significant SNPs as a diagnostic tool for GDM is limited. In the future, genome-wide GRSs capturing more GDM-associated variants are to be explored.

OP17

TIME TRENDS IN PERINATAL OUTCOMES COMPARING PEOPLE WITH AND WITHOUT TYPE 1 DIABETES BETWEEN 1965 AND 2024: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background/Aims

Improvements in obstetric and diabetes care are likely to have improved perinatal outcomes in patients with type 1 diabetes (T1DM). However, long-term trends in perinatal risk have not been studied. Therefore, we aimed to investigate whether the gaps in perinatal outcomes between pregnant people with T1DM and without diabetes have changed over time.

Materials and Methods

We searched PubMed, EMBASE, CINAHL, Scopus and Web of Science from inception to Feb 7, 2025, for studies reporting relevant perinatal outcomes in pregnant people with T1DM. Eligible studies with more than 50 participants with T1DM and at least one outcome were included; control group consisted of reported data on participants without diabetes. We used meta-regression to measure rate of change in outcomes in each group per calendar year and fitted an interaction model to test the difference between the groups.

Results

211 studies published between 1965 and 2024 yielded 416,642 pregnant people with T1DM and 108,786,126 control pregnancies. Over time, maternal age at conception and pre-pregnancy BMI each increased significantly in both groups. In patients with T1DM first trimester HbA1c decreased (β_{T1DM}= -0.5%/decade (95%CI:-0.6- -0.3)). Perinatal mortality decreased in T1DM group from 11.7% to 0.8% (N_{oldest}=2293, N_{newest}=34882, β_{T1DM}=-1.2%/decade (95%CI:-1.54- -0.94), and the difference with people without diabetes has disappeared (0.7 to 0.3%; N_{oldest}=2715790, N_{newest}=11594389, β_{C}=-0.2%/decade (95%CI:-0.32-0.02)). However, in T1DM birthweight increased with 163 grams over time (β_{T1DM}=41.4 gram/decade (95%CI:19.7-63)), while control group remained the same. In addition, T1DM showed consistently higher prevalence of large for gestational age, cesarean section, NICU admissions, and preterm births, without improvement of the difference over time (p_{gap}>0.05).

Conclusion

Increasing perinatal survival in pregnancies in people with T1DM closed the gap to the general population. However, unchanged differences across other perinatal outcomes and increasing difference in birthweight highlight the persisting risks of T1DM pregnancies.

OP18

CARDIOVASCULAR ADAPTION AND PLACENTAL FUNCTION IN PREGNANT WOMEN WITH TYPE 1 DIABETES – A PROSPECTIVE STUDY BASED ON THE FAPDI COHORT.

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Background/Aims

Pregnancies complicated by type 1 diabetes (T1DM) are at increased risk of placenta-related obstetric complications, which may be caused by maternal hyperglycemia. However, diabetes is also associated with impaired cardiovascular adaptation to pregnancy which may contribute to impaired placental function. This study aimed to investigate the correlation between placental function assessed by MRI and maternal glycemic control and cardiovascular function in pregnant women with and without T1DM.

Materials and methods

This prospective cohort study is based on the FaPDi (Fetal growth and Placental function in Diabetes) cohort including 40 pregnant women with T1DM and 60 pregnant women without diabetes. Maternal cardiac MRI and T2* weighted placental MRI was performed at 28.3 ± 0.9 week's of gestation. The correlation between placental T2* and maternal Hba1c and cardiovascular parameters was investigated by multiple linear regression.

Results

Placenta T2* z-score was significantly reduced in pregnant women with T1DM, and in the total cohort placental T2* z-score showed a negative correlation with maternal Hba1c (Coefficient ± SD, -0.03±0.02, p = 0.03, R^2=0.06).There was a significant negative correlation between placental T2* z-score and maternal MRI parameters related to vascular stiffness such as total peripheral vascular resistance (-0.11±0.04, p <0.01, R^2=0.08); and effective arterial elastance (-2.03±0.65, p <0.01, R^2=0.11). Whereas there was a significant positive correlation between placental T2* z-score and maternal MRI parameters related to left ventricle (LV) dimensions and function such as LV diastolic volume (0.01±0.01, p=0.02, R^2=0.07); LV stroke volume (0.03±0.01, p=0.01, R^2=0.09); Cardiac output (0.03±0.14, p=0.03, R^2=0.06). These correlations remained significant after adjusting for maternal HbA1c.

Conclusions

This study underlines the impact of maternal glycemic level and cardiovascular performance on placental function. Suboptimal cardiovascular adaptation during pregnancy, characterized by increased vascular resistance and abnormal LV remodeling, correlates with impaired placental function, irrespective of maternal glycemic status.

OP19

SONOGRAPHIC EVALUATION OF THE FETAL ABDOMINAL SUBCUTANEOUS TISSUE IN THE BIRTH-WEIGHT ESTIMATION AND PREDICTION OF THE FETAL MACROSOMIA IN PREGNANCIES COMPLICATED BY GESTATIONAL AND TYPE 1 DIABETES MELLITUS.

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Aim: To evaluate the efficacy of the ultrasonographic measurement of the fetal abdominal fat mass (AFM) in the estimation of the fetal birth-weight (FBW) and prediction of fetal macrosomia in pregnancies with concomitant gestational (GDM) and type 1 diabetes mellitus (T1DM).
Methods: A total of 245 participants were recruited for this prospective, cross-sectional study, including women with diet-controlled GDM (GDMG1) (n=50), insulin-controlled GDM (GDMG2) (n=50), T1DM (n=50) as well as non-diabetic control patients (n=95). In each participant measurements of the AFM in conjunction with the standard fetal biometric parameters were performed within the 72 hour period prior to delivery.
Results: After adjustment for confounding factors, median AFM and abdominal circumference (AC) measurements as well as the FBW were significantly higher among patients with T1DM as compared to other groups ($p<.05$). In each group both AFM and AC measurements showed strong positive correlations with the FBW ($p<.001$). Two new models comprising maternal (body mass index) and/or ultrasound-derived parameters (biparietal diameter, AC, AFM) for the FBW estimation were constructed. Both equations provided significantly lower mean absolute percent error among GDMG1 and T1DM women as compared to the Hadlock formula ($p<.05$). In addition novel equation for the prediction of fetal macrosomia, utilizing both AC and AFM measurements, yielded sensitivity of 84.8%, specificity 91.9%, positive predictive value 62.2% and negative predictive value of 97.5% within the total study population.
Conclusions: In women with GDM/T1DM incorporation of the AFM measurement into equations for the FBW estimation provide better accuracy to standard formulas and increase the detection of fetal macrosomia.

OP20

PLACENTAL PATHOLOGIES AND ADVERSE PREGNANCY OUTCOMES ASSOCIATED WITH UNDERDIAGNOSED GLUCOSE DYSMETABOLISM: A NESTED CASE-CONTROL STUDY

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Abstract

Aims

This study aims to investigate the incidence of various placental pathologies according to the Amsterdam criteria across different types of glucose dysmetabolism and explore their links to ultrasound Doppler findings and pregnancy outcomes

Materials and Methods

From a prospective cohort study that recruited pregnant women undergoing an oral glucose tolerance test (OGTT) between 24 and 32 weeks, a nested case-control study of 106 placentas submitted for histopathology was conducted. The study participants were categorised into (1) GDM based on modified NICE criteria; gestational reactive hypoglycaemia (RH): (2-hour < fasting); and (3) high-normal OGTT (n=28): fasting 5-5.6 mmol/l, 1-hour 9-10 mmol/l, or 2-hour PG 7-7.7 mmol/l. Those who did not meet the criteria were classified as normal glucose tolerance (NGT). The pathologist was blinded to clinical information. The placenta histology diagnosis was made according to the Amsterdam criteria. Ultrasound findings and maternal notes were also recorded.

Results

Placentas from pregnancies with RH had higher trends of fetal vascular malperfusion (FVM) (17.56% vs 2.65%) and delayed villous maturation (DVM) (11.76% vs 7.69%) compared to NGT. Placentas from high-normal OGTT pregnancies had a higher incidence of FVM (7.69% vs 2.56%) than those from NGT. DVM and FVM were associated with high uterine artery pulsatility index at 11-14 weeks ($p<0.05$). With DVM, the incidence of preterm birth (33.33%, $p<0.01$) and premature prelabour rupture of membranes (16.67%, $p<0.05$) was higher compared to controls. of unknown etiology was associated with abnormal middle cerebral artery resistance, birthweight < 10th percentile, and neonatal sepsis ($p<0.05$).

Conclusions

RH is a pregnancy condition that possibly has a higher risk of placental abnormality, including FVM and DVM. These placental abnormalities may induce adverse pregnancy outcomes, including preterm birth, fetal growth restriction, and early neonatal infection. In our study, DVM is associated with increased first-trimester uterine artery resistance.

OP21

INDIVIDUALIZED, RISK-BASED DELIVERY TIMING RATHER THAN ROUTINE EARLY INDUCTION BEFORE THE DUE DATE APPEARS SAFE TO AVOID STILLBIRTH

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Background
Pregnancies complicated by preexisting diabetes are associated with an increased risk of intrauterine fetal death which has led to recommendations for elective induction of labor at 38–39 weeks. However, this approach may result in early-term deliveries even in women without additional risk factors. We aimed to assess the safety of expectant management until the estimated due date (EDD) and to compare maternal and neonatal outcomes according to the onset of labor.
Methods
In this prospective, multicenter cohort study, 861 pregnancies with preexisting diabetes (62% type 1, 38% type 2) were analyzed. Since 2016, expectant management until EDD has been applied to women without predefined high-risk criteria, including poor glycemic control, fetal macrosomia, vascular complications, or abnormal Doppler findings. Participants were categorized by onset of labor: spontaneous labor (including pre-labor rupture of membranes), induction for medical indication, and elective induction for postterm pregnancy. Women with a primary cesarean delivery were excluded from outcome analyses. Results
The overall stillbirth rate was 0.69% (6/861). All events occurred before implementation of the risk-based management strategy, with three occurring <37 weeks. Compared with other groups, women undergoing medical induction delivered earlier (37.9 ± 2.6 weeks) and had higher third-trimester HbA1c levels (6.3 ± 0.9%), higher rates of C-section (94.2%), neonatal hypoglycemia (32.2%), and NICU admission (47.2%) (all p≤0.002). Elective induction for postterm pregnancy occurred at a later gestational age than spontaneous labor (39.9 ± 0.6 vs. 37.9 ± 2.2 weeks). C-section rates were higher after elective induction (54.2% vs. 43.2%, p = 0.03); neonatal hypoglycemia was less frequent after postterm induction (13.0% vs. 23.9%, p = 0.02), and NICU admission rates were also lower (16.9% vs. 27.4%, p = 0.02), likely due to the higher gestational age at delivery.
Conclusion
In selected women with preexisting diabetes, expectant management until the EDD appears safe when predefined risk criteria are applied. Elective induction at the EDD was not associated with adverse neonatal outcomes, supporting individualized, risk-based delivery timing rather than routine early induction before the due date. Further studies are needed to evaluate whether delaying induction beyond the due date might be also safe.

OP22

MARKERS OF PANCREATIC DEVELOPMENT AND FUNCTION ARE ALTERED IN THE PANCREAS OF FEMALE ADULT OFFSPRING OF DIABETIC RATS: EFFECTS OF A MATERNAL DIET ENRICHED WITH EXTRA VIRGIN OLIVE OIL.

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Background/Aim: Previously, we demonstrated that rats with mild pregestational diabetes program GDM and DM2 in their adult female offspring. A maternal diet enriched with extra virgin olive oil (EVOO) reduces maternal insulin resistance, provides benefits to the placenta and may ameliorate fetal programming of the pancreas. We aimed to evaluate whether a maternal diet enriched with EVOO regulates markers of pancreatic development, function and adaptations to pregnancy in the adult female offspring of diabetic rats.

Materials and methods: A mild pregestational diabetic rat model was induced in F0 females by neonatal administration of streptozotocin (90 mg/kg sc). Control and diabetic females were mated with healthy males and received or not a 6% EVOO-enriched diet from preconception (2 estrous cycles before pregnancy) until parturition. All offspring were fed a standard diet from weaning. Pancreas of 5-month-old adult female offspring was evaluated. Expression of genes codifying transcription factors relevant in pancreatic development and function (*Ngn3*, *Pdx1*, *Nkx6.1*, *Neurod1* and *Mafa*) as well as gene expression of genes codifying insulin (*Ins1*) and prolactin receptor (*Prlr*, relevant in beta cell mass expansion and pancreatic adaptations to pregnancy) were evaluated by RT-qPCR. Protein levels of PDX1 and PRLR were evaluated by Western blot.

Results: Female offspring of diabetic rats (O-DR) showed no changes in *Ngn3* but reduced *Pdx1, Nkx6.1, Neurod1, Mafa, Ins1* and *Prlr1* mRNA levels as well as reduced PDX1 and PRLR protein levels in the pancreas compared to controls ($p<0.05$). The EVOO-enriched maternal diet prevented impaired mRNA and protein levels of PDX1 and PRLR and increased *Ins1* mRNA levels in the pancreas of their female offspring ($p<0.05$ vs. O-DR fed a standard diet).

Conclusions: Impaired markers of development, function and adaptation to pregnancy are programmed in the pancreas of the O-DR. Maternal diets enriched with EVOO can prevent part of these alterations.

OP23

GENETIC HETEROGENEITY IN GESTATIONAL DIABETES MELLITUS: MONOGENIC DIABETES VARIANTS AND GENETIC RISK OF TYPE 1 DIABETES – FINDINGS FROM THE TRANSLATE STUDY

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Background/Aims

Gestational diabetes mellitus (GDM) is a heterogeneous condition encompassing susceptibility to both maturity-onset diabetes of the young (MODY), type 1 diabetes (T1D), and type 2 diabetes. We aimed to determine the prevalence of genetic MODY variants and high genetic risk for T1D in women with GDM and examine associated maternal- and perinatal phenotypes.

Materials and methods

We included women with GDM participating in the genomic precision medicine project TRANSLATE between May 2022 and April 2025. Whole-genome sequencing data were assessed after pregnancy for disease-causing variants in MODY genes (glucokinase (*GCK),* hepatocyte nuclear factor (*HNF1A, HNF4A, HNF1B),* and insulin *(INS)*). A T1D genetic risk score (GRS) comprising 67 variants was calculated. Based on genotypes, women were stratified as: 1) carriers of MODY variants, 2) those with a high T1D-GRS, and 3) all remaining women.

Results

Altogether, 991 women with GDM were eligible. MODY variants were identified in 13 women (1.3%) (10 *GCK*, 1 *HNF1A*, 1 *HNF4A*, and 1 *HNF1B*), and a high T1D-GRS in 40 women (4.0%). In women with GCK variants, 50% of infants had inappropriate birthweight (3 small-for-gestational-age and 2 large-for-gestational-age). Women with MODY variants had lower pre-gestational BMI (23.3 vs 27.4 kg/m^2, p=0.04), higher HbA1c at GDM diagnosis (39 vs 34 mmol/mol, p<0.01) and in late pregnancy (40 vs 35, p<0.01), and were more frequent insulin-treated (69.2 vs 24.1%, p<0.001), while women with a high T1D-GRS had lower pre-gestational BMI (25.3 vs 27.4, p=0.04), lower HbA1c at GDM diagnosis (32 vs 34, p<0.01), and in late pregnancy (33 vs 35, p=0.03) compared with remaining women. Otherwise, maternal and perinatal outcomes were overall similar.

Conclusions

MODY variants were rare; however, prevalent inappropriate birthweight suggest that standard GDM treatment might have been suboptimal for this group. Phenotypic differences in women with high T1D-GRS may reflect distinct etiologies of GDM.

OP24

USING HUMAN MILK AS A LIQUID BIOPSY TO DETECT CHANGES IN MAMMARY FUNCTION DURING LACTATION AFTER GESTATIONAL DIABETES

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Background/Aims: There has been growing interest in using ribonucleic acid (RNA) levels in human milk to study the molecular status of the lactating mammary epithelial cell (MEC). Gene expression measured from cells and cell fragments shed in milk can serve as a liquid biopsy. Gestational diabetes mellitus (GDM) is associated with difficulties during lactation including perceived insufficient milk supply and early cessation of breastfeeding. GDM has been found to alter human milk (HM) composition compared to women without diabetes. Here we sought to understand gene expression changes that might explain these differences.

Materials and Methods: IMAGE-GDM is a case-control study of gestational endocrinopathies affecting human milk composition. Fresh HM collected at 2 months (n=24) had RNase inhibitor added prior to freezing and was stored at -80°C until processing. Whole milk RNA was extracted using the RNeasy Mini kit. We performed RNA sequencing to investigate transcriptome differences by GDM status. DESeq2 was used to analyze count and read data. Demographic factors were tested for differences by case or control status via Wilcoxon or Fischer's Exact Test.

Results: Participant demographics revealed higher glucose at the 1-hour time point of the OGCT in participants with GDM (p= 1.37E-07). PCA analysis of RNA sequencing revealed that GDM did not explain the majority of transcriptome variance in our samples, however maternal pre-pregnancy BMI was a major determinant. After adjustment for multiple comparisons, we found 13 significantly upregulated and 11 significantly downregulated genes in mothers with GDM. Pathway analysis revealed that inflammation, macrophage, vitamin D and vitamin B12 pathways were downregulated while cell proliferation increased.

Conclusion: These results indicate that maternal GDM alters mammary function during lactation but that it is not the major determinant of changes in gene expression between mothers. Further work will characterize milk composition differences predicted by these findings.

OP25

STILLBIRTH RISK BY GESTATIONAL WEEK IN WOMEN WITH TYPE 1 AND TYPE 2 DIABETES DURING 2014–2023: A POPULATION-BASED COHORT STUDY IN SWEDEN

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1. Background/Aims

Stillbirth rates are tripled among women with type 1 (T1D) and type 2 diabetes (T2D), but positions on optimal delivery timing varies in countries. The aim was to analyze stillbirth rates by gestational week in Sweden for women with T1D and T2D.

2. Material and methods

The population-based cohort study used Swedish Medical Birth Register data during 2013–2022 including singleton pregnancies with delivery <42 gestational weeks. Pregnancies with T1D and T2D were compared with a control group without any diagnosis of hyperglycemia. The Mann–Whitney U test, the chi-squared test, relative risk calculation, and Poisson regressions with 95% confidence intervals was used. P<0.05 was considered significant.

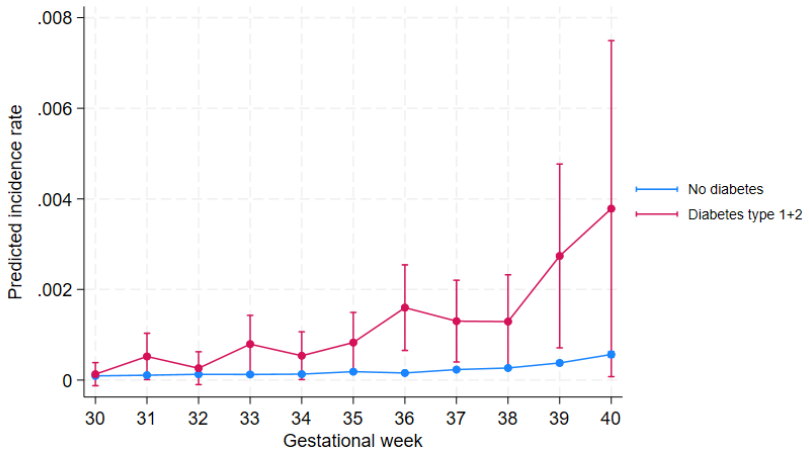
3. Results

987,119 women were included for analysis, with 979,348 controls. T1D- (n=5641, 0.6%), and T2D-pregnancies (n=2130, 0.2%) had higher prevalences of obesity (20.8% and 56.8 vs 13.8%), chronic hypertension (2.3% and 6.4% vs 0.4%), preeclampsia (16.7% and 9.5% vs 2.9%), and large for gestational age (weight deviation >22% vs mean, 45.2% and 24.3% vs 4.1%) vs the control group. Mean gestational age (week+day) at delivery in case of T1D was 38+1, T2D 38+5 and for controls 40+0.

Overall stillbirths were 45 (0.80%) in the T1D-group, 21 (0.99%) in the T2D-group, and 2833 (0.29%) in the control group, while the relative risks were 2.8 (95%CI 2.1–3.7) and 3.4 (2.2–5.2) for women with T1D and T2D, respectively. Compared with controls, stillbirth rate per gestational week among women with T1D or T2D (combined) was increased from week 36, with an incline after week 38.

4. Conclusions

Stillbirth risk was higher among T2D compared with T1D pregnancies and 2-5 times higher compared with pregnancies without diabetes. From gestational week 36 comorbidities and individual risk assessment need to be evaluated from 36 weeks.



Poisson regression (95% CI), with interactions between weeks and diabetes type 1 and type 2 (combined), stillbirths, gestational weeks 30-40, in Sweden 2013-2022.

OP26

NECK CIRCUMFERENCE IS AN INDICATOR OF HYPERGLYCAEMIC DISORDER 11-15 YEARS AFTER PREGNANCY – FINNGEDI FOLLOW-UP STUDY

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Background/Aims: Neck circumference (NC) has been proposed as a simple anthropometric measure reflecting harmful fat distribution and metabolic risks, such as insulin resistance and type 2 diabetes (T2DM). This study aimed to examine whether NC circumference is independently associated with the development of hyperglycaemic disorder (prediabetes or T2DM) on average 13 years after pregnancy with or without a history of gestational diabetes (GDM).

Material and methods: We followed the Finnish prospective case-control cohort 11-15 years after the index pregnancy, including 213 women with a history of GDM and 204 non-GDM controls. Fasting glucose, HbA1c, NC, waist circumference (WC), weight and height were measured. A 2-h 75-g oral glucose tolerance test was performed, except for participants who reported type 1 diabetes (T1DM) or T2DM. Two participants were excluded from the analyses (n=1 T1DM, n=1 benign thyroid tumour). Logistic regression, adjusted for GDM status at the index pregnancy, age, smoking, BMI and WC, was performed.

Results: Of women with GDM at the index pregnancy, 41.5% (n=88) developed T2DM or prediabetes compared with 7.4% (n=15) non-GDM controls. NC was greater among those with prior GDM than among non-GDM women (35.7 vs 34.7 cm, $p < 0.001$). When considering GDM status at the index pregnancy, age and smoking, NC was associated with hyperglycaemic disorders (OR 1.42, 95 % CI 1.28-1.58). Even after adjustments for BMI and waist circumference, a 1 cm increase in NC was independently associated with a 29% higher risk for hyperglycaemic disorders (OR 1.29, 95% CI 1.08-1.53). The highest NC quartile (37.1-45.9 cm) was associated with 3.90-fold odds (95% CI 1.15-13.2) for hyperglycaemic disorders compared to the lowest NC quartile (29.6-33.1 cm).

Conclusions: Neck circumference is an independent risk factor for prediabetes and type 2 diabetes after pregnancy. It shows promise as a simple and easily obtainable measure for postpartum risk assessment.

OP27

THE ACCURACY OF HAEMOGLOBIN A1C AND FASTING PLASMA GLUCOSE VERSUS OGTT IN DIAGNOSING TYPE 2 DIABETES MELLITUS IN WOMEN WITH PREVIOUS GESTATIONAL DIABETES MELLITUS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background and aims:
Gestational diabetes mellitus (GDM) is the most common medical complication in pregnancy, with up to 40–50% developing type 2 diabetes (T2D) within 10 years postpartum. Adherence to recommended postpartum diabetes testing is low, and the cumbersome oral glucose tolerance test (OGTT) may be a barrier. Simplifying postpartum testing may improve adherence. Alternatives such as fasting plasma glucose (FPG) and haemoglobin A1c (HbA1c) have been proposed, but their diagnostic performance remains uncertain. This review evaluates the diagnostic accuracy of FPG and/or HbA1c compared with OGTT for detecting T2D after GDM.

Materials and methods:
A search of four databases identified studies including women with prior GDM who underwent both OGTT and either FPG and/or HbA1c postpartum using T2D cut-offs corresponding to WHO criteria. Study quality was assessed using QUADAS-2 and QUADAS-C. Data for 2x2 tables were extracted. Bivariate random-effects meta-analyses were performed to obtain pooled estimates of sensitivity and specificity, and summary receiver operating characteristic curves and forest plots were made.

Results:
Of 4587 records screened, 94 by full text, 17 studies were included. Eight studies evaluating FPG showed pooled sensitivity 0.53 (95% CI 0.29–0.76) and specificity 0.98 (95% CI 0.96–0.99). Eleven studies evaluating HbA1c showed pooled sensitivity 0.38 (95% CI 0.22–0.56) and specificity 0.98 (95% CI 0.96–0.99). Substantial between-study variability was observed for sensitivity in both tests, while specificity was consistently high. Meta-regression for HbA1c indicated slightly higher sensitivity when testing was performed ≥12 weeks postpartum.

Conclusion:
FPG and HbA1c demonstrate consistently high specificity but only moderate/low sensitivity for detecting postpartum T2D after GDM. Combining tests may improve sensitivity. Low sensitivity challenges their use as standalone alternatives to OGTT, but they may still be considered within simplified screening strategies to improve testing adherence, thereby potentially facilitating earlier T2D detection in this high-risk population.

OP28

IMPACT OF PRIOR GESTATIONAL DIABETES ON FUTURE NORMAL GLUCOSE TOLERANCE PREGNANCY - A RETROSPECTIVE COHORT STUDY IN GALWAY, IRELAND

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Background and Aims Gestational diabetes mellitus (GDM) is a pregnancy-induced hyperglycemia impacting upwards of 18 million women every year with lifelong risks of obesity, type 2 diabetes, and cardiovascular disease. While recurrence risk is well established, little is known about the outcomes of subsequent normal glucose tolerance pregnancies (NGTP) in women with prior GDM.

The aim of this study us to examine the maternal and neonatal outcomes of women with NGTP following an index GDM pregnancy.

Materials and Methods This retrospective cohort examined 166 women with GDM and a subsequent pregnancy (2016-2020, single center, West Ireland). Data on maternal demographics, laboratory values, maternal, and neonatal outcomes were collected. Only women who had a 75g OGTT in the subsequent pregnancy were included and classified as recurrent GDM (rGDM) or a normal glucose tolerance pregnancy (NGTP). Outcomes were compared between pregnancies using a proportions calculator and Mann-Whitney U-test on SPSS.

Results In total, 386 women had GDM between 2016-2020. Of these, 166 (43%) went on to have another pregnancy. Only 16 (9.6%) had NGTP, the remainder had GDM. There was no difference in age or body mass index between those with rGDM versus NGTP (34.1 versus 34.5 years and 29.5 versus 23.6 kg/m2 respectively), high rates of obesity were observed in both groups (40.9% versus 37.5%). Women with NGTP had high rates of caesarean delivery (43.8%), fetal macrosomia (18.8%), neonatal care admission (12.5%), respiratory distress (6.3%) and depression (18.8%). No significant differences were determined between those with NGTP and rGDM.

Conclusion Women with NGTP encounter high rates of serious adverse complications despite the absence of metabolic derangement and their pregnancies should be risk stratified accordingly.

OP29

CLINICAL CHARACTERISTICS OF WOMEN WITH NEWLY DIAGNOSED TYPE 2 DIABETES WITH OR WITHOUT A HISTORY OF GESTATIONAL DIABETES

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1.Background/Aims

We investigated whether women with type 2 diabetes (T2D) and previous gestational diabetes mellitus (GDM) have a more severe T2D prognosis characterized by an earlier diabetes onset, more medication use, and higher prevalence of complications compared to women with T2D without previous GDM.

2.Materials and methods

All patients in the Danish Centre for Strategic Research in Type 2 Diabetes (DD2)-cohort are enrolled within two years after their diabetes diagnosis. We included all women in the DD2-cohort, who had previously been pregnant (n=2,865), and compared women with previous GDM (n=173) to women without GDM (n=2,692) in terms of age at diabetes diagnosis, clinical traits and diabetes complications at enrolment.

3.Results

Women with previous GDM developed T2D more than 10 years earlier than women without previous GDM (median age 43.5 vs. 56.3 years; $p<0.001$), and 40% of these women were below 40 years at diabetes onset compared to 6% of women without previous GDM ($p<0.001$). Furthermore, at DD2 enrolment, women with previous GDM had a 2-fold higher prevalence of insulin treatment (10.4% vs. 5.2%, $p<0.01$) and lower fasting levels of serum C-peptide (median 1068 vs. 1195 pmol/l, $p<0.05$) compared to women without previous GDM. We did not observe significant statistic differences in BMI, HbA1c, fasting plasma glucose, HOMA2-B, HOMA2-S and HOMA2-IR or in the prevalences of nephropathy, neuropathy, and cardiovascular disease between the groups. The prevalence of diabetic retinopathy was different between the groups ($p<0.05$), but due to few cases, we cannot report the exact numbers or evaluate whether this finding has clinically relevance.

4.Conclusions

Women with a history of GDM experience disease onset approximately a decade earlier compared to women without prior GDM. In addition, these women more frequently require insulin therapy at the time of diabetes diagnosis. This suggests a distinct T2D phenotype characterized by potentially greater severity.

OP30

TRAJECTORY ANALYSES OF CONTINUOUS GLUCOSE MONITORING (CGM) FROM EARLY TO LATE PREGNANCY: ASSOCIATION WITH NEONATAL ADIPOSITY

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Background/Aims

This secondary analysis of the GO MOMs cohort evaluated associations of longitudinal changes in glycemia assessed by CGM during pregnancy with measures of newborn adiposity.

Material and Methods:

Gravidas with singletons and no pre-existing diabetes were evaluated at 10-14, 16-20, 24-28 and 32-36 weeks' gestation. For analysis, ≥5 days of blinded CGM data were required from ≥2 visits. CGM measures included mean 24hr, nocturnal (12-6 AM) and daytime (6-12 AM) glucose. Newborn measurements were performed at <72 hours postpartum to estimate fat mass (FM, grams) and percent body fat (%BF). Latent class trajectory modeling summarized longitudinal patterns of CGM-derived metrics. Optimal latent classes were selected based on goodness of fit and maintaining class size of ≥ 5% of the total sample. Class membership was treated as a categorical predictor in multivariate regression analyses of newborn adiposity. Models were adjusted for maternal age, BMI, parity, race, ethnicity, tobacco use, infant sex, gestational age at birth, and days of life at measurement.

Results:

Data were available for 1539 participants. Two classes were identified for each CGM measure: declining glucose (Class A: included 93% of cohort for daytime, 94% for nocturnal, and 93% for 24 hour CGM) and increasing glucose (Class B: 7% of cohort for daytime, 6% for nocturnal, and 7% for 24 hr CGM). In regression models of 24 hour mean glucose, members of Class B had newborns with higher FM (β [95% CI], 37.2g [9.3, 65.0]) and %BF (0.84 [0.21,1.47]) than members of Class A. Models for daytime and nocturnal mean CGM classes demonstrated similar positive associations of Class B CGM with FM (33.6g [6.4, 60.8] and 66.4g [35.4, 97.4], respectively) and %BF (0.84 [0.21, 1.47] and 1.4 [0.7, 2.1])

Conclusion:

Trajectory analyses of glycemia across pregnancy suggest patterns of increasing glucose are associated with greater neonatal adiposity.

OP31

INFANT WEIGHT GAIN AFTER GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONIST DISCONTINUATION FOR PREGNANCY

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Background: Discontinuation of glucagon-like peptide-1 receptor agonists (GLP1RAs) for pregnancy is associated with greater maternal gestational weight gain and higher newborn birthweight percentile. It is unclear if metabolic changes induced by stopping GLP1RAs impact infant weight during the first year.

Methods: In a retrospective cohort (2016-2024), we used prescriptions to identify GLP1RA exposure 3-year prior to 90-day after conception in full-term, singleton pregnancies. Using propensity score weighting to adjust for pre-pregnancy BMI, maternal age, race/ethnicity, health insurance, year/location of delivery, pre-existing diabetes, and chronic hypertension, we compared 12-month weight percentile for sex in infants born to individuals with and without GLP1RA exposure before/early pregnancy to estimate the average treatment effect among the exposed. Weight percentile at 12 months was estimated using linear mixed models with splines and available data from 3 to 21 months of age. Inverse-probability weighting, adjusted for propensity score variables, plus birthweight percentile and GLP1RA use, was used to account for exclusion of infants with missing weights. In sensitivity analyses, we compared differences in weight-for-length percentile. Separately, we used weight data within a tighter window (9-15 months).

Results: In a cohort of 290 GLP1RA exposed and 93,567 unexposed pregnancies, there was no significant difference in the infants' estimated 12-month weight percentile for sex (weighted mean (SD) 65.6 (28.4) vs 65.8 (26.3) percentile points respectively, mean difference -0.21 [-6.47, 6.05], p= 0.95). Weight-for-length percentile was similar among the two groups (weighted mean (SD) 66.1 (28.8) vs 66.7 (26.5) percentile points respectively, mean difference -0.60 [-7.27, 6.06], p= 0.86). Findings were consistent when restricting data to 9-15 months to estimate the 12-month weight percentile.

Conclusion: There was no significant difference in 12-month weight and weight-for-length percentiles in infants born to individuals who used and discontinued GLP1RAs prior to or in early pregnancy compared to GLP1RA unexposed propensity weighted controls.

OP32

ASSOCIATION BETWEEN GLP-1 RECEPTOR AGONIST USE DURING PREGNANCY AND BIRTH OUTCOMES IN PREGNANCIES AFFECTED BY GESTATIONAL DIABETES OR TYPE 2 DIABETES

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Background/Aims:
Safety of GLP-1 Receptor Agonists (GLP-1RA) during pregnancy remains understudied. We investigated pregnancies affected by gestational diabetes (GDM) or type 2 diabetes (T2DM) and contributing risk of GLP-1RA with adverse birth outcomes.

Methods:
The analyses were conducted utilizing population-level data from Epic Cosmos (N>300million). We conducted separate GDM or T2DM analyses excluding ICD-10 codes for type 1 diabetes and the other (e.g. either GDM or T2DM). For GDM, we examined use of GLP-1RA (N=6,468), insulin (N=111,532), metformin (N=107,214), and no diabetes medications (N=596,221) overlapping with pregnancy. For T2DM we examined use of a) insulin with (N=1,646) and without (N=8,133) GLP-1RA and b) insulin and metformin with (N=4,722) and without (N=16,181) GLP-1RA. We compared outcomes of prematurity, birth weight (b.wt), and common congenital anomalies. Analysis was performed with odds ratios (OR) and data are presented with 95% CI across treatment groups.

Results:
In pregnancies with GDM, GLP-1RA use was associated with higher odds of adverse outcomes compared to metformin, including neonatal demise, prematurity, b.wt>4kg, and b.wt<2.5kg (ORs 1.25-1.76; 95%CIs 1.12-2.28). In contrast, GLP-1RA had lower odds compared to insulin (ORs 0.45-0.73; 95% CIs 0.34-0.84), whereas higher odds compared to no medications (ORs 1.25-1.57; 95% CIs 1.01-1.97), across adverse outcomes including neonatal demise, prematurity, b.wt<2.5kg, and congenital heart disease. In pregnancies with T2DM, the combination of insulin and GLP-1RA was associated with lower odds of b.wt<2.5kg compared to insulin alone (OR 0.85; 95% CI 0.75-0.97). By contrast, the combination of insulin, metformin, and GLP-1RA had higher odds of prematurity and congenital heart disease compared to insulin and metformin without GLP-1RA (ORs 1.17-1.19; 95% CIs 1.09-1.29).

Conclusion:
In pregnancies affected by GDM or T2DM, prenatal exposure to GLP-1 RA was associated with mixed risk for adverse birth outcomes. This is the first study to provide population-level data on GLP-1RA use in pregnancies complicated by GDM and T2DM.

OP33

MATERNAL GLYCAEMIA AND METFORMIN EFFECTS ON MATERNAL AND NEONATAL OUTCOMES IN GESTATIONAL DIABETES: SECONDARY ANALYSIS OF EMERGE.

Dr David Aguilar Macia[1], Prof Christine Newman[1], Dr Mairead Corwley[2], Dr Alberto Alvarez-Iglesias[1], Dr Mary Fitzgerald[1], Dr Robert McEvoy[1], Prof Paula O'Shea[2], Dr Roberta Scairati[1], Prof Paddy Gillespie[1], Prof Declan Devane[1], Prof Aoife Egan[3], Prof Andrew Simpkin[1], Prof Andrew Smyth[1], Prof Martin O'Donnell[1], Prof. Fidelma Dunne[1]

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Background and aims: Metformin is frequently used in the treatment of gestational diabetes mellitus (GDM), however the addition of insulin therapy is commonly required. The aim of this study was to assess whether the baseline maternal glycaemic profile modifies the effect of metformin on maternal and neonatal outcomes in GDM.

Materials and Methods: This post hoc analysis used data from the EMERGE randomized, double-blind, placebo-controlled trial.. Singleton pregnancies with GDM diagnosed at ≤28 weeks' gestation were randomized to metformin or placebo plus standard care. The primary outcome was a composite of insulin initiation or fasting hyperglycaemia at 32 or 38 weeks' gestation. Secondary maternal and neonatal outcomes were analysed within glycaemic bands, and treatment-by-band interaction was assessed. Participants were retrospectively stratified into low- and high-band glycaemic groups according to oral glucose tolerance test thresholds as reported in the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study.

Results: Among 526 pregnancies with complete data, 214 (41%) were classified as low-glucose band and 312 (59%) as high-glucose band. Metformin reduced the primary composite outcome in the high-band group (OR 0.55, 0.34–0.89, p = 0.015) but not in the low-band group (OR 1.05, 0.61–1.80, p = 0.868, p-interaction = 0.084). Metformin had no effect on insulin initiation in the low-band group (OR 0.97, 0.55–1.70, p = 0.902) but was associated with lower odds in the high-band group (OR 0.40, 0.25–0.64, p <0.001, p-interaction = 0.019). In the low-band group metformin was associated with higher odds of preterm birth (OR 4.67, 1.43–20.99, p = 0.020) but this was not seen in the high-band group (OR 0.82, 0.36–1.84, p = 0.631, p-interaction = 0.026).

Conclusions: Metformin improved glycaemic outcomes in women with higher baseline glucose levels but increased the odds of preterm birth in women with lower baseline glucose levels, supporting individualized treatment based on glycaemic profile.

POSTER PRESENTATION

POSTER SESSION 1

PP001

PREDICTORS OF THE NEED FOR PHARMACOLOGICAL TREATMENT OF HYPERGLYCAEMIA IN WOMEN NEWLY DIAGNOSED WITH GESTATIONAL DIABETES

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Gestational Diabetes Mellitus (GDM) affects approximately 1 in 7 pregnancies in Ireland, and is characterised by hyperglycaemia that develops during pregnancy, and resolves after delivery. Whilst the mainstay of GDM treatment is lifestyle modification, a significant proportion of women require pharmacological therapy to achieve target blood glucose levels. This work examines if maternal characteristics at the time of GDM diagnosis can predict which women will require treatment intensification, which could enable a more personalised approach to their care.

The EMERGE randomised controlled trial (NCT02980276) evaluated the efficacy of early metformin (versus placebo) in addition to lifestyle modification for the treatment of GDM. For the present work, anonymised data were extracted from the EMERGE database. The primary outcome of interest was insulin initiation. Candidate predictor variables known to be associated with insulin resistance were also extracted, as measured at the time of GDM diagnosis. Multivariate logistic regression analyses were performed in each treatment subgroup to identify which variables were independent predictors of insulin initiation.

In the placebo group (n=262), representing women treated with lifestyle modification alone, the independent predictors of requiring pharmacological treatment were: gestational age (p=0.001), HbA1c (p=0.029), and fasting glucose on the oral glucose tolerance test (OGTT) (p=0.000), with area under the receiver operating characteristic curve (AUROC) 0.75. In the group who received metformin and lifestyle modification from the time of diagnosis (n=259), the independent predictors of requiring additional insulin treatment were: gestational age (p=0.002), HbA1c (p=0.003), fasting glucose (p=0.016), 1-hour glucose (p=0.028), and 2-hour glucose on OGTT (p=0.012), AUROC 0.73.

This analysis shows that commonly measured parameters can be used at the time of GDM diagnosis to estimate the probability of subsequently requiring pharmacological treatment of hyperglycaemia, with moderate accuracy. Once externally validated, these models may allow a more personalised approach to GDM care in the Irish population.

PP002

MATERNAL AND NEONATAL OUTCOMES IN PREGNANCIES WITH ISOLATED HYPERGLYCAEMIA AT 120 MINUTES ON ORAL GLUCOSE TOLERANCE TESTING FOR THE DIAGNOSIS OF GESTATIONAL DIABETES- A SECONDARY ANALYSIS OF THE EMERGE STUDY

Dr. Christine Newman[1], Dr Mairead Crowley[2], Dr Alberto Alvarez-Iglesias[2], Dr David Aguilar Macias[2], Dr Mary Fitzgerald[2], Dr Keelan Eyers[2], Dr Robert McEvoy[2], Dr Roberta Scairati[2], Dr Paula O'Shea[2], Prof Paddy Gillespie[2], Prof Declan Devane[2], Prof Aoife Egan[3], Prof Andrew Simpkin[2], Prof Martin O'Donnell[2], Prof Andrew Smyth[2], Prof Fidemlam Dunne[2]

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Background and aims

The Hyperglycaemia and Adverse Pregnancy Outcomes study recommend a three-point blood draw for the diagnosis of gestational diabetes mellitus.
Outside of pregnancy there is a suggestion that the one-hour value is more predictive of future hyperglycaemia.
The aim of this study is to determine the diagnostic utility of the two-hour glucose value and the maternal and neonatal outcomes of pregnancies with isolated hyperglycaemia at 2 hours.

Materials and Methods

The results of 525 OGTTs conducted between 12-28 weeks of gestation were analysed. The first group has a two-hour glucose level of $\geq$8.5 mmol/L and normal fasting/one-hour glucose levels (isolated hyperglycaemia at 2 hours IH2); the second group had either an elevated fasting glucose ($\geq$5.1 mmol/L)/one-hour glucose level ($\geq$10 mmol/L). The results from each group were compared.

Results

In total 525 OGTTs were reviewed in 510 participants. From 525 women, 36 (6.9%) had IH2. 244 participants had isolated fasting hyperglycaemia only and 184 participants had hyperglycaemia $\geq$2 time points. Those with IH2 had a lower body mass index and haemoglobin A1c at time of OGTT (29.5$\pm$3.5 vs 32$\pm$3.5 kg/m^2 p 0.01; 31$\pm$2 vs 33$\pm$2 mmol/mol, p 0.02; and lower fasting glucose level at both 32 and 38 weeks (4.6 ± 0.4 vs 5.0 ± 0.6 p<0.01 and 4.3 ± 0.3 vs 4.6 ± 0.3 p<0.01) and required less insulin treatment. There were no differences in maternal outcomes between those with IH2 and the other group; the only difference in neonatal outcome was that those with IH2 were born on average 6 days later (p 0.02) than the other group. Of 36 women with IH2, one participant had type 2 diabetes mellitus at three month follow up and two participants had pre-diabetes.

Conclusion

If testing at 2 hours was omitted a small number of GDM cases and future diabetes/pre-diabetes (8.3%) would be missed, however their pregnancy outcomes are on par with other GDM populations.

PP003

QUALITY AND EQUITY OF CARE FOR GESTATIONAL DIABETES MELLITUS IN NHS ENGLAND: RESULTS FROM THE FIRST NATIONAL GDM AUDIT

Prof. Eleanor Scott[1], Mr David Caldwell[2], Ms Sally Jones[2], Ms Karen Kennedy[2], Dr Chirag Bakhai[2], Dr Gary Tan[2], Dr Clare Hambling[2], Prof Helen Murphy[3]

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Background/Aims:
Following a national feasibility study, NHS England commissioned a national Gestational Diabetes Mellitus (GDM) Audit in 2022. The audit uses routinely collected primary and secondary care data to benchmark clinical practice across England, assess pregnancy and long-term outcomes, and identify areas for service improvement.

Methods:
Under legal direction, data were extracted from Hospital Episode Statistics (HES) and the General Practice Extraction Service (GPES) for all women identified as having GDM. Records were linked for demographic characteristics, maternal and neonatal outcomes, postnatal surveillance (annual HbA1c), progression to type 2 diabetes mellitus (T2DM), and participation in the Diabetes Prevention Programme (DPP).

Results:
A total of 586,280 women with a coded diagnosis of GDM were identified in secondary care. Of these, only 58% (n=342,050) had a corresponding GDM code in primary care records. Women from the most deprived quintile accounted for 25% of GDM diagnoses compared with 20% of all women, and 25% were of Asian ethnicity compared with 10% overall. Most infants (89%) born to women with GDM had a normal birthweight and were delivered at term (≥37 weeks). Approximately 5% were born preterm, comparable to rates in women without GDM. Among term births, there was no significant difference in birthweight between infants of women with and without GDM. In 2023–24, postnatal monitoring was incomplete: 57% received annual HbA1c testing, 52% blood pressure measurement, 45% BMI assessment, and 35% cholesterol testing. Only 5% of women with prior GDM had ever participated in the DPP.

Conclusions:
Accurate estimation of GDM prevalence remains challenging due to incomplete coding across care settings. Pregnancy outcomes among treated women with GDM were comparable to those without GDM; however, substantial socioeconomic and ethnic inequalities persist. Postnatal surveillance and engagement with diabetes prevention services remain suboptimal, highlighting the need for systematic referral pathways and proactive, coordinated postnatal care.

PP004

THE IMPACT OF PRE-PREGNANCY THYROID DISEASE ON THE DEVELOPMENT OF GESTATIONAL DIABETES: A REAL-WORLD DATA ANALYSIS USING TRINETX

Dr. Tomoko Nakagawa[1], Dr. Keiko Yanagisawa[1], Prof. Masakatsu Sone[1]

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Background/Aims Thyroid diseases are common in women of reproductive age. Thyroid dysfunction is known to affect glucose metabolism; for example, hyperthyroidism increases hepatic gluconeogenesis, whereas hypothyroidism reduces peripheral glucose uptake. However, the role of thyroid diseases in gestational diabetes mellitus (GDM) development remains controversial. This study aimed to investigate the association between pre-pregnancy thyroid disease and GDM by using large-scale real-world data.
Material and methods We extracted data for women aged 15–50 years with a history of pregnancy between January 1, 2015, and March 31, 2025, from the TriNetX Global Collaborative Network, and evaluated the impact of pre-pregnancy thyroid disease, i.e., overall thyroid disease, hypothyroidism, and thyrotoxicosis (exposure), on GDM development (outcome). All diagnoses, including GDM, overall thyroid disease, and specific thyroid disease, were defined using International Classification of Disease-10 (ICD-10) diagnostic codes.
Results Among 6,039,111 eligible women, 364,641 (6.0%) had pre-pregnancy thyroid disease. GDM incidence was significantly higher in women with thyroid disease (10.5%) than in those without (5.2%, $p<0.05$). Furthermore, GDM incidence was significantly higher in women with hypothyroidism (11.0%) and in those with thyrotoxicosis (9.4%) than in those without thyroid disease ($p<0.05$ for both). Compared to those without thyroid disease, women with thyroid disease, hypothyroidism, and thyrotoxicosis had relative GDM risks of 2.04 (95% confidence interval [CI], 2.02-2.06), 2.14 (95% CI, 2.11-2.16), and 1.82 (95% CI, 1.77-1.87), respectively.
Conclusions Pre-pregnancy thyroid disease, including hypothyroidism and thyrotoxicosis, was associated with GDM development, strongly suggesting that pre-pregnancy thyroid disease is a potential GDM risk factor. Because this study relied on ICD-10 codes without accounting for medical treatments or conditions, further research is necessary to fully elucidate these associations.

PP005

A PROSPECTIVE STUDY OF INSULIN SENSITIVITY, ORAL DISPOSITION INDEX, AND PREGNANCY OUTCOMES OF ATYPICAL GLUCOSE DYSMETABOLISM DURING PREGNANCY

Dr. Pradhiki Mahindra[1,2], Dr Hadi Waheed[1,2], Dr M Pradhika Mapindra[1,2], Dr Niki Margari[2], Dr J Ciaran Hutchinson[3], Dr Emily Cornish[1,2], Dr Melissa Whitten[1,2], Prof. Anna David[1,2], Dr Owen Vaughan[1], Prof Sara Hillman[1,2], Prof Dimitrios Siassakos[1,2]

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Objective

This study aimed to investigate 2-hour OGTT-derived pancreatic β-cell function indices and adverse pregnancy outcomes in pregnancies with different types of glucose dysmetabolism.

Materials and Methods

In this prospective study, 120 women who underwent a 75-gram 2-hour OGTT between 24 and 32 gestational weeks were prospectively recruited and followed until delivery. A Quantikine enzyme-linked immunosorbent assay measured insulin and C-peptide levels. Insulin sensitivity was evaluated using the Homeostasis Model Assessment (HOMA), Matsuda index, quantitative insulin sensitivity check index (QUICKI), and oral disposition index. The study participants were categorised into (1) GDM (n=26): 1 of 3 abnormal values (fasting ≥ 5.7 mmol/, 1-hour ≥ 10 mmol/l, or 2-hour ≥ 7.8 mmol/l); (2) reactive hypoglycaemia (RH) (n=20): (2-hour < fasting); and (3) high-normal OGTT (n=28): fasting 5-5.6 mmol/l, 1-hour 9-10 mmol/l, or 2-hour PG 7-7.7 mmol/l. Those who did not meet the criteria were classified as normal glucose tolerance (NGT).

Results

Postload insulin and C-peptide levels were significantly higher in GDM (insulin 82.64 µlU/ml vs 31.22 µlU/ml; C-peptide 444.46 µlU/ml vs 293.06 µlU/ml) and high-normal OGTT (insulin 64.22 µlU/ml vs 31.22 µlU/ml; C-peptide 396.57 µlU/ml vs 293.06 µlU/ml) than in NGT. In RH, the 2-hour insulin level was lower than NGT (insulin 15.82 vs 31.22). GDM and high-normal OGTT had lower Matsuda (GDM 3.44 vs 6.87) (high-normal OGTT 4.72 vs 6.87) and disposition index (GDM 942.90vs2509.25) (high-normal OGTT 1447.17 vs 2509.25, p<0.01) than NGT. Macrosomia at birth was significantly higher in RH (25% vs 2.17%) and high-normal OGTT (17.86% vs 2.17%).

Conclusions

The incidence of macrosomia was the highest in women with high-normal OGTT and RH. RH was also associated with low 2-hour insulin secretion. Understanding atypical dysmetabolism might be key to preventing adverse outcomes normally associated with diabetes, which has implications for the prevention of brachial plexus injury and stillbirth.

PP006

A NOVEL LOW GLYCAEMIC LOAD BREAKFAST IMPROVES POSTPRANDIAL AND 24H GLUCOSE IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A RANDOMISED CROSSOVER TRIAL

Mrs. Jessica Burk[1,2], Associate Professor Glynis Ross[2], Professor Stephen Colagiuri[1,2], Professor Grant Brinkworth[3], Dr Pennie Taylor[4], Emily Dunn[5], Dr Synneva Hagen-Lillevik[6], Professor Marie-France Hivert[7,8], Professor Adrienne Gordon[1,9], Professor Teri Hernandez[5,6], Associate Professor Arianne Sweeting[1,2]

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Background/Aims

Medical nutrition therapy is recommended for gestational diabetes (GDM) management, yet evidence-based guidelines are lacking. In women with GDM, elevated morning insulin resistance contributes to post-breakfast hyperglycaemia. We conducted a randomised, crossover trial comparing the effects of a low vs high glycaemic load breakfast (LGL-B vs HGL-B) on breakfast 1hr postprandial glucose (PPG) and 24h coefficient of variation (%CV) in women with GDM.

Materials and Methods

We enrolled 32 women with diet-controlled GDM to consume a LGL-B (245 kcal; 10.9g carbohydrate) and HGL-B (247 kcal; 43.4g carbohydrate) (meals provided) for 7d with a 7d washout between treatments, randomising the order of treatment allocation. For each 7d breakfast intervention, participants undertook blinded continuous glucose monitoring (CGM) with 4x daily self-monitoring of blood glucose (SMBG) and we assessed fasting lipids and ketones pre and post each 7d. We used mixed effect models with Bonferroni corrections to compare between intervention effects within women, presented as estimated marginal means.

Results

Participants were 34.2 yrs old, 26.6 wks' gestation, with BMI 28.1 kg/m^2 at enrolment (medians), and 20 women provided ≥48h CGM data for primary outcome analysis. Compared to a HGL-B, a LGL-B reduced 1h PPG at breakfast (mean 134 mg/dL [95% CI 129, 140]; 7.5 mmol/L [7.2, 7.8] vs 89 mg/dL [84, 94]; 5.0 mmol/L [4.7, 5.2]) and 24h %CV (20% [18, 21] vs 17% [15, 18]) (both p<0.001). Triglycerides decreased during the LGL-B 7d period, while they increased during the HGL-B treatment, with no differences in ketones, hunger or satiety.

Conclusions

In women with GDM, a LGL-B intervention improves breakfast PPG and 24h %CV, and appears safe and well tolerated. Larger randomised control trials for the duration of pregnancy are required to determine whether a LGL-B reduces the need for pharmacotherapy and improves perinatal outcomes.

PP007

EXAMINING IMPLEMENTATION OF THE BUMP2BABY AND ME RANDOMISED CONTROLLED TRIAL USING THE REACH, EFFECTIVENESS, ADOPTION, IMPLEMENTATION AND MAINTENANCE FRAMEWORK

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Background/Aims

Gestational diabetes (GDM) prevention requires earlier, proactive intervention yet most programmes remain reactive. Mobile health (mHealth) coaching delivered from early pregnancy alongside usual care offers a scalable, person-centred approach but evidence for real-world implementation is limited. This study evaluated the Bump2Baby and Me intervention for women at-risk of GDM using the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) framework.

Materials and Methods

Mixed-methods data from the multisite Bump2Baby and Me RCT (Dublin, Bristol, Granada, Melbourne) were mapped to RE-AIM dimensions. The intervention delivered personalised mHealth coaching via smartphone from early pregnancy to 12 months postpartum, alongside usual care. Data sources included app analytics, blood analysis, questionnaires, exit interviews, staff focus groups, site lead and stakeholder interviews. Quantitative data were analysed using SPSS (version 29) and R (version 4.3.1); qualitative data using NVivo 15 with Braun and Clarke's thematic analysis framework.

Results

Of 4,386 women screened, 1,784 were invited and 865 (48%) randomised (437 intervention, 428 control); 804 completed baseline and 577 were included in the intention-to-treat analysis (*Reach*). Clinical benefit for GDM prevention and metabolic outcomes were found (*Effectiveness*). Three distinct patterns of app engagement were identified; higher engagement was associated with improved outcomes. Integration alongside usual care was feasible but dependent on staff attitudes towards early GDM screening and the health coach relationship (*Adoption*). Greater app fidelity was associated with improved outcomes; exercise and dietary goals were most frequently tracked (*Implementation*). Workforce pressures, communication gaps and the COVID-19 pandemic were threats to longer-term sustainability, underscoring the challenges faced by early prevention programmes within strained maternity systems (*Maintenance*).

Conclusions

mHealth coaching from early pregnancy alongside usual care is viable and effective for GDM prevention, but requires investment in workforce capacity, training and system resilience. The RE-AIM evaluation provides actionable translational insights to support scale-up within routine maternity services.

PP008

COST-EFFECTIVENESS OF TREATING GESTATIONAL DIABETES IN WOMEN WITH DISCORDANT WHO 2013 VS 1999 DIAGNOSES: THE TANGO-DM RANDOMIZED CONTROLLED TRIAL

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Background/Aims

Adoption of the 2013 WHO diagnostic criteria for gestational diabetes mellitus (GDM) substantially increases GDM prevalence. However, the clinical and economic consequences of treating women identified under these criteria remain uncertain. We aimed to assess the cost-effectiveness of treating GDM in women with discordant diagnoses according to the 2013 and 1999 WHO criteria.

Material and methods

A cost-effectiveness analysis was conducted alongside a multicentre randomised controlled trial (TANGO-DM) involving 21 centres in the Netherlands. Women (n=1032) with a singleton pregnancy between 16 and 32 weeks' gestation, who had discordant results on a one-step 75-gram oral glucose tolerance test according to the WHO 2013 and 1999 diagnostic thresholds, were randomized to GDM treatment or routine antenatal care. Outcomes included large-for-gestational-age (LGA) birth and quality-adjusted life years (QALY). Costs were assessed from a societal and healthcare perspective. Differences in effects and costs were estimated using bootstrapped bivariate regression to derive incremental cost-effectiveness ratios. Cost-effectiveness acceptability curves showed the probability of cost-effectiveness across different willingness-to-pay (WTP) thresholds.

Results

GDM treatment resulted in higher antenatal care costs (€486; 95% CI: 137 to 803) and lower postpartum maternal costs (–€298; CI: −843 to −43). The total societal costs were similar (–€303 CI: −3,092 to 2,487). No differences were observed in QALYs (+0.003; CI: −0.003 to 0.008) or LGA risk (+1.2%; CI: −6% to 3.5%). At a WTP of €0, the probability of cost-effectiveness was 58% for both outcomes. At €20,000, this was 60% for QALYs and 51% for LGA. From a healthcare perspective, cost-effectiveness probabilities ranged from 66% at WTP €0 to 67% and 57% at €20,000 for QALYs and LGA, respectively.

Conclusions

The low to modest probability of cost-effectiveness across WTP thresholds suggests that implementing the WHO 2013 diagnostic criteria would not lead to cost reductions or improved outcomes.

PP009

PREVENTIVE CARE FOR WOMEN AT RISK OF GESTATIONAL DIABETES: GAPS IN MATERNITY CARE ACROSS FOUR EUROPEAN COUNTRIES

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Title: Preventive care for women at risk of gestational diabetes: gaps in maternity care across four European countries

Background: Gestational diabetes mellitus (GDM) is an increasing public health concern. Early pregnancy care for women at high-risk, including health behavioural interventions is essential for supporting healthy gestational weight gain, preventing and managing GDM and improving maternal outcomes. This study examined availability, delivery and organisational capacity for preventive care within maternity services.

Methods: A mixed-methods study was conducted among health professionals in Spain, Poland, Norway, and Ireland. Data were collected from one maternity hospital per country with additional primary care settings in Spain and Norway. A cross-sectional survey (n=147) assessed availability of and organisational capacity for preventive care. Semi-structured interviews (n=17) explored experiences of delivering care to women at risk of GDM. Survey data were analysed descriptively and qualitative data using thematic analysis.

Results: The availability of preventive care varied across countries. Routine weight monitoring during pregnancy was widely reported in Spain (94%) and Poland (87%). More comprehensive services, including dietitian referral, group education and digital tools were more frequently reported in Ireland (60-93%). Respondents from Norway reported low availability across all preventive services (2-38%). Interviews identified inconsistencies in service delivery. Women at risk of GDM were identified early; however, care was predominantly focused on screening and diagnosis. Preventive care was often limited to women with specific risk factors, particularly those with severe obesity (BMI ≥40 kg/m²) or previous GDM. Organisational barriers included limited consultation time, lack of educational resources for women and insufficient integration of preventive care into clinical pathways.

Conclusions: There are significant missed opportunities between early risk identification and the provision of timely preventive care. Strengthening organisational capacity and better integrating preventive interventions into routine maternity pathways are essential to enable early action and reduce GDM-related adverse outcomes.

PP010

TARGETED ANTENATAL INTERVENTION FOR WOMEN WITH OBESITY AT RISK OF GESTATIONAL DIABETES: A PILOT FEASIBILITY RANDOMISED CONTROLLED TRIAL

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Background/Aims Gestational diabetes mellitus (GDM) is increasing alongside rising maternal obesity. However, most women with obesity do not develop GDM, highlighting the need for risk stratification and targeted intervention. This study evaluated the feasibility and acceptability of a behaviour change intervention with or without metformin in pregnant women with obesity identified as high risk of GDM.
Materials and methods UPBEAT-TIF was a single-centre, open-label, pilot randomised controlled trial conducted at St Thomas' Hospital, London, UK (2021-2024). Women with obesity (BMI ≥30 kg/m²) were screened at 11-14^{+6} weeks using a novel prediction tool. High-risk women were randomised to behaviour change (n=22), behaviour change plus metformin (n=20), or standard care (n=18). Behaviour change comprised eight online diet and physical activity sessions. Primary outcomes were feasibility (recruitment, retention, session completion, and adherence) and acceptability (semi-structured interviews). Secondary patient-centred outcomes included glycaemic measures, dietary intake, physical activity, GDM incidence and pregnancy outcomes.
Results Of 207 women screened using the prediction tool, 96 (46.4%) were high risk and 60 (62.5%) were randomised. Retention was 86.7%; 83.3% completed ≥4 behavioural sessions. In those randomised to metformin, initiation was 60%. Among initiators, mean adherence was 84.2%, with 75% achieving ≥80% adherence. No differences were observed in secondary outcomes. Qualitative findings demonstrated that risk prediction and behavioural intervention were acceptable, with perceived benefits in terms of awareness and behaviour change; however, uncertainty existed regarding the use of preventive medication in pregnancy.
Conclusions A risk-stratified intervention was feasible and acceptable. However, metformin initiation and adherence were limited. The absence of between-arm differences likely reflects sample size and may also reflect heightened behavioural responses to risk awareness in the standard care arm following screening. These findings support feasibility and acceptability of the study approach; a larger multi-centre trial would be indicated to evaluate effectiveness and optimise intervention delivery.

POSTER SESSION 2

PP011

UNDERSTANDING INTERCONCEPTION EXPERIENCES OF WOMEN WITH PREVIOUS GESTATIONAL DIABETES MELLITUS ACROSS IRELAND

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1. Background

Gestational diabetes mellitus (GDM) is a common pregnancy complication, with approximately 50% risk of recurrence in subsequent pregnancies. Current evidence suggests that the pre- and inter-pregnancy period provide opportunities to support health behaviours during and beyond pregnancy and the postpartum and improve pregnancy outcomes. However, women's experiences during these periods remain underreported. This study of women across the island of Ireland explored interconception experiences after GDM to inform how to optimise health between pregnancies.

2. Methods

A qualitative descriptive study was implemented. Online semi-structured individual interviews were conducted (April-May 2025) with women living on the island of Ireland who had experienced GDM ≤5 years ago. Data were transcribed and analysed inductively using reflexive thematic analysis.

3. Results

Twenty-seven women participated and four themes generated; 1) *Shaping health behaviours beyond pregnancy* describes how education received during pregnancy influenced women's postpartum health behaviours, however maintaining behaviour changes was often challenging without ongoing support 2) *GDM's emotional legacy* emphasises the residual guilt and retrospective fear, and enduring weight stigma of gestational diabetes beyond pregnancy, 3) *Understanding interconception care and future risk management* highlights perceived discontinuity in care, limited access to preconception information, and varied perceptions of recurrence risk that shaped women's approaches to subsequent pregnancy preparation, and 4) *Interconception needs and support preferences* describes women's preferences for interconception support following a GDM pregnancy, including the timing and format of digitally delivered and lived-experience-informed resources, need for culturally relevant guidance, and preference for practical strategies to support behaviour change.

4. Conclusion

This study provides novel insights into women's interconception experiences following GDM in Ireland and how GDM's behavioural, emotional and healthcare-related impacts between pregnancies. These findings highlight the need for interconception care including timely postpartum follow up, clearer communication about recurrence risk, and accessible preconception support for women planning a subsequent pregnancy.

PP012

LONG-TERM HEALTH OUTCOMES IN OFFSPRING ACCORDING TO MATERNAL HISTORY OF GESTATIONAL DIABETES MELLITUS: NHSII AND GUTS STUDY

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Abstract

Background/Aims:

With the global trend of advancing maternal age at delivery, particularly in developed nations, the prevalence of gestational diabetes mellitus (GDM) is steadily increasing. GDM confers substantial long-term cardiometabolic risks to both mother and offspring. This study aimed to evaluate the long-term prognostic implications of maternal GDM history on offspring health to identify potential targets for early intervention.

Materials and methods:

We conducted a prospective cohort study linking data from the Nurses' Health Study II (NHS II) and the Growing Up Today Study (GUTS). The study population comprised 23,636 mother-child dyads, including 1,918 offspring born to mothers with a history of GDM. Maternal GDM status was ascertained via self-administered questionnaires. We estimated multivariable-adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for mid-to-long-term offspring metabolic outcomes using logistic regression models. Covariates included maternal smoking, age at delivery, BMI at age 18 years, offspring sex, and duration of breastfeeding.

Results:

Maternal GDM history was significantly associated with adverse cardiometabolic outcomes in offspring. In fully adjusted models, maternal GDM was linked to elevated risks of childhood obesity (OR 1.24, 95% CI 1.06–1.44), adult obesity (OR 1.17, 95% CI 1.04–1.33), and incident diabetes (OR 1.57, 95% CI 1.07–2.30). A marginal positive association was observed for dyslipidemia (OR 1.15, 95% CI 0.98–1.34).

Conclusions:

Offspring exposed to maternal GDM exhibit an increased long-term risk of developing obesity and diabetes. These findings underscore the critical need for continuous longitudinal surveillance, including the development of targeted early interventions to mitigate intergenerational cardiometabolic risks

PP013

APP USABILITY, ENGAGEMENT, AND POSTPARTUM WEIGHT RETENTION: SECONDARY ANALYSIS OF THE INTER-ACT RANDOMIZED CONTROLLED TRIAL

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Background and Aim: Postpartum weight retention (PPWR) contributes to long-term obesity risk and impaired maternal health. Mobile health (mHealth) interventions may support a healthier postpartum lifestyle, but their effectiveness may depend on usability. This study examined whether perceived usability of the INTER-ACT app was associated with weight loss at 6 months postpartum and whether this association was mediated by app use frequency, motivational power, and implementation of lifestyle recommendations.

Materials and Methods: This secondary analysis included 138 participants of the INTER-ACT intervention arm (n=138), targeted women with excessive gestational weight gain (EGWG). At 6 months postpartum, participants (n=138) completed a process evaluation survey, including assessing app usability using the System Usability Scale (SUS), perceived motivational power, and perceived implementation of lifestyle recommendations. Weight loss was calculated between 6 weeks and 6 months postpartum. Pearson correlations and parallel mediation analyses were conducted in SPSS, adjusting for maternal age, parity, and pre-pregnancy BMI.

Results: App usability was moderate (mean SUS=60.6) and positively associated with perceived app use frequency (B=.05, p<.001), motivational power (B=.003, p<.001), and implementation of lifestyle recommendations (B=.01, p=.036), but not with weight loss. Usability showed no total, direct, or indirect association with weight loss. Gestational weight gain (GWG) was the only significant predictor (B=0.24, p=0.003). Higher usability was also associated with more positive and fewer negative emotional responses (p<.05).

Conclusion: App usability was associated with engagement and positive emotional experience, but not with reduced PPWR. Gestational weight gain remained the main determinant of postpartum weight outcomes. Preventing excessive GWG and complementing this with emotionally supportive postpartum mHealth tools may improve outcomes.

PP014

DIABETES IN PREGNANCY AND FEEDING IN INFANCY (DOLFIN); A MIXED METHODS STUDY: QUALITATIVE FINDINGS ON WOMEN'S EXPERIENCES OF INFANT FEEDING

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Background/Aims

The prevalence of diabetes in pregnancy continues to rise. Women with diabetes in pregnancy have lower breastfeeding rates, yet qualitative research comparing how different types of diabetes shape infant feeding experiences is lacking. This analysis presents the qualitative findings from the DolFIn study, exploring perceptions and experiences of infant feeding in women with gestational diabetes (GDM), type 1 diabetes (T1DM), and type 2 diabetes (T2DM).

Materials and methods

Between April 2024 and May 2025 semi-structured, online interviews were conducted with purposively sampled women who received antenatal and postnatal care at Guy's and St. Thomas' NHS Foundation Trust. Interviews explored feeding intentions, experiences, information received, and the perceived influence of diabetes on feeding. Interviews were analysed using Braun and Clarke's reflexive thematic analysis in NVivo.

Results

Twenty women (10 GDM, 6 T1DM, 4 T2DM) between 3–6 months postpartum participated. Preliminary analysis revealed a lack of diabetes-specific infant feeding education across all three groups, as care was more focused on antenatal maternal glucose management. A clear pattern of differences in the perceived diabetes–feeding interaction emerged: women with GDM were unaware of the potential metabolic benefits of breastfeeding given their higher future metabolic risk. Women with T1DM described practical barriers associated with hypoglycaemia management during breastfeeding, with some ceasing breastfeeding due to recurrent episodes. The experience of women with T2DM varied with disease severity; insulin-dependent women reporting challenges similar to T1DM. Access to specialist lactation support, frequently through private services, was key to sustaining breastfeeding across all groups.

Conclusion

The type of diabetes in pregnancy shapes infant feeding experiences in distinct ways, suggesting a need for diabetes type-specific feeding support to be integrated into antenatal and postnatal care. These findings will contribute to the development of targeted clinical recommendations for breastfeeding in women with diabetes.

PP015

IMPACT OF LIFESTYLE INTERVENTION DURING PREGNANCY ON OFFSPRING BODY COMPOSITION AND CARDIO-METABOLIC PROTEIN PROFILE AT 3 YEARS: FOLLOW-UP OF TWO RANDOMIZED TRIALS

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Background/Aims

Maternal lifestyle during pregnancy influences offspring metabolic health, but evidence on long-term effects remains limited. This study examined whether antenatal lifestyle interventions affect offspring body composition, anthropometry, biochemical markers, and cardiometabolic protein profiles at 3 years of age.

Materials and methods

This study combines follow-up data from two Danish randomized controlled trials: the Lifestyle in Pregnancy (LiP) trial, (n=360), and the FitMum trial (n=220) at North Zealand Hospital. LiP enrolled pregnant women with obesity (BMI 30–45 kg/m²) randomized to dietary counselling and supervised physical activity versus standard care. FitMum included physically inactive pregnant women randomized to structured exercise, technology-supported motivational counselling, or standard care. Offspring were assessed at ~3 years using the LiPO and FitKids follow-up. Outcomes included anthropometry, DXA-derived body composition, biochemical measures, and targeted profiling of 30 cardiometabolic proteins.

Results

A total of 116 children were included (LiPO n=81; FitKids n=35). Maternal baseline characteristics differed substantially between trials: FitMum mothers had lower pre-pregnancy BMI (23.9 vs. 33.1 kg/m², p<0.001), higher gestational weight gain (15.9 vs. 7.7 kg, p<0.001) and higher maternal age (32.0 vs. 29.0 years, p=0.002). No differences were observed between intervention and control groups in anthropometry, metabolism, or cardiometabolic outcomes. However, pronounced cohort differences emerged. Despite maternal obesity in LiP, LiPO children had lower fat mass (2.14 vs. 4.00 kg, p<0.001) and fat percentage (18.1% vs. 25.1%, p<0.001) than FitKids children. In contrast, fasting glucose was higher in LiPO children (5.5 vs. 4.9 mmol/L, p<0.001). Fat-free mass was comparable between cohorts.

Conclusions

Antenatal lifestyle interventions were not associated with offspring outcomes at 3 years. The observed discordance between lower adiposity and higher glucose metabolism suggests that early metabolic programming may be influenced by factors beyond maternal BMI and gestational lifestyle alone.

PP016

LOWER MATERNAL INSULIN SENSITIVITY DURING PREGNANCY IS ASSOCIATED WITH GREATER CHILDHOOD CENTRAL ADIPOSITY IN THE GENETICS OF GLUCOSE REGULATION IN GESTATION AND GROWTH (GEN3G) COHORT

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Background/Aims: Childhood obesity is associated with prenatal maternal hyperglycemia, but we lack understanding about maternal physiologic components contributing to this association. We evaluated associations between maternal glycemic traits during pregnancy and adiposity measures throughout childhood.

Materials/methods: Participating pregnant women completed 75g oral glucose tolerance test at ~26 weeks of gestation; we measured glucose and insulin (fasting, 1h, 2h) and calculated insulin sensitivity (Matsuda Index). We followed offspring at 5 and 12 years after birth and measured height, weight, and body composition using dual-energy X-ray absorptiometry. We transformed continuous variables into z-scores. We tested associations between each maternal glycemic trait and child adiposity measures using linear mixed models integrating the two time-points of child measurements. We adjusted for child sex and age at each visit, maternal age at enrollment, parity, and education (model 1); we additionally adjusted model 2 for maternal first trimester body mass index (BMI).

Results: Among 514 women-child pairs, mean (SD) maternal age was 29.0 (4.2)years old, first trimester BMI was 25.7 (5.7)kg/m^2, and 47% children were female. At the 12 years visit, mean (SD) children BMI-z was 0.32 (1.29), %total fat was 32.0 (7.0)% and %trunk fat was 28.0 (8.0)%. In model 1, higher glucose levels at any time-point were associated with greater %trunk fat and %total fat. Lower Matsuda index was strongly associated with greater child BMI-z, %total fat, and %trunk fat (ß= -0.16; *P*=3.7x10^{-5} for %trunk fat). In model 2, higher 2h-glucose remained associated with greater %total fat (ß=0.09; *P*=0.03) and %trunk fat (ß=0.09; *P*=0.03), while lower Matsuda remained associated with greater %trunk fat (ß= -0.09; *P*=0.03); other associations were attenuated by adjustment for maternal BMI.

Conclusions: Lower maternal insulin sensitivity and higher post-load glucose at ~26 weeks of gestation are associated specifically with centrally distributed adiposity throughout childhood, independent of maternal weight status.

PP017

EXPLORATORY ANALYSIS OF COGNITIVE AND METABOLIC OUTCOMES AT 6 YEARS IN CHILDREN EXPOSED TO DIET-CONTROLLED GESTATIONAL DIABETES

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Background
Gestational diabetes mellitus (GDM) has been associated with long-term metabolic and neurodevelopmental alterations in the offspring, although evidence in school-age children remains inconsistent.
Objective
To explore metabolic and cognitive outcomes at 6 years of age in children exposed to diet-controlled GDM compared with non-exposed controls.
Methods
This study is based on a prospective prenatal cohort with follow-up at 6 years of age. A matched analysis (1:1) was performed including 19 children exposed to diet-controlled GDM and 19 controls, matched by maternal pre-pregnancy BMI, parity, gestational age, child sex, and age at assessment. Additionally, the full cohort (n=167; 19 GDM, 148 controls) was analyzed and multivariable linear regression adjusted models were assessed. Outcomes included anthropometric measures, metabolic biomarkers and cognitive performance assessed using the Test of Nonverbal Intelligence (TONI).
Results
In matched analyses, children exposed to GDM didn't show differences in anthropometric parameters as weight or size, either in metabolic parameters as fat mass or total mass, hip and waist perimeters and analytic parameters (insuline, triglycerides, HbAc1) or blood pressure.
In adjusted models, GDM exposure remained independently associated with lower cognitive score, whereas differences in metabolic parameters were attenuated when maternal pre-pregnancy BMI was included in the model.
Conclusions
Exposure to diet-controlled GDM is not related to more obesity or metabolic syndrome parameters at 6 years of age. These findings may suggest that well controlled GDM managed through diet without medication may not increase susceptibility to metabolic disorders later in life in their offspring. Longer studies are needed to confirm this data.
Otherwise exposure to GDM was associated with lower abstract reasoning performance at 6 years of age. These findings suggest a possible impact of intrauterine exposure to GDM on neurocognitive development, warranting confirmation in larger studies.

PP018

CHANGES IN HEART RATE AND HEART RATE VARIABILITY FROM LATE PREGNANCY TO SIX MONTHS POSTPARTUM IN WOMEN WITH AND WITHOUT GESTATIONAL DIABETES MELLITUS

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Background/Aims:
Women with gestational diabetes mellitus (GDM) have a higher risk of diabetes and cardiovascular events after pregnancy. Higher heart rate variability (HRV) is associated with improved cardiovascular health. The aims of this study were to investigate changes in resting heart rate (HR) and HRV from late pregnancy to six months postpartum in women with GDM and healthy pregnant controls (HC), and to determine whether perinatal changes in HRV were associated with improved postpartum glucose control.

Material and methods:
This prospective observational study performed at the Lausanne University Hospital included 34 individuals with GDM and 33 HC. They were assessed at 30 ± 3 weeks of gestation (GA) and at 6 months postpartum. Resting HR and HRV (Root Mean Square of Successive Differences between normal heartbeats, RMSSD) were measured for 2 minutes sitting quietly using the Actiheart device. Participants with GDM wore a continuous glucose monitor (CGM) for 14 days. We used linear mixed-effects models to investigate changes in HR and HRV, and linear regressions to evaluate the associations between changes in HRV and postpartum glucose levels, adjusting for age and GA.

Results:
Participants' mean age was 32 ± 4 years. Women with GDM had a mean postpartum glucose of 5.9 ± 0.7 mmol/L. HRV increased and HR decreased from pregnancy to the postpartum in both groups (all $p<0.001$). Women with GDM had higher HR in pregnancy than HC (91.2±1.9 vs. 82.7±2.3 bpm, $p=0.01$), but not in the postpartum. Greater RMSSD recovery from pregnancy to postpartum was associated with lower mean glucose in the postpartum (-0.02, 95% CI: -0.04, -0.002, $p=0.03$).

Conclusions:
Autonomic functioning shows favourable changes from late pregnancy to six months postpartum in all women independently of GDM status. Higher HRV recovery is linked to better glycemic control in the PP in women with GDM.

PP019

INTERGENERATIONAL ADIPOSITY TRAJECTORIES AND HYPERTENSIVE DISORDERS OF PREGNANCY: SWEDISH POPULATION-BASED COHORT STUDY

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Background/Aim: Intergenerational patterns of adiposity may influence the risk of hypertensive disorders of pregnancy (HDP), but the joint influence of maternal and daughter body-mass index (BMI) remains unclear. This study examined how concordant and discordant mother–daughter adiposity is associated with HDP risk in daughters.

Methods: Using data from the Swedish Medical Birth Register (1973–2023), we created a pregnancy-level cohort of daughters (148,906 pregnancies) linked to their mothers (252,813). Maternal BMI was measured at booking during the first trimester of the pregnancy in which the daughter was born and classified as obese (≥30 kg/m²) or non-obese (<30 kg/m²). Daughter BMI during her own pregnancy was categorized as under/normal weight (<25), overweight (25.0–29.9), or obese (≥30). Six combined BMI categories were constructed. Logistic regression estimated odds ratios (OR) and 95% confidence intervals (CI) for HDP, using non-obese mother and under/normal weight daughter as reference. Models adjusted for key maternal and daughter characteristics, including maternal diabetes, with robust standard errors.

Results: HDP incidence was 6.44%. Daughter BMI was strongly associated with HDP regardless of maternal obesity status. Compared with the reference group, daughter obesity was linked to increased HDP risk both among daughters of obese mothers (OR 2.84, 95% CI 2.44–3.30) and non-obese mothers (OR 2.94, 95% CI 2.77–3.13). Overweight daughters also had elevated odds, with OR 1.43 (95% CI 1.16–1.76) for obese mothers and 1.69 (95% CI 1.59–1.79) for non-obese mothers. Maternal obesity and diabetes, without daughter being overweight or obesity, were not associated with HDP.

Conclusion: Daughter BMI during pregnancy is the primary predictor of HDP, independent of maternal obesity or diabetes. These findings suggest that maternal obesity may have limited independent influence on HDP risk beyond its association with daughter BMI, underscoring the importance of optimizing BMI before and during pregnancy.

PP020

GESTATIONAL DIABETES EXPOSURE AND CHILDHOOD MORBIDITY – THE FINNISH GESTATIONAL DIABETES STUDY (FINNGEDI) FOLLOW UP

Dr. Jenni Kinnunen[1], Dr. Elina Keikkala[1], Dr. Sanna Mustaniemi[1], Biostatistician Paula Pesonen[1], Dr. Shilpa Lingaiah[1], Prof. Eero Kajantie[1,2,3,4], Prof. Marja Vääräsmäki[1]

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Background and aim: Gestational diabetes mellitus (GDM) is associated with adverse health outcomes in offspring. The study explores childhood morbidity based on maternal questionnaire, while accounting for sibling correlation and pregnancy-specific GDM status.

Materials and methods: The FinnGeDi follow-up study included 417 mothers, who had originally participated FinnGeDi clinical-genetic study in 2009-2012. At the time of follow-up visits in 2023-2024, these mothers had 1432 children (mean age 15 years (range 0–41). Mothers completed a questionnaire regarding children's morbidity. Of the children 29.7% (n = 424) had been exposed to GDM. Statistical analyses accounted for sibling relationships. Models were widely adjusted.

Results: Overall, 30.3% (n = 423) of the children had at least one chronic health concern, with no difference between groups when the sibship was considered, (29.1% vs. 29.4%, OR 0.87, 95% CI 0.63-1.20; aOR 1.00, 95% CI 0.65-1.54). The prevalence of psychiatric disorders was 9.8% vs. 9.5%, with no difference between groups when the sibship was considered (OR 0.18, 95% CI 0.01-2.31 and aOR 1.61, 95% CI 0.55-4.68). As a subcategory, ADHD and conduct disorder were diagnosed in 5.9% of the children, with no statistical difference between the groups, when the sibship was considered (4.8% vs. 6.3%, OR 0.24, 95% CI 0.01-4.50 and aOR 1.35, 95% CI 0.41-4.43). The prevalence of neurodevelopmental disorders was 3.8% (5.5% vs. 3.0%) with no difference between groups when the sibship was considered (OR 1.01, 95% 0.04-25.07 and aOR 3.06, 95% CI 0.33-27.97). The prevalence of mental health disorders was too low for detailed analysis 1.9% (2.4% vs. 1.8%) and somatic disorders were heterogeneous, precluding more detailed analyses.

Conclusion: Based on maternal questionnaire, GDM-exposure did not associate with higher morbidity in children. However, the sample size was limited, precluding definitive conclusions. Clinical follow-up of the offspring would provide more detailed and objective information.

POSTER SESSION 3

PP021

ESTIMATION OF THE FETAL BIRTH-WEIGHT IN PREGNANCIES COMPLICATED BY GESTATIONAL AND TYPE 1 DIABETES MELLITUS: A COMPARISON OF 29 ULTRASONOGRAPHIC FORMULAS.

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Aim: To evaluate the accuracy of the two-dimensional ultrasonographic formulas for the estimation of the fetal birth-weight (FBW) in pregnancies with concomitant gestational (GDM) and type 1 diabetes mellitus (T1DM).
Methods: A total of 245 participants were recruited for this prospective, cross-sectional study, including women with diet-controlled GDM (GDMG1) (n=50), insulin-controlled GDM (GDMG2) (n=50), T1DM (n=50) as well as non-diabetic control patients (n=95). In each participant measurements of the standard and non-standard fetal biometric parameters (abdominal fat mass, AFM) were performed within the 72 hour period prior to delivery. Two novel formulas comprising AFM measurement and twenty seven previously published algorithms were assessed individually and clustered depending on the type of fetal biometric parameters they incorporated.
Results: Two novel equations provided the following mean absolute percentage error (MAPE) and predictions within ±10% of error (1. GDMG1: 5.47%, 84%; GDMG2: 4.95%, 92%; T1DM: 5.37%, 82%; control: 4.98%, 89.5%; 2. GDMG1: 4.44%, 92%; GDMG2: 5.76%, 84%; T1DM: 4.82%, 84%; control: 5.07%, 90.5%). Both formulas incorporating fetal AFM and algorithms based on head-abdomen-femur measurements showed the lowest MAPE and highest percentage of predictions within ±5%, ±10%, and ±15% of error in all subgroups of patients. Among women with GDMG1, GDMG2, T1DM and controls 19, 18, 18 and 20 formulas provided good accuracy (signed bias 0.50 or less), respectively.
Conclusions: Among diabetic women the accuracy of novel formulas integrating AFM in the estimation of the FBW is comparable to previously published algorithms. Similar to non-diabetic population the majority of formulas tend to underestimate FBW in fetuses weighing ≥4000g in pregnancies with GDM/T1DM.

PP022

MIMICH: METFORMIN IMPACT ON MATERNAL AND INFANT CARDIOMETABOLIC HEALTH. RANDOMISED CONTROLLED TRIAL INVESTIGATING FETAL GROWTH WITH AND WITHOUT METFORMIN TREATMENT FOR DIABETES IN PREGNANCY.

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Background

Metformin is standard treatment for insulin-resistant diabetes in pregnancy in the UK and has been associated with lower birth weight in previous trials. In women with diabetes, risk factors for placental dysfunction and SGA often further complicate the pregnancy. We sought to investigate whether metformin treatment altered fetal growth trajectory in pregnancies at higher risk of placental dysfunction.

Methods

MIMICH was an open-label, randomised controlled trial in which participants at risk of placental disease with Type 2 or gestational diabetes between 6+0 to 29+6 weeks gestation were randomised to standard care (with metformin) or the intervention (metformin withheld/discontinued). Inclusion: age ≥35, nulliparity, BP >130/80mmHg, previous SGA or pre-eclampsia, current SGA, mean uterine artery PI>95th centile, PlGF <10th centile ; exclusion: previous shoulder dystocia. Primary outcome was growth velocity determined by the difference in Z-scores (Delta-Z) at 20+0 to 29+6 and birth.

Results

Of 191 participants randomised, 178 had data to calculate the primary outcome (n=XX withdrawn, n=X pregnancy loss). Delta-Z, adjusted for minimisation variables (type of diabetes, gestation at randomisation) was not different between groups: adjusted difference -0.168 (95%CI -0.156-0.492). SGA complicated 15/89 (17%) in the intervention group and 24/89 (27%) standard care (aRR 0.53, 95% CI 0.25 to 1.09); LGA complicated 15/89 (17%) intervention and 16/89 (18%) standard care. Similar rates of pre-eclampsia (12% vs 13%) and NICU admission (17% vs 19%) between arms. Maternal weight gain was 5.5[2-9] vs 4.5[0-8] kg (p=0.03). Total daily insulin units 80[48-131] vs. 58[34-101]

Conclusions

In this group of pregnancies with diabetes and an increased risk of growth restriction, metformin did not significantly impact fetal growth trajectory; secondary maternal and perinatal outcomes were also not markedly different between treatment groups. This trial provides further supportive data for metformin treatment in pregnancies complicated by diabetes and risk factors for placental dysfunction.

PP023

A DIABETES MANAGEMENT PLAN WITH SUBCUTANEOUS INSULIN DURING INDUCED LABOR AND DELIVERY IN WOMEN WITH TYPE 1 OR TYPE 2 DIABETES

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Background/Aims:
Optimal insulin management during labor remains uncertain. We evaluated a diabetes management plan with subcutaneous insulin during induction of labor and delivery in women with type 1 and insulin-treated type 2 diabetes, and its impact on maternal glucose control and neonatal outcomes.

Material and methods:
A secondary analysis of the CopenFast trial including women undergoing induction of labor. According to the diabetes management plan, usual diet and insulin was initially continued. From onset of active labor, target glucose was 4.0-7.0 mmol/L, and intravenous glucose infusion (3g/hour) was given. Women using insulin pen discontinued routine insulin injections and insulin pump users continued subcutaneous basal insulin via the pump. Supplemental insulin was given if glucose levels exceeded the recommended threshold. Continuous glucose monitoring was used in type 1 diabetes and hourly capillary blood glucose monitoring (BGM) in type 2 diabetes.

Results:
In total, 113 women (85 women with type 1 diabetes and 28 women with type 2 diabetes) were included. HbA1c was 42 ±5 mmol/mol (6.0 ±2.0%) and 41 ±10 mmol/mol (5.9 ±2.0%) (mean ±SD)) at 35 weeks. Glucose infusion was given for 4.8 (2.0-7.0) and 5.5 (4.0-8.0) (median (IQR)) hours. During induction and active labor, mean sensor glucose was 5.9 ±1.8 and 7.1 ±1.8 mmol/L in type 1 diabetes, and BGM was 5.6 ±2.8 and 5.8 ±1.2 mmol/L in type 2 diabetes. Maternal hypoglycemia (≤3.9 mmol/L) occurred in 6% and 11%. Supplemental insulin was administered in 35% (4.0 IU (2.0–7.5)) and 18% (2.0 IU (2.0–4.0)). Neonatal hypoglycemia (<2.2 mmol/L) occurred in 12% and 4%.

Conclusions:
Among women with type 1 and type 2 diabetes following a diabetes management plan with subcutaneous insulin during induction and active labor, glucose control was close to target with a low prevalence of maternal and neonatal hypoglycemia.

PP024

INTRAPARTUM GLUCOSE CONTROL AND NEONATAL HYPOGLYCAEMIA IN WOMEN WITH PREGESTATIONAL DIABETES

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Background/Aims: Specific intrapartum glucose targets in women with diabetes remain debated. We aimed to describe glucose monitoring methods during pregnancy and delivery and mean intrapartum blood glucose, and to analyse their association with neonatal hypoglycaemia in women with pregestational diabetes, at a terciary reference center.

Materials and methods: We conducted an observational cohort study of adult women with pregestational diabetes who delivered, between January 2022 and February 2024, after week 24, without major foetal malformations. Medical records and continuous glucose monitoring (CGM) data were reviewed. Descriptive analyses, group comparisons (chi-squared, Student's t, Mann-Whitney's U), ROC curve analysis and multivariate logistic regression were used to find factors associated with neonatal hypoglycaemia. The study received Ethics Committee approval and participants provided written informed consent.

Results: A total of 84 women were included (40% with type 1 diabetes), and 16.7% of their offspring had neonatal hypoglycaemia. During pregnancy, 40 women wore CGM (7 in a hybrid closed loop). During delivery, for 64.3% capillary blood glucose was available, for 2.4%, CGM and for 17.9%, both. Associations with neonatal hypoglycaemia were found for gestational age (p=<0.001), basal insulin analogue use (p = 0.004), first-trimester HbA1c (p = 0.003), gestational weight gain (p = 0.032), and intrapartum glucose (p = 0.034). ROC analysis (area under the curve 0.696) identified mean intrapartum blood glucose of 106.9 mg/dl as the best cut-off (sensitivity 75%, specificity 64,3%), for prediction of neonatal hypoglycaemia. In multivariate analysis, neonatal hypoglycaemia was independently associated with basal insulin type, first-trimester HbA1c and gestational weight gain, after adjusting for gestational age at delivery.

Conclusions: Our data suggest an association between neonatal hypoglycaemia and maternal glycaemic control and weight-gain during pregnancy. Intrapartum glucose was not associated with neonatal hypoglycaemia in multivariate analysis. Further studies are needed to validate the findings and increase knowledge in this area.

PP025

MIS-UNDERDIAGNOSED HYPERGLYCAEMIA 'MUSA' IN PREGNANCY: IDENTIFICATION OF A PREDICTIVE MODEL OF GLUCOKINASE DEFICIENCY DIABETES (MODY2) IN PREGNANT WOMEN WITH HYPERGLYCAEMIA

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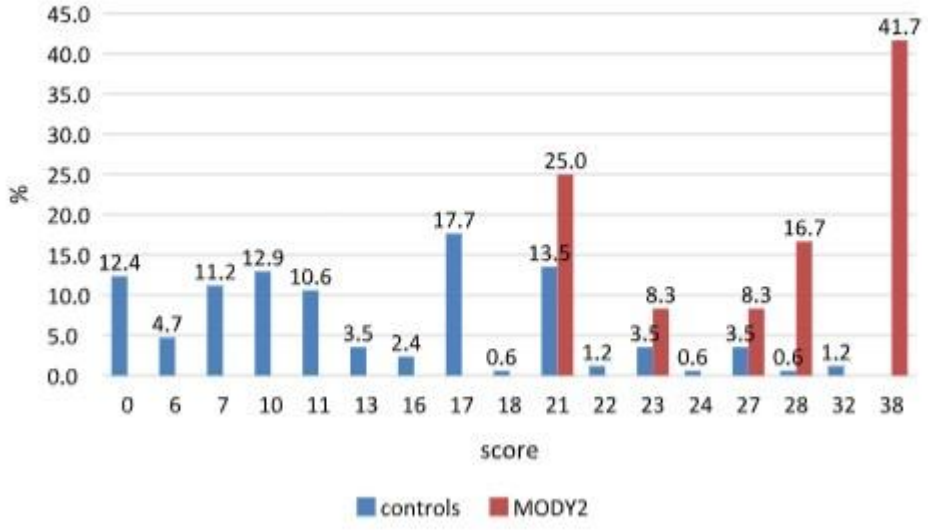
Background and aims: The MUSA study is the first Italian multicentric, osservational, longitudinal, prospective study that has showed a 5.79% glucokinase (GCK) - diabetes prevalence whilst 94,21% of women resulted negative at the CGK genetic testing.Primary aims were to evaluate the prevalence of CGK and other monogenic types of diabetes in pregnant women with fasting hyperglycemia and to build and validate a predictive model to identify those candidates to genetic test for the mutation of the GCK gene.

Materials and methods: Inclusion criteria: singleton pregnancies with fasting glycemia ≥99 mg/dl before 16 weeks of gestation and ≥92 mg/dl after, pregestational BMI <27 Kg/m^2 , age ≥18 years. Patients' DNA has been analyzed with Next Generation Sequencing using a custom panel and filtering the analysis for genes involved in insulin secretion (HNF4A, GCK, HNF1A, HNF1B, ABCC8, KCNJ11, INS) and for INSR gene, involved in insulin resistance.

Results: Six and nine of the mutations found in 15/259 women recruited in pregnancy (5.79%) were pathogenetic and likely pathogenetic mutations, respectively; 12 of them were novel. Other variants of unknown significance were found. Moreover, among the 244 CGK negative women of the control group, one was affected by HNF4A diabetes (pathogenic variant) and another one by ABCC8 diabetes (pathogenic variant). Based on the multivariable logistic regression modelling the risk of MODY2, the probability of having a diagnosis increased in presence of a family history of diabetes or hyperglycemia, previous GDM, and with high level of FBG (>110 mg/dl) at first visit. Increasing BMI levels were associated with a lower likelihood of MODY2.The score ranges between 0 and 38, with higher values indicating a higher likelihood of MODY2. The ROC curve analysis showed an AUC of 94.5%, and a best score cutoff of 19.5 yielding a sensitivity of 100.0% and a specificity and 75.9%. Using this cut-off, the positive predictive value is 22.6% while the negative predictive value is 100%.

Conclusion: Monogenic diabetes constitutes an underestimated and/or misdiagnosed cause of diabetes in pregnancy. Clinical features allow to build and validate a predictive model to select women for genetic test.



PP026

MATERNAL AND FETAL POLYGENIC SCORES FOR TYPE 2 DIABETES AND PLACENTAL WEIGHT: ASSOCIATIONS WITH LATE-GESTATION GROWTH AND UTEROPLACENTAL PERFUSION

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Background

Placental function regulates fetal growth; growth restriction increases future type 2 diabetes (T2D) risk. We hypothesized that fetal and maternal polygenic scores (PGSs) for T2D and placental-weight (PW) influence fetal growth, uteroplacental flow and birthweight (BW).

Methods

In a cohort of 1,128 genotyped Danish mothers and 665 of their newborns, we calculated maternal and fetal PGSs for T2D and PW using genetic variants identified in previous genome-wide association studies. Ultrasound estimated weights at 20, 25, and 32 weeks were log-transformed to model fetal growth. Uterine artery pulsatility index (UtA-PI) was measured at 20 weeks; BW and PW recorded at delivery. Linear mixed models estimated associations between each PGS (per SD increase) and fetal growth, specifically model-estimated weight at 28 weeks and third-trimester growth velocity. Linear regression analyzed UtA-PI and BW per SD increase in each PGS.

Results

Higher fetal T2D PGS was associated with higher fetal weight at 28 weeks ($\beta = 0.0076$, $p = 0.029$), but greater third-trimester growth deceleration ($\beta = -1.95\times10^{-7}$, $p = 0.039$). Higher maternal T2D PGS showed a trend towards increased third-trimester growth ($\beta = 1.37\times10^{-7}$, $p = 0.072$). Neither T2D PGS associated with PW or UtA-PI.

Both higher fetal and maternal PW PGS were associated with increased third-trimester growth ($\beta = 2.11\times10^{-7}$, $p = 0.026$, $\beta = 1.68\times10^{-7}$, $p = 0.048$). Higher fetal PW PGS associated with higher BW ($\beta = 44$ g, $p = 0.01$).

Lower UtA-PI was observed in relation to both higher fetal and maternal PW PGS ($\beta = -0.024$, $p = 0.049$, $\beta = -0.029$, $p = 0.026$).

Conclusion

Higher fetal T2D PGS may reduce fetal growth in the third trimester whereas maternal T2D PGS may increase it. Higher PW-PGS from either the fetus or the mother seems to support late-gestation fetal growth, possibly mediated by enhanced uteroplacental perfusion.

PP027

PREGNANCY OUTCOMES AFTER AN AUSTRALIAN DISTRICT-WIDE PROGRAMME TO PROMOTE CONTRACEPTION USE AND PRE-CONCEPTION PLANNING AMONG WOMEN WITH ESTABLISHED DIABETES MELLITUS.

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Background/Aims

Pregnancy preparation may reduce adverse pregnancy outcomes among women with diabetes. This study evaluated pregnancy outcomes before and after introduction of the Diabetes Contraception And Pre-pregnancy Program (DCAPP) in a multi-ethnic, outer-metropolitan health district of Australia (population ~1million).

Methods

New diabetes pre-pregnancy clinics and multifaceted campaigns to increase awareness were launched including educational materials for women of reproductive age and primary care healthcare professionals. A retrospective cohort study design evaluated ten-year (2014-2024) outcomes (primary outcome: major congenital malformations). Comparisons across periods were assessed using chi-square tests for trend and multivariable modified Poisson regression.

Results

Among 981 pregnancies (28.7% with Type 1 diabetes; mean Age 32±5 years; 24.5% European; mean BMI 31.6±7.4 kg/m^2) annual malformation rates declined over time (shown in figure 1), from 13.3% in 2014 to 2.6% in 2024 (trend p=0.002). Malformation rates dropped significantly across pre-COVID (2014-2019: 8.7%), during COVID (2020-2022: 6.4%), and post-COVID (≥2023: 2.7%) (p=0.003). Birth year was independently associated with a lower malformation rate (risk ratio 0.89, 95% CI 0.82-0.96; p=0.003). After DCAPP, women more often attended diabetes in pregnancy clinics before 10 weeks' gestation (44% vs 27% RR=1.62, p=0.022) with more frequent use of high dose folate (51% vs 14% RR 3.26, 95% p<0.001).

Conclusion:

Publicly funded "pre-pregnancy clinics" alongside awareness and education programs coincided with improvements in pregnancy planning and outcomes in women with type 1 and type 2 diabetes over 10 years in this district-wide Australian program.

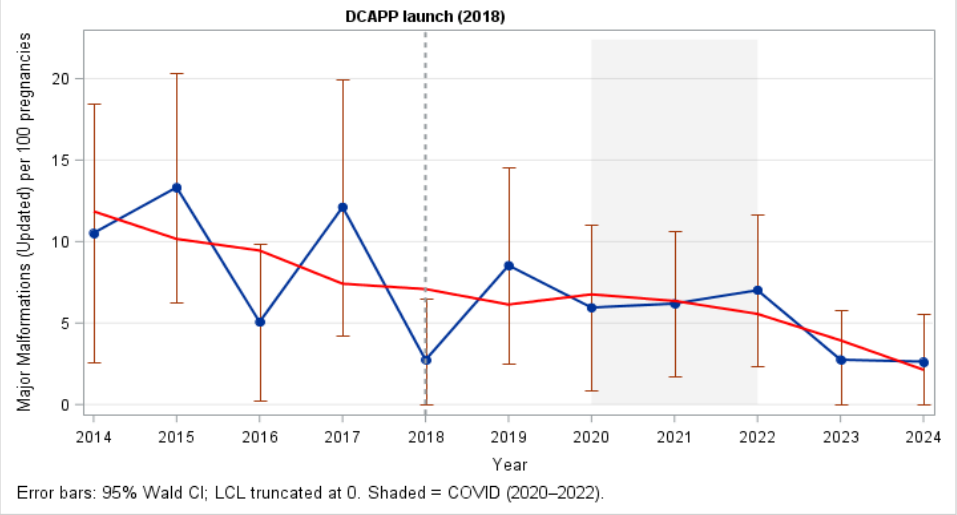

Figure 1: Major Congenital Malformations by Year with Loess Smoother

PP028

DAYTIME TIME IN RANGE AND NOCTURNAL GLUCOSE TRAJECTORIES IDENTIFY A LOW-RISK PHENOTYPE IN TYPE 1 DIABETES PREGNANCY: A JOINT LATENT CLASS TRAJECTORY ANALYSIS

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Background/Aims

Despite advances in insulin pump therapy and CGM, large-for-gestational-age (LGA) infants and neonatal hypoglycemia remain frequent in type 1 diabetes (T1D) pregnancies. Trimester-averaged CGM metrics obscure day-to-day variability. We hypothesised that daytime pregnancy-specific time-in-range (TIR 63–140 mg/dL) and nocturnal glucose follow distinct trajectories that differentially influence neonatal outcomes and aimed to identify weekly trajectories and clinically meaningful risk phenotypes.

Materials and methods

In a single-centre retrospective cohort of 168 T1D women managed with insulin pumps and CGM, weekly means of daytime TIR and mean nocturnal glucose were calculated from 10 to 30 weeks' gestation. Latent class trajectory models (three classes each) were fitted separately, then combined into low- (2 points), intermediate- (3–4), and high-risk (5–6) phenotypes. Primary outcomes were LGA and neonatal hypoglycemia.

Results

Daytime TIR trajectories (high 81%, n=65; intermediate 65%, n=93; low 55%, n=10) stratified LGA risk (24.6% vs 57.0% vs 70.0%; p<0.001) and neonatal hypoglycemia (15.4% vs 33.3% vs 30.0%; p=0.040). Nocturnal glucose trajectories (low 100 mg/dL, n=97; moderate-rising 113–125 mg/dL, n=22; high 120 mg/dL, n=49) showed a gradient for LGA (35.1% vs 68.2% vs 55.1%; p=0.005) and a trend for neonatal hypoglycemia (19.6% vs 40.9% vs 32.7%; p=0.058). Daytime TIR was the primary driver of LGA, while nocturnal glucose was more strongly associated with neonatal hypoglycemia. The low-risk group (n=58) showed markedly lower adverse outcome rates (LGA 27.6%, neonatal hypoglycemia 13.8%) versus intermediate (50.8%/32.3%) and high-risk groups (60.0%/33.3%) (p=0.002; p=0.029).

Conclusions

Joint trajectory analysis identifies three glycemic phenotypes in T1D pregnancy along two complementary axes: daytime TIR as the primary driver of LGA and nocturnal glucose as the key determinant of neonatal hypoglycemia. Strict glycemic control — daytime TIR >70% with nocturnal glucose ≤100 mg/dL — confers substantial protection against both negative outcomes, supporting a phenotype-based, CGM-guided approach to antenatal care.

PP029

TRENDS IN GESTATIONAL WEIGHT GAIN AND DIABETES TREATMENT IN PREGNANCIES WITH TYPE 2 DIABETES IN 2012-2021

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Background

Gestational weight gain (GWG) may be influenced by diabetes medication. Our aim was to study trends in GWG and diabetes treatment in type 2 diabetes (T2D) pregnancies at Helsinki University Hospital (HUH) during 2012-2021.

Material and Methods

A retrospective record review was conducted on all singleton T2D pregnancies at HUH. Only the last pregnancy of each woman was included. Changes in maternal GWG and treatment modalities (nutrition therapy only, insulin and/or metformin use) were assessed comparing two time periods: 2012–2016 *vs.* 2017–2021. Excessive GWG was defined as GWG exceeding the BMI-based upper threshold of NAM recommendations.

Results

There were 394 singleton deliveries among 292 women with T2D. GWG increased from 6.0 (8.6)kg in 2012-2016 to 8.0 (7.9)kg in 2017-2021 (p=0.027). No significant trends were observed in diabetes treatment. Excessive GWG in women with obesity was 30.0% in 2012-16 vs. 44.4% in 2017-21, however the difference was not significant.

Table 1. Background characteristics, GWG and diabetes treatment in 292 women with T2D and a singleton delivery at HUH during 2012-2021.

	2012-2016(n=108)	**2017-2021(n=184)**	**p-value**
Maternal age, years	35.4 (5.5)	34.7 (4.9)	0.810
BMI < 25 kg/m^2	11 (10.3)	17 (9.3)	0.794
BMI 25-30 kg/m^2	27 (25.2)	46 (25.3)	0.994
BMI >30 kg/m^2	69 (64.5)	119 (65.4)	0.877
Lifestyle treatment only	5 (4.7)	10 (5.5)	0.782
Metformin treatment	91 (84.3)	163 (88.6)	0.289
Insulin treatment	75 (70.1)	124 (67.4)	0.633
Gestational weight gain (kg)	6.0 (8.6)	8.0 (7.9)	**0.027**
GWG >9kg in obese women, n(%)	12 (30.0)	40 (44.4)	0.121
GWG >11.5kg in overweight women, n(%)	1 (16.7)	8 (26.7)	0.606
GWG>16kg in normal weight women, n(%)	0 (0.0)	3 (25)	0.267

Data are means (SD), median (IQR) or frequencies (%)

Conclusions:

Gestational weight gain increased in T2D pregnancies. Additional data on GWG and treatment modalities in T2D pregnancies during 2022-2025 is pending and will be reported at the IADPSG.

PP030

HUMAN PLACENTAL LACTOGEN IN PREGNANCIES COMPLICATED BY PREGESTATIONAL DIABETES: ASSOCIATIONS WITH MATERNAL METABOLIC PROFILE AND FETAL GROWTH

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Background/Aims: Human placental lactogen (hPL) regulates maternal metabolism and fetal nutrient supply. However, contemporary data on its associations with longitudinal maternal lipid profiles, pre-pregnancy BMI, and gestational weight gain (GWG) remain limited. Furthermore, reports on the correlation between maternal and fetal hPL compartments are conflicting. This study aimed to evaluate maternal and fetal hPL concentrations in pregnancies complicated by pregestational diabetes mellitus (PGDM) and healthy controls.

Materials and Methods: In this observational cohort study, 43 mother-infant pairs (21 PGDM, 22 healthy controls) were enrolled. Maternal blood and umbilical cord blood (arterial and venous) were collected at delivery. hPL concentrations were measured and analysed in relation to maternal metabolic parameters (BMI, trimester-specific triglyceride (TG) levels, HbA1c, and gestational weight gain (GWG). Neonatal outcomes, including weight-to-length ratio (WLR), birthweight z-score, and placental weight, were recorded.

Results: Maternal hPL levels did not differ significantly between PGDM and controls. However, fetal hPL levels (arterial and venous) were significantly lower in the PGDM group ($p<0.02$). A strong positive correlation was observed between fetal arterial and venous hPL ($r=0.97$, $p<0.0001$), but no correlation was found between maternal and fetal hPL levels. Maternal hPL correlated positively with birthweight z-scores ($r=0.539$, $p<0.001$) and the first-to-third trimester change in triglycerides (ΔTG T1-T3; $r=0.573$, $p=0.02$). In contrast, fetal hPL was inversely associated with maternal BMI in the second and third trimesters ($r = -0.44$, $p < 0.05$) and with birthweight z-scores ($r = -0.390$, $p = 0.033$). GWG and HbA1c were not significantly associated with hPL concentrations.

Conclusions: hPL demonstrates distinct maternal–fetal compartmentalisation. Lower fetal hPL concentrations observed in PGDM and in pregnancies with higher birthweight z-scores may indicate independent placental regulation despite stable maternal concentrations. The opposing maternal and fetal associations further support compartment-specific regulation of hPL. Maternal hPL appears to be associated with maternal lipid mobilisation rather than directly with fetal growth.

POSTER SESSION 4

PP031

THREE LIPID-DERIVED CLUSTERS IN GESTATIONAL DIABETES: RESULTS FROM THE EMERGE RANDOMIZED, PLACEBO-CONTROLLED TRIAL OF METFORMIN

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Background: Gestational diabetes (GDM) is characterized by metabolic alterations beyond hyperglycemia, including changes in lipid metabolism. Whether maternal lipid profiles identify phenotypes associated with fetal growth and treatment response is unclear. This study aimed to identify novel metabolic phenotypes in GDM and evaluate associations with maternal/neonatal outcomes and response to metformin. **Methods:** This is a secondary analysis of the EMERGE phase 3 double-blind, placebo-controlled randomized trial. Women with GDM were randomized 1:1 to metformin or placebo. Among 535 pregnancies, 399 with complete lipid data at 38 weeks were included. Total cholesterol, LDL, HDL and triglycerides were standardized (z-scores) and clustered using k-means. Neonatal outcomes included anthropometry, small- or large-for-gestational age (SGA, LGA), macrosomia and neonatal hypoglycemia. Maternal outcomes included hypertensive disorders and postpartum glycemia. Associations were evaluated using multivariable regression with treatment-by-cluster interaction terms. **Results:** Three lipid phenotypes were identified: hypolipidemic (n=203), proatherogenic (n=87), and favorable (n=109) ($p<0.001$). The proatherogenic phenotype was associated with higher birth weight (3659.8±404 vs 3458.6±418 g, p=0.004), larger arm circumference (11.4±1.1 vs 10.9±1.0 cm, p=0.018), and increased LGA (15% vs 4.6%, p=0.046) and macrosomia (18% vs 5.5%, p=0.019). The favorable phenotype showed lower birth weight and higher SGA prevalence (8.3% vs 1.1–2.5%, p=0.027). Cluster-stratified analyses showed phenotype-specific effects. In the hypolipidemic cluster, metformin reduced crown–heel length (β=−0.95 cm, p=0.013) and increased AGA births (p=0.040). In the favorable cluster, metformin reduced arm circumference (β=−0.66 cm, p=0.006), while in the proatherogenic cluster it was associated with increased neonatal hypoglycemia (p=0.035). No difference was observed in postpartum glycemic outcomes. **Conclusion:** Late-pregnancy lipid phenotypes in GDM identify biologically distinct fetal growth patterns, from undergrowth- to overgrowth-prone profiles. Metformin effects varied across phenotypes, supporting lipid profiling as a complementary tool for risk stratification and a potential framework for precision medicine in GDM.

PP032

A RETROSPECTIVE COHORT STUDY OF PREPARTUM GLUCOSE LEVELS IN TYPE 1 DIABETES PREGNANCIES AND THE CORRELATION TO NEONATAL MORBIDITY

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Aim Pregnancy complicated by diabetes increases risks of neonatal morbidity. Little is known regarding maternal glucose variations shortly before birth and impacts on neonatal outcomes. This study aims to examine glucose variations, using continuous glucose monitoring (CGM), prepartum in women with type 1 diabetes and evaluate associations with neonatal morbidity.

Methods This retrospective cohort study included 86 pregnant women with type 1 diabetes and infants born at four Swedish hospitals between 2014-2019. Exposure glucose variables were mean glucose, SD, time in target, time above target and time below target. Associations between glucose variables 1, 6 and 12 hours prepartum and hourly means were analyzed by binary logistic regression with neonatal morbidity (asphyxia, low Apgar score, neonatal unit admission, or hypoglycemia) as outcome, adjusted for BMI and change in HbA1c throughout pregnancy.

Results Hourly mean glucose was lower in the group without neonatal morbidity, significantly 11-12 hours prepartum (6.1 vs. 7.2 and 6.0 vs. 7.1 mmol/L). Hourly means increased continuously before birth in both groups, significantly in the group without neonatal morbidity. No associations between CGM variables and neonatal morbidity were found.

Conclusion Higher hourly mean glucose was associated with decreased neonatal morbidity. Optimal maternal glucose level prepartum remains uncertain.

PP033

DIFFERENTIAL FATTY ACIDS IN HUMAN MILK FROM INDIVIDUALS WITH GESTATIONAL DIABETES

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Background/Aims: Human milk (HM) fatty acids (FA), which are critical for infant development, show wide inter-individual variability, but the impact of maternal metabolic health on HM FA profiles remains unclear. Our objective was to evaluate differences in HM FA in lactating mothers with and without gestational diabetes mellitus (GDM) in the recent pregnancy.
Materials and Methods: HM samples were collected at 3 months post-partum from participants at two centers, Minnesota and Oklahoma, enrolled in the MILk Study (NIHR01HD080444). MILk included women aged 21- 45; pre-pregnancy BMI 18.5-45.0 kg/m^2; singleton full-term pregnancy; intending to breastfeed. Cohort selection for this analysis ensured one third of participants had GDM. Data on GDM treatment was unavailable. HM was stored at -80^{o}C until FA analysis by GC-MS to measure relative concentrations of 24 FA, reported as percent of total FA measured (FA%). The primary FA of interest was docosahexaenoic acid (DHA; 22:6n3). Linear regression models evaluated associations between GDM status and HM FA. Adjustments included maternal BMI, parity, maternal omega(n)3 FA supplementation and study center.
Results: Of the 100 participants (n=32 with GDM), maternal age was 32.4±4.2 years, pre-pregnancy BMI 27.7±5.7 kg/m^2 and 38% were nulliparous. Most participants (80%) used n3 FA supplements. Mean dietary n3 FA intake was 1.59±0.83 g/d with no difference by GDM. HM from mothers with GDM had lower DHA (ß=-0.07, 95%CI (-0.14,-0.01; p=0.029) which was attenuated in fully adjusted models (ß=-0.035 (-0.10,0.03). HM oleic acid (18:1n9) was lower in GDM in adjusted models (ß=-2.28 (-4.44,-0.12); p=0.039). GDM was associated with higher FA 15:0, 17:1, 20:1n9, 20:4n6, and lower FA 12:0, 18:3n6, 22:4n6, 22:5n6, 24:0 in adjusted models. The n6:n3 FA ratio did not differ by GDM status.
Conclusions: GDM is associated with altered HM FA profiles. These findings suggest implications of GDM extend beyond gestation well into the lactation period.

PP034

COMPARATIVE PROTEOMIC ANALYSIS OF UMBILICAL CORD BLOOD VESSELS OF HYPERGLYCEMIC PREGNANCIES REVEALS DISCRETE ALTERATIONS IN EXTRACELLULAR MATRIX PROTEINS

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Background/Aims

Gestational diabetes mellitus (GDM) increases long-term cardiometabolic risk in offspring. Vascular dysfunction is a key mechanism in these outcomes, yet early molecular effects of hyperglycemia on fetal vessels remain unclear. Elevated extracellular matrix (ECM) proteins, including collagen type IV, have been reported in diabetic vasculature and linked to cardiovascular disease (CVD). This study investigates the short-term impact of maternal hyperglycemia on umbilical cord vessels. Using a proteomic approach, our study aims to identify molecular signatures of early vascular dysfunction associated with GDM.

Materials and methods

In a prospective case-control study of 32 women (11 GDM, 21 controls) delivering at term, umbilical cord arteries and veins were dissected for protein extraction. Mass spectrometry-based proteomics was performed using an initial discovery approach, followed by a subsequent targeted analysis for focused quantification of selected proteins. Differential expression and enrichment analyses were performed using both a binary GDM vs. control model (Danish criteria: 2-hour OGTT > 9.0 mmol/L) and a continuous model based on maternal 2-hour OGTT values. Proteins significant prior to multiple testing correction in both models were further assessed in targeted analyses.

Results

A total of 6,249 proteins were identified, of which 4,490 were quantified in at least 50% of samples. While no proteins remained significant after multiple testing correction, exploratory analyses suggested early vascular remodeling, including alterations in extracellular matrix-related proteins in hyperglycemic pregnancies. In unadjusted analyses, 164 and 108 proteins were differentially expressed in arteries and veins, respectively. Targeted analysis of CVD/ECM-related proteins supported increased levels of spondin-1, matrilin-2, collagen alpha-1(XII) chain, transforming growth factor-beta-induced protein ig-h3, olfactomedin-like protein 3, and cartilage oligomeric matrix protein in the GDM group.

Conclusion

Hyperglycemia in pregnancy is associated with discrete proteomic alterations indicating emerging vascular remodeling of ECM in the umbilical cord vessels. Further investigations are needed to confirm these findings.

PP035

CLUSTER ANALYSIS OF POSTPARTUM CONTINUOUS GLUCOSE MONITORING AFTER GESTATIONAL DIABETES

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Background/aims: Postpartum testing for diabetes is underperformed in women with gestational diabetes (GDM). Continuous glucose monitoring (CGM) data may be able to predict oral glucose tolerance (OGTT) results with less burden.

Materials and methods: Participants with GDM wore a CGM postpartum and completed their standard-of-care OGTT at 6 weeks postpartum. In this secondary analysis, mean and standard deviation, percent time above range, percent time in range (TIR 70-180 mg/dL), percent time below range, and coefficient of variation were entered into k-means cluster analysis with optimal cluster number determined by the elbow method and validation performed by bootstrapping. Participant characteristics were then compared among clusters using bivariate analyses.

Results: Of 50 participants given CGM sensors, 26 completed OGTT. Based on CGM data, three clusters emerged with mean stability of 0.81, 0.79, and 0.52, respectively. Cluster 1 had high TIR and normal OGTT results. Cluster 2 had lower mean glucose, lower TIR, and a mix of OGTT results. Cluster 3 had the highest mean glucose, lowest TIR, and were found to have impaired glucose tolerance on OGTT. The clusters did not differ by age, parity, pregravid BMI, or medication use.

Conclusions: K-means cluster analysis was able to identify different glycemic profiles based on CGM data in the postpartum period. This information may be valuable for providers as well as patients who are unable to tolerate or complete an OGTT in the postpartum period. Larger studies will be useful in validating this data for clinical use.

PP036

CONTINUOUS GLUCOSE MONITORING REDUCES PLACENTAL FIBROSIS AND GLYCATION IN TYPE 1 DIABETES: ASSOCIATION WITH PERINATAL OUTCOME

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Background/Aims:
Type 1 diabetes (T1DM) increases perinatal mortality 5- to 10-fold and can cause sudden placental dysfunction, leading to intrauterine fetal demise (IUFD), typically without predictors or histological correlates of placental insufficiency. Advanced glycation endproducts (AGEs), Transforming Growth Factor β1 (TGF-β1), and β-catenin induce diabetic fibrosis and dysfunction in other organs. We investigated whether similar mechanisms occur in the diabetic placenta, whether fibrosis links to adverse outcomes (large for gestational age (LGA) neonates, admission to the neonatal intensive care unit (NICU), IUFD), and whether improved glycemic control via continuous glucose monitoring (CGM) affects these changes.

Materials and Methods:
To simulate hyperglycemia, the trophoblastic cell line AC1-M32 was treated with 5, 10, or 30 mM glucose for seven days. Production of profibrotic stimuli (SNAIL, TGF-β1, β-catenin) was assessed by Western blot and ELISA. Formalin-fixed placentas from T1DM patients and controls were analyzed for fibrosis (Picrosirius red staining, n=89/group) and AGEs (immunohistochemistry, n=50/group). Collected clinical data included HbA1c, glucose monitoring method (CGM vs. self-monitoring of blood glucose), LGA, and NICU admission rate. Statistical analysis was performed using paired t-tests and linear mixed-effects models.

Results:
Hyperglycemia-stimulated cells produced increased profibrotic stimuli. T1DM placentas showed elevated AGE accumulation and fibrosis compared to controls. Placental fibrosis was increased in cases with HbA1c ≥ 5.7% or in those linked to neonates requiring NICU admission and was most pronounced in diabetic IUFDs. AGE deposition correlated with inadequate glycemic control (HbA1c > 5.7%) and LGA neonates. CGM use was associated with reduced placental fibrosis and glycation and lower NICU admission rates.

Conclusions:
Persistent hyperglycemia promotes fibrosis in T1DM placentas by inducing the production of profibrotic stimuli in trophoblast cells. This is particularly evident in placentas from pregnancies with inadequate glycemic control and adverse perinatal outcomes. CGM use is associated with reduced diabetes-related placental alterations and improved perinatal outcomes.

PP037

PLASMA METABOLOMIC SIGNATURES ASSOCIATED WITH PERIPARTUM MENTAL HEALTH PROBLEMS IN WOMEN WITH GESTATIONAL DIABETES MELLITUS

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Background: Peripartum mental health problems are increasingly associated with gestational diabetes mellitus (GDM), but their biological basis remains unclear. The higher prevalence of depressive and anxiety symptoms in women with GDM compared to those with normal glucose tolerance (NGT) suggests that the biological pathways underlying these symptoms may differ by maternal metabolic status. This study aimed to identify plasma metabolomic signatures associated with peripartum mental health symptoms in both GDM and NGT cohorts.

Materials and methods: We included 220 women (GDM: n=86; NGT: n=134) from the PlaNS cohort in Zagreb, Croatia. Fasting blood samples were collected at the end of pregnancy and untargeted metabolomic profiling of plasma samples was performed using liquid chromatography-mass spectrometry (LC-MS) and gas chromatography-mass spectrometry (GC-MS). Depressive, anxiety, and perceived stress symptoms were assessed at the end of pregnancy and three months postpartum using the Depression, Anxiety and Stress Scale-21 (DASS-21). Associations between metabolite levels and DASS-21 subscale scores were evaluated within each group (GDM, NGT) using Pearson or Spearman correlations.

Results: During pregnancy, the dominant classes associated with DASS-21 subscale scores were glycerophospholipids and fatty acyl metabolites in women with GDM, and glycerophospholipids and sphingolipids in women with NGT. Postpartum, a broader range of fatty acyl metabolites showed positive associations with DASS-21 subscale scores in women with GDM, while glycerophospholipids remained the dominant class in women with NGT.

Conclusions: Metabolomic signatures associated with peripartum depressive, anxiety, and stress symptoms differ according to glucose tolerance status. In the GDM group, the emergence of fatty acyl metabolites as correlates of mental health symptoms during pregnancy and the expansion of these associations postpartum suggest that altered mitochondrial energy metabolism, including incomplete fatty-acid β-oxidation, may underlie these symptoms specifically in women with GDM.

PP038

EXTRACELLULAR VESICLE PROTEOMICS IN GESTATIONAL DIABETES REVEALS SELECTIVE METABOLIC ASSOCIATIONS AND ALTERED MATERNAL–FETAL COORDINATION

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Abstract

Aims: To perform an exploratory proteomic characterization of extracellular vesicles (EVs) in maternal and cord blood in gestational diabetes mellitus (GDM), and to identify differential protein patterns and their relationship with clinical variables, with particular focus on maternal–fetal interactions.

Material and Methods: EVs were isolated from plasma samples of non-pregnant women (NG), pregnant women with normal glucose tolerance (TNG), pregnant women with GDM (DMG), and umbilical cord blood from their offspring (TNGuc, DMGuc). EV characterization was performed using nanoparticle tracking analysis. Differential proteomic analysis was conducted using a label-free SWATH approach. Statistical analyses included pairwise comparisons between groups and correlation with clinical variables (glucose, HbA1c, triglycerides, and birthweight). Given the exploratory nature of the study, both nominal and adjusted p-values were considered.

Results: No significant differences in EV concentration or size distribution were observed between TNG and DMG groups in maternal or cord blood samples. In contrast, significant differences between maternal and cord blood EVs were observed in control pregnancies ($p < 0.001$), which were attenuated in GDM.
Proteomic analysis revealed modest but consistent differences between TNG and DMG. Some differentially expressed proteins, including GNB2, A2M, ADK and GP5, also showed associations with clinical variables, whereas PEA15 and ITGB1 appeared as differential proteins without consistent links to classical metabolic parameters.
In cord blood, differences between TNGuc and DMGuc were less pronounced but involved proteins related to lipid metabolism, coagulation and complement pathways. Integration of maternal and cord blood data suggested a partial disruption of maternal–fetal coordination in GDM.

Conclusion: GDM was not associated with major changes in EV concentration or size, but with alterations in EV proteomic content and its relationship with metabolic variables. These findings support a functional reorganization of the EV proteome and suggest a potential disruption of maternal–fetal communication.

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PP039

PERCEPTIONS OF METHODS TO ASSESS GLYCEMIA IN PREGNANCY: A GO MOMS ANALYSIS

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Background/Aims: Diagnosis of gestational diabetes (GDM) is based on oral glucose tolerance testing (OGTT), which requires fasting, is time intensive, and reflects a physiological stress response to a large glucose load rather than usual glycemic patterns. Continuous glucose monitoring (CGM) has emerged as a potentially less burdensome alternative to assess glycemia. We evaluated pregnant individuals' experience with CGM wear and preferences for CGM versus OGTT for GDM screening.
Materials and methods: We included singleton pregnant individuals without preexisting diabetes enrolled in GO MOMs, a multicenter study of glycemia across pregnancy. Participants wore a blinded CGM for up to 10 days at four study visits (V1:10-14wks, V2:16-20wks, V3:24-28wks, V4:32-36wks). OGTTs were completed at V1 and V3. At V4, participants completed a questionnaire conveying their experience with both testing modalities. Participants chose their preferred method for GDM screening: CGM, OGTT, or neither. Participants who completed the survey, an OGTT, and had at least one CGM inserted were included.

Results: A total of 1,919 participants (mean age 32 years, mean BMI 28 kg/m^2) met inclusion criteria, of whom 15% had GDM (similar to overall cohort). Overall, 65% (95% CI: 63, 67) preferred CGM, 18% (17, 20) had no preference, and 17% (15, 18) preferred OGTT. Most participants (90%) stated the sensor lasted for the full 10-day wear period. Few participants reported considerable or extreme discomfort with CGM: 2.6% reported itchiness and 1.5% reported irritation at the sensor site. In contrast, 11.4% felt unwell after ingesting the glucose load.

Conclusions: As alternative methods to assess glycemia are explored, understanding patient-reported experiences and acceptability is crucial. Our findings indicate CGM was preferred over OGTT, suggesting it may be accepted by pregnant individuals if validated as a diagnostic method for GDM.

PP040

ASSOCIATION BETWEEN CONTINUOUS GLUCOSE MONITORING-DERIVED GLYCAEMIC METRICS AND BIRTHWEIGHT IN DIET-TREATED GESTATIONAL DIABETES MELLITUS: A PROSPECTIVE COHORT STUDY

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Background/Aims

Self-monitored blood glucose is widely used as the standard method for assessing glycaemic control in gestational diabetes mellitus (GDM) but may not capture glycaemic fluctuations. Continuous glucose monitoring (CGM) has been associated with improved pregnancy outcomes in type 1 diabetes, whereas evidence in GDM remains limited.

This study aimed to evaluate the association between CGM-derived glycaemic variability and fetal growth, assessed by birthweight and birthweight z-score, in women with diet-treated GDM.

Material and methods

In this prospective cohort study, singleton pregnant women with GDM were included at 28+0 to 34+6 weeks' gestation. Participants were recruited from two Danish centres between 2022 and 2026. All participants wore a blinded FreeStyle Libre Pro CGM for 14 days, and clinical and biochemical data were collected.

Associations between CGM-derived glycaemic variability and birthweight and birthweight z-score were assessed using linear regression adjusted for maternal age, BMI, and parity.

Results

Of the 84 included women, 78 completed the study period without initiating insulin therapy. Gestational age at inclusion was 32+0 weeks (IQR 30+6–33+2), maternal age 32 years (IQR 30–35), and BMI 28.0 kg/m² (IQR 23.5–33.8).

Median glucose was 5.2 mmol/L (IQR 4.9–5.4). Time in range (TIR; 3.5–7.0 mmol/L) was 93% (IQR 90–97). The coefficient of variation (CV) was 18.3% (SD 3.4).

Median birthweight was 3520 g (IQR 3200–3810), corresponding to a median birthweight z-score of 0.07 (IQR -0.32–0.65). In adjusted analyses, CV was not associated with birthweight (β = −25.24, 95% CI −65.84–15.36, p = 0.22) or birthweight z-score (β = −0.01, 95% CI −0.09–0.07, p = 0.77).

Conclusions

In women with diet-treated gestational diabetes mellitus, no association was observed between CGM-derived glycaemic variability and birthweight or birthweight z-score. Further studies are warranted to clarify the role of CGM metrics in this population.

POSTER DISPLAY

PD041

PREGNANCY OUTCOMES IN WOMEN WITH TYPE 1 DIABETES OVER 20 YEARS: THE IMPACT OF MODERN TREATMENT STRATEGIES IN REAL-WORLD DATA FROM A PERINATAL CENTRE IN GERMANY

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Background:
Pregnancies in women with type 1 diabetes (T1DM) are associated with substantial maternal and neonatal complications despite major therapeutic and technological advances. While modern diabetes technologies may improve glycaemic control, robust evidence on their impact on obstetric outcomes remains limited. This study aims to assess perinatal outcomes and the influence of diabetes technologies in women with T1DM treated at our centre over the last two decades.

Methods:
Retrospective cohort study of pregnant women with T1DM treated at our centre 2005–2024 (n=257). Analysis of a composite adverse pregnancy outcome (APO) endpoint and its individual components (preeclampsia, preterm birth, diabetic ketoacidosis, caesarean section, large-for-gestational-age (LGA), small-for-gestational-age (SGA), shoulder dystocia, and neonatal intensive care unit (NICU)-admission) over time (by year and pre- vs. post-technology implementation (2005–2015 vs. 2016–2024)). Impact evaluation of treatment modality (intensified insulin therapy (ICT) vs. insulin pump therapy) and glucose monitoring method (self-monitoring of blood glucose (SMBG) vs. continuous glucose monitoring (CGM)) on perinatal outcomes.

Results:
The APO rate remained high at 86.4%, without relevant changes along the observation period. Comparing the decades, since 2016, the rate of caesarean deliveries (72.7% vs. 57.0%, p=0.042) and the NICU admission (83.5% vs. 47.1%, p<0.001) were significantly reduced, while rates of LGA (24.3% vs. 38.0%, p=0.019) and preeclampsia (9,6% vs. 19,9%, p=0.024) increased significantly. Pump therapy, compared to ICT, corresponded with higher APO (90.7% vs. 80.6%, p=0.020) and LGA (37.7% vs. 24.3%, p=0.024) rates. However, modern automated pump systems showed a lower APO rate than conventional pump therapy (76.2% vs. 93.3%, p=0.032). CGM compared with SMBG, was associated with significantly reduced NICU admission (45.6% vs. 77.8%, p<0.001).

Conclusions:
Women with T1DM remain at high risk for adverse pregnancy outcomes. Modern diabetes technologies may improve selected outcomes, particularly NICU admission and caesarean section rates, however interdisciplinary, individualized care is essential.

PD042

A QUALITATIVE EVALUATION OF ANIMATED VIDEOS AS AN EDUCATIONAL TOOL IN ANTENATAL CARE FOR WOMEN WITH PRE-EXISTING DIABETES IN THE ETOS-DM STUDY

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Background/Aims

Given the substantial potential for digital health solutions, we explored how pregnant women with pre-existing diabetes use and experience short, animated videos in a smartphone app as an educational tool for diabetes management in antenatal care.

Materials and methods

We conducted semi-structured interviews with 14 pregnant women with type 1 (n=10) and type 2 (n=4) diabetes in late pregnancy. All had access to 15 animated videos with optional text via a smartphone app from early pregnancy, as part of the ETOS-DM RCT investigating the videos' impact on offspring birthweight. The videos covered dietary recommendations, glucose targets, weight gain, mental health and tips for self-adjustment of insulin dose for pens and pumps. Interviews were transcribed verbatim and analysed using thematic analysis with an abductive approach.

Results

The findings are presented under two themes: (1) video use and its influencing factors, and (2) the perceived impact and value of the videos. Most women frequently used the videos as an information resource between clinical consultations. Engagement was facilitated by trustworthiness of the app, motivation for knowledge and improved disease management, and quick answers to questions. Barriers included competing everyday demands, lower information needs (e.g. prior pregnancy experience) and preference for text-based formats. The videos were perceived as easy to understand and informative, also for partners. The format supported individual learning preferences through visual and auditory engagement with optional text support, and self-paced use (e.g. revisiting content). The women perceived the videos as improving their knowledge and confidence in self-managing changing insulin needs. The women valued close contact with healthcare professionals; however, some perceived a reduced need for contact between scheduled consultations.

Conclusions

The women perceived the educational videos as a trustworthy and easily understandable information resource for diabetes management during pregnancy, complementing clinical consultations and supporting their knowledge and confidence in self-management.

PD043

IDENTIFICATION AND MAPPING OF PATIENT-REPORTED OUTCOMES AND OVERALL QUALITY OF LIFE OUTCOMES IN PREGNANT WOMEN WITH PRE-EXISTING DIABETES: A SCOPING REVIEW

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1. **Background/Aims:** Pre-existing diabetes during pregnancy increases the risk of adverse outcomes, including high levels of diabetes-related distress, anxiety, and depression. However, patient-reported outcomes (PROs) are underrepresented in research among pregnant women with pre-existing diabetes. To support the use and standardization of PROs, this study provides an overview of PROs assessed in prior studies involving pregnant women with pre-existing diabetes.
2. **Material and methods:** Systematic searches were performed in Embase, Medline, PsycInfo, and Cochcrane Central, and identified studies were screened for eligibility. Subscales of patient-reported outcome measurements (PROMs) used in included studies were mapped into PRO (sub)domains.
3. **Results:** In total, 57 reports from 49 studies were eligible for inclusion. Across the included studies, 61 unique PROMs were identified. Most PROMs (n=46) were only included in one study and were not pregnancy- nor diabetes-specific. Only one of the identified PROMs was developed specifically for pregnant women with pre-existing diabetes. The majority of the PROMs assessed symptom status, with mental symptoms being most commonly assessed. Across studies, depressive symptoms were most commonly assessed, followed by symptoms of fear, anxiety, worry, and distress.
4. **Conclusions:** Various PROMs are used in research involving pregnant women with pre-existing diabetes, reflecting heterogeneity in PROs assessed. A lack of scales specifically developed for these women is concerning, as pregnant women face unique challenges. These findings highlight the need to support and standardize PROs in studies among pregnant women with pre-existing diabetes, and will be used to guide the development of a core outcome set.

PD044

GLYCEMIC CONTROL AND PREGNANCY OUTCOMES IN PREGNANT WOMEN WITH TYPE 1 DIABETES TREATED WITH INSULIN PUMPS ACCORDING TO DIABETES DURATION AND VASCULAR COMPLICATIONS.

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Background/Aims

Women with long-lasting type 1 diabetes (T1D) and vascular complications represent a high-risk subgroup during pregnancy. We aimed to compare glycemic control and pregnancy outcomes in women with T1D treated with insulin pumps, stratified by baseline clinical severity: White class B/C versus D/R/F.

Materials and methods

We conducted a single-center retrospective cohort study including 197 pregnant women with T1D treated with insulin pumps. The study group was divided into women with White class B/C (diabetes duration <20 years and no vascular complications; n = 94) and women with White class D/R/F (long-lasting diabetes and/or vascular complications; n = 103). Clinical characteristics, HbA1c, continuous glucose monitoring (CGM) metrics, insulin requirements, and perinatal outcomes were compared across pregnancy.

Results

HbA1c values did not differ significantly in any of the analyzed trimesters. However, CGM revealed consistently poorer glycemic control in the D/R/F group. Mean time in range (63–140 mg/dL) was significantly lower in the D/R/F group in all trimesters: 68.5% vs 73.4% in the first trimester (p = 0.007), 69.6% vs 73.7% in the second trimester (p = 0.018), and 73.2% vs 78.8% in the third trimester (p = 0.014). The D/R/F group also showed greater glucose variability and higher exposure to hyperglycemia, reflected by higher SD, CV, MAGE, MODD, ADRR, and TAR values. Total daily insulin dose was higher in the D/R/F group at weeks 10 and 20 of pregnancy. They also had a higher rate of caesarean delivery, predominantly due to elective procedures, preterm birth, and significantly lower birthweight. No significant between-group differences were found in large-for-gestational-age rate, neonatal hypoglycemia, jaundice, or transient tachypnea of the newborn.

Conclusions

Pregnant women with long-lasting T1D and/or vascular complications had worse CGM-derived glycemic control throughout pregnancy despite similar HbA1c values, and were more likely to experience less favorable obstetric outcomes.

PD045

IMPACT OF USING 3.5 VS 3.9 MMOL/L CGM LOWER THRESHOLDS IN WOMEN WITH TYPE 1 DIABETES PLANNING PREGNANCY

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Background and aims: Recent consensus recommendations suggest using pregnancy-specific glucometrics in preconception optimization. However, applying the pregnancy lower target threshold in the non-pregnant state may underestimate hypoglycemia risk.
We aimed to assess the impact of using CGM lower threshold of 3.5 versus 3.9 mmol/L on time below range (TBR) and apparent glycemic regulation in women with Type 1 diabetes (T1D) planning or not planning pregnancy.
Materials and methods: We analyzed 14-day CGM metrics in 40 women with T1D (20 planning, 20 not planning pregnancy), matched by age (±5 years). Recommended targets for women planning or not planning pregnancy were 3.9–7.8 mmol/L and 3.9–10 mmol/L respectively. Outcomes: Average glucose, $TBR1_{<3.9}$, $TBRp_{<3.5}$, $TBR2_{<3.0}$. Statistics: McNemar and Wilcoxon signed-rank test for paired samples.
Results:
In women planning pregnancy, average age was 38 years (34-41.3), T1D duration 10.5 years (5.0-22), BMI 22.7 kg/m^2 (21.2 - 25.6), 16/20 (80%) used hybrid closed-loop. In women not planning pregnancy, only BMI differed (25.7). Average glucose and TBR outcomes are displayed in the table.

	Women planning pregnancy		Women not planning pregnancy		p, planning vs not
	Median or %	P_{25-75} or n/N	Median or %	P_{25-75} or n/N	
Glucose (mmol/L)	7.2	6.6–7.6	8.2	7.8–9.0	<0.001
$TBR1_{<3.9\ (\%)}$	4.5	3.0–6.0	2.0	0–4.8	0.052
$TBRp_{<3.5\ (\%)}$	2.0	1.0–3.0	1.0	0–2	0.045
$TBR2_{<3.0\ (\%)}$	1.0	0–1.0	0	0–0.75	0.026
$TBR1_{<3.9\ (women\ not\ meeting\ target)}$	60%	12/20	30%	6/20	0.146
$TBRp_{<3.5\ (women\ not\ meeting\ target)}$	15%*	3/20	15%	3/20	1
$TBR2_{<3.0\ (women\ not\ meeting\ target)}$	70%	14/20	25%	5/20	0.022

*p <0.05 vs $TBR1_{<3.9}$
Conclusion: In women with T1D planning pregnancy,

- Glycemic regulation is tighter than in peers, at cost of increased clinically relevant hypoglycemia.
- Changing the recommended lower cut-off to 3.5 mmol/L may give false reassurance and would likely increase TBR outcomes.

PD046

CARE FOR TYPE 1 DIABETES IN PREGNANCY: REAL WORLD USE OF HYBRID CLOSED LOOP MEDTRONIC 780G SYSTEM IN A SINGLE CENTRE MATERNITY HOSPITAL

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Background/Aims

Hybrid closed loop (HCL) therapy results in varied improvements of glucose control in pregnant individuals living with type 1 diabetes (T1D) depending on the system used. Access to HCL systems licensed for pregnancy varies globally. We aimed to describe real world pregnancy outcomes in patients using the Medtronic 780G HCL compared to a group using continuous glucose monitoring (CGM) and multiple daily injection (MDI) in addition to describing glucose control at delivery and in the postpartum period. We also reviewed adherence rates to manufacturer recommended settings.

Materials and methods

A retrospective analysis was conducted of glycaemic and pregnancy outcome data in those with T1D attending our unit from 2023-2025. Women with T1D using CGM and MDI formed a comparative group. Glycaemic control was assessed using HbA1c and CGM-derived glucometrics with time in range (TIRp) specified as 3.5-7.8mmol/l. Neonatal outcomes included rates of large for gestational age (LGA) and neonatal hypoglycaemia (NH).

Results

A total of 36 pregnancies were included; 16 HCL and 20 CGM. There was no significant difference in HbA1c. Mean TIRp was higher in the HCL group at 9-12weeks (66±9% vs. 56±13%, p=0.026) and 20-23weeks gestation (65±8% vs. 54±16%, p=0.014) but otherwise similar through gestation and delivery. Six patients tolerated optimised target glucose of 5.5mmol/l and AIT of 2 hours from booking to 36 weeks. One week postpartum, TIR (3.9-10mmol/l) was higher in the HCL group (90±5% vs. 76±11%, p<0.001) with lower TBR (2±2% vs. 5±3%, p=0.004). There was no difference in rates of LGA, NH, NICU admission, Caesarean or preterm delivery (all p>0.05).

Conclusions

The Medtronic 780G system did not significantly improve antepartum glucose control however did improve postpartum glucose control and reduce hypoglycaemia. Optimising device settings for pregnancy while individualising care based on hyperemesis and hypoglycaemia was challenging in this real world care setting.

PD047

IMPACT OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSION ON EXTRAPOLATED TIME IN RANGE IN PREGNANCIES COMPLICATED BY TYPE 1 DIABETES

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Background/Objective: Pregnant women with type 1 diabetes (T1D) have increased risk of adverse outcomes, mitigated by improved glycemic control and higher time in range (TIR). Continuous subcutaneous insulin infusion (CSII) can improve control, but its cost and limited availability often restrict use to more severe cases, reducing comparability with multiple daily injections (MDI) in real-world studies. We evaluated metabolic changes in pregnant women with T1D by comparing extrapolated TIR (from self-monitoring of blood glucose, SMBG) before and after CSII initiation.

Methods: Retrospective observational before-and-after study with paired within-subject analysis of singleton pregnancies with live births without malformations, with antenatal care initiated <20 weeks' gestation (2010–2024). CSII was prescribed during pregnancy due to previous nephropathy and/or symptomatic recurrent hypoglycemia and/or marked glycemic variability despite supervised diet. Seven-point daily SMBG data were analyzed over 14 days before and 14 days after CSII initiation. Outcomes were extrapolated time in range (Etir 63–140 mg/Dl), time below range (Etbr), and time above range (Etar). Pre- vs post-CSII values were compared using paired t-tests ($p<0.05$).

Results: Forty-two pregnant women were included. After CSII initiation, mean glucose decreased by 10.5 mg/Dl (95%CI 2.60–18.44). Etar decreased by 8.81% (95%CI 2.81–14.81) and Etbr decreased by 5.55% (95%CI 3.55–7.55). Etir increased by 14.14%.

Conclusions: CSII initiation during pregnancy in women with T1D was associated with significant improvement in glycemic control, with lower mean glucose, reduced time above and below target, and increased time in range, supporting CSII as a valuable strategy for difficult-to-manage T1D in pregnancy.

PD048

AUTOMATED INSULIN DELIVERY IN A HIGH-RISK PREGNANCY WITH TYPE 2 DIABETES: A CASE REPORT

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Case Report

Case Report We report the case of a 41-year-old G6P2 woman referred at 23+5 weeks of gestation with pre-existing type 2 diabetes mellitus, chronic arterial hypertension, and obesity (initial BMI 35.29 kg/m²). At presentation, HbA1c was 9.0%. Glucose-lowering therapy consisted of insulin lispro as needed, insulin glargine 40 IU at bedtime, and metformin 1000 mg twice daily. Until referral, glycemic monitoring had been limited to self-monitoring of blood glucose. Antihypertensive therapy initially consisted of nifedipine and was subsequently intensified by the addition of methyldopa and metoprolol.

After initiation of continuous glucose monitoring, glycemic control was found to be profoundly inadequate, with a mean glucose of 269 mg/dL, time in range (TIR) of 5%, time above range (TAR) of 95%, and a glucose management indicator (GMI) of 9.7%. Insulin therapy was markedly intensified prior to pump initiation; however, glycemic control remained suboptimal, partly owing to limited treatment adherence. At 30+0 weeks of gestation, therapy was escalated to continuous subcutaneous insulin infusion using YpsoPump CamAPS FX. This resulted in marked improvement in glycemic control, with TIR increasing to 46% and mean glucose decreasing to 142 mg/dL.

From 30+0 weeks onward, placental insufficiency with pathological fetal Doppler findings became evident. At 32+3 weeks of gestation, Doppler assessment demonstrated absent/reversed end-diastolic flow in the umbilical artery and a ductus venosus pulsatility index above the 95th percentile. In the presence of a suspicious cardiotocogram and previous cesarean delivery, repeat cesarean section was performed.

A female infant was delivered with a birth weight of 1600 g (18th percentile) and a neonatal arterial pH of 7.16. The newborn required admission to the neonatal intensive care unit because of prematurity.

Conclusion

This case suggests that insulin pump therapy with algorithm-based support may also be beneficial in selected pregnant women with type 2 diabetes mellitus

PD049

UNDERSTANDING BARRIERS AND FACILITATORS TO PARTICIPATION IN GESTATIONAL DIABETES RESEARCH AMONG BLACK WOMEN: A COMMUNITY-PARTNERED PPIE STUDY WITHIN THE UNICORN COHORT

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Background and aims

Women of Black ethnicity experience a disproportionate burden of gestational diabetes mellitus (GDM) and its associated complications, yet remain underrepresented in pregnancy research. This mismatch risks generating evidence that does not fully reflect populations most affected. This study aimed to explore barriers and facilitators to research participation among Black women and to evaluate a community-partnered patient and public involvement and engagement (PPIE) approach embedded within the UNiCoRN pregnancy cohort.

Materials and methods

A community-partnered PPIE model was developed between the UNiCoRN study and Diabetes Africa. Engagement sessions were conducted in community settings to facilitate open and accessible discussion. Participants were invited to share their perspectives on research participation, awareness of GDM and metabolic health, trust in research processes, and experiences of healthcare engagement. Data were documented and thematically analysed to identify key barriers, facilitators, and recommendations to inform study design, recruitment strategies, and communication approaches.

Results

Thematic analysis identified five key themes influencing research participation: (1) trust and perceptions of research, (2) cultural relevance and representation, (3) structural burden and accessibility, (4) awareness and communication, and (5) motivations and community influence.

Trust emerged as a central factor, with participants expressing concerns around being treated as "specimens" and highlighting the influence of family and peer perceptions. Cultural relevance was consistently emphasised, with participants identifying the importance of engaging with staff who reflect or understand their lived experiences. Current research tools, including dietary assessments, were perceived as insufficiently tailored to diverse populations, contributing to participant fatigue and potential inaccuracies in data collection.

Limited awareness of GDM and metabolic health contributed to disengagement, while improved understanding increased willingness to participate. Motivations to engage included a desire to address health inequalities and improve outcomes within their communities. Participants highlighted the importance of community-based engagement, peer advocacy, and culturally sensitive communication in building trust and improving participation.

Conclusion

A community-partnered PPIE approach embedded within a large pregnancy cohort provides valuable insight into the barriers and facilitators influencing research participation among Black women. Addressing issues of trust, cultural relevance, and accessibility is critical to improving engagement and ensuring research is inclusive and representative. Embedding community-informed approaches within study design may support more equitable participation and enhance the validity and impact of gestational diabetes research.

PD050

ASSOCIATIONS BETWEEN SELF-EFFICACY, CONSCIENTIOUSNESS PERSONALITY TRAIT, AND HEALTH LITERACY WITH METABOLIC AND MENTAL HEALTH IN WOMEN WITH GESTATIONAL DIABETES MELLITUS IN THE PERINATAL PERIOD: A PROSPECTIVE STUDY

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Background/Aims
Effective management of gestational diabetes mellitus (GDM) requires sustained behavioural changes, especially in diet and weight gain regulation. Psychosocial factors such as self-efficacy, conscientiousness personality trait, and health literacy may improve successful GDM management, yet their combined and prospective roles in individuals with GDM remains scarce. The study investigated changes of psychosocial factors and their associations with mental and metabolic health outcomes across the perinatal period in women with GDM.
Materials and methods
This secondary observational study included 211 participants from the MySweetheart trial. Psychosocial factors included dietary (Diet-SE), physical activity (PA-SE), social support (Social-SE) self-efficacy, conscientiousness (Big5C), and health literacy (HL). Outcomes included body mass index (BMI), intuitive eating (Reliance on Hunger and Satiety Cues and Eating for Physical rather than Emotional Reasons), and depressive symptoms (EPDS score). Both psychosocial factors and outcomes were assessed during pregnancy (24-32 of gestational age) and at 1-year postpartum. They did not differ based on group allocation. Regression models were adjusted for group allocation and relevant covariates.
Results
Psychosocial factors (SE, Big5C) did not change over the perinatal period (all p≥.123). Higher Diet-SE, Social-SE and Big5C were associated with healthier eating behaviors during pregnancy and at 1-year postpartum (all p≤0.040). Only Diet-SE was associated with lower BMI in the postpartum (p=0.003). All psychosocial factors were associated with lower depressive symptoms in the postpartum, while Social-SE, Big5C, and HL were also associated with lower depressive symptoms during pregnancy (all p≤0.030). Longitudinally, Diet-SE emerged as the strongest independent predictor of healthier eating behavior at 1-year postpartum (all p≤0.035).
Conclusions
Diet-SE, Social-SE, and conscientiousness were consistently associated with healthier eating behaviour during the perinatal period. All psychosocial factors were associated with lower depression scores, with Social-SE, conscientiousness, and HL playing a stronger role. This highlights the importance of social and psychological aspects.

PD051

CURRENT STATUS OF SOCIAL JETLAG AND ITS INFLUENCING FACTORS AMONG PREGNANT WOMEN WITH GESTATIONAL DIABETES MELLITUS

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Aims: To examine the prevalence of social jetlag (SJL) among pregnant women with gestational diabetes mellitus (GDM) and to identify its associated factors.
Methods: In this cross-sectional study, 200 hospitalized pregnant women with GDM were recruited by convenience sampling between October and December 2023. Data were collected using a self-designed general information questionnaire, the Munich Chronotype Questionnaire, the Self-Regulation Fatigue Scale, and the GDM Quality of Life Scale.
Results: The prevalence of SJL ≥1 h among pregnant women with GDM was 40.0%. Significant differences in SJL were found according to age, pre-pregnancy body mass index (BMI), gravidity and parity, family history of diabetes, occupational type, and pre-pregnancy alcohol consumption (all $P < 0.05$). SJL was positively correlated with self-regulation fatigue ($r = 0.39$, $P < 0.05$) and negatively correlated with quality of life ($r = -0.42$, $P < 0.05$). Stepwise multiple regression analysis identified age <35 years, family history of diabetes, pre-pregnancy alcohol consumption, employment as a civil servant or in a public institution, self-regulation fatigue, and quality of life as significant factors associated with SJL in pregnant women with GDM.
Conclusions: SJL ≥1 h is common among pregnant women with GDM. Greater attention should be paid to relevant risk factors during clinical assessment, and individualized interventions should be developed for high-risk groups to improve sleep patterns, support metabolic control, and reduce adverse pregnancy outcomes.

PD052

LONG-TERM DYSGLYCEMIA IN WOMEN WITH GESTATIONAL DIABETES: RELEVANCE OF 1-HOUR POST-LOAD GLUCOSE

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Background and aim: Elevated 1-hour plasma glucose (1hPG) during a 75 g OGTT is linked to impaired insulin indices and higher long-term vascular risk, even with normal fasting and 2-hour PG. As a more sensitive marker than traditional criteria, the 2024 IDF guidelines include 1hPG thresholds (≥155 mg/dL for intermediate hyperglycemia (IH), ≥209 mg/dL for diabetes (DM)). However, its impact on long-term dysglycemia diagnosis in women with gestational diabetes (GDM) remains unclear.
We aim to evaluate the time to dysglycemia diagnosis in women with GDM followed long-term, using IDF 2024 criteria (fasting+1hPG), Expert Committee 2003 criteria (EC2003; fasting+2hPG), or either of the two, and to identify predictive variables.
Materials and Methods: Survival analysis until diagnosis of postpartum DM or IH/DM in 2,731 women with GDM according to EC2003, IDF 2024, or either criteria (EC2003/IDF2024). Evaluation of dysglycemia predictors . Statistical analysis: Kaplan–Meier curves; Cox regression analysis to identify intragestational predictors of IH/DM.
Results: At the beginning of pregnancy, mean age was 32.3 years, and body mass index (BMI) was 24.2 kg/m²; 98.6% were Caucasian.
The table shows the survival analysis until dysglycemia diagnosis according to diagnostic criteria:

	N	Time to dysglycemia (years)	
		Median	Confidence interval 95%
DM			
EC2003	2723	17.8	17.4 – 18.3
IDF2024	2722	11.9	10.8 – 13.0
EC2003/IDF2024	2703	11.9	10.7 – 13.1
HI/DM			
EC2003	2731	7.7	7.3 – 8.1
IDF2024	2731	4.3	3.5 – 5.0
EC2003/IDF2024	2703	3.9	3.2 – 4.6

The risk of postpartum IH/DM increased with non-Caucasian ethnicity, prior GDM, higher maternal age and BMI, pregestational smoking, and higher 2hPG in the intragestational OGTT.
Conclusion: In women with GDM:
• Postpartum glucose tolerance assessment, including 1hPG after glucose load, significantly reduces the time to dysglycemia diagnosis.
• Higher 2hPG during pregnancy, and personal and clinical characteristics are pedictors of the risk of IH/DM at follow-up.

PD053

ASSOCIATION BETWEEN INSULIN RESISTANCE TRAJECTORIES AND PERINATAL COMPLICATIONS: A RETROSPECTIVE COHORT STUDY

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Background :

During pregnancy, the maternal body undergoes adaptive regulation to support the normal growth and development of the fetus, such as insulin resistance (IR). When the degree of IR progresses continuously and is significantly higher than the normal range in the corresponding period, it will increase the risk of perinatal complications, including gestational diabetes mellitus (GDM) and hypertensive disorders of pregnancy (HDP). The study is to investigate the correlation and influenced factors between different levels of IR during pregnancy and adverse pregnancy outcomes, and to identify the critical threshold for risk stratification of pathological IR.

Material and methods :

By applying the Group-based Trajectory Model, the trajectories' classification based on IR index changes was constructed, including fasting serum insulin (FINS), insulin resistance homeostasis model assessment (HOMA-IR), and the quantitative insulin sensitivity check index (QUICKI), to analyze the differences in the differentiation of IR evaluation indicators. We used the Poisson Regression Model to analyze the correlation between various IR changing trajectories and adverse pregnancy outcomes.

Results :

Four gradient differences in IR change trajectories were fitted in the population using three IR evaluation indicators respectively, including low level, moderate level, high level and low-high level. For FINS trajectories, the GDM risk of the moderate level trajectory (aRR 1.73, 95% CI 1.21-2.47) and the high level trajectory (aRR 2.40, 95% CI 1.58-3.65) showed a gradient increase. The low-high level trajectory, which only sharply increased in late pregnancy, exhibited a significantly higher difference in HDP risk (aRR 6.45, 95% CI 1.78-23.33) compared to the high level (aRR 5.86, 95% CI 2.41-14.25). In this study, the early pregnancy IR value of the population was used to predict GDM exhibited similar predictive ability (AUC 0.607, P<0.001). For predicting HDP, FINS showed the highest AUC value of 0.740 (P<0.001), comparing to HOMA-IR and QUICKI showed slightly lower AUC values of 0.73.

Conclusion :

There are various subtypes of IR trajectories in pregnant women, which are significantly correlated with adverse pregnancy outcomes.

PD054

NONINVASIVE RETINAL FEATURES FOR EARLY PREDICTION OF GESTATIONAL DIABETES MELLITUS

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Background Gestational diabetes mellitus (GDM) is the most common complication during pregnancy and early risk prediction enables timely intervention. However, most of the existing biomarkers require invasive blood sampling and are costly, limiting routine clinical practice. This study aimed to assess whether non-invasive retinal parameters could improve the predictive performance of established models for GDM.

Material and Methods This prospective cohort study collected demographic characteristics, glycolipid metabolism indices, and retinal parameters at 11-13+6 weeks of gestation at a tertiary hospital. GDM was diagnosed by oral glucose tolerance test at 24-28 weeks. Variables were selected using LASSO regression. Six machine learning algorithms were employed to develop the LIGHT (LIpid+Glucose+opHthalmic+maTernal factors) model incorporating baseline, glycolipid metabolism and retinal features. Model performance was assessed by the area under the receiver-operating-characteristic curve (AUC) and interpreted by the Shapley Additive Explanation method. We compared LIGHT model with (1) Baseline model based on demographic characteristics, (2) Glycolipid model including baseline and glycolipid metabolism features, and (3) Eye model using baseline and retinal features.

Results Of the 2114 participants, 1774 pregnancies were included in the final analysis. Sixteen variables including six baseline variables, three glycolipid metabolism variables, and seven retinal features were selected for model development. The categorical boosting performed best among the machine learning algorithms. The LIGHT model achieved an AUC of 0.75 (95% CI 0.69-0.82), which outperformed the Baseline model (AUC 0.71, 95% CI 0.64-0.79), Glycolipid model (AUC 0.74, 95% CI 0.68-0.81), and the Eye model (AUC 0.72, 95% CI 0.66-0.79). Furthermore, the Eye model indicated performance comparable to the Glycolipid model.

Conclusions The LIGHT model demonstrates the potential of retinal features as a non-invasive, accessible and low-cost biomarker, which improve the predictive performance of GDM model. The study presents retinal photography as a highly implementable method for GDM screening.

PD055

IMPACT OF MATERNAL OBESITY ON THE RISK OF LARGE-FOR-GESTATIONAL-AGE NEWBORNS IN WOMEN WITH GESTATIONAL DIABETES

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Background/Aims

Maternal obesity and gestational diabetes mellitus (GDM) are increasingly prevalent conditions associated with adverse perinatal outcomes. Both have been linked to excessive fetal growth, and their coexistence may potentiate this effect. This study aimed to evaluate the association between maternal body mass index (BMI) and the occurrence of large-for gestational-age (LGA) newborns in women with GDM.

Materials and methods

This retrospective cohort study included women with GDM followed at the Obstetrics Clinic of the Hospital das Clinicas, University of Sao Paulo School of Medicine (HCFMUSP), between January 2012 and March 2020 (CAAE: 48868915.9.0000.0068). Inclusion criteria were singleton pregnancy, GDMdiagnosis according to IADPSGcriteria, and availability of maternal BMI and neonatal birthweight percentile. Participants were classified as eutrophic (BMI 18.5–24.9 kg/m²), overweight (25–29.9 kg/m²), or obese (≥30 kg/m²). The primary outcome was LGA newborn. Comparisons between groups were performed using appropriate statistical tests, and multivariate logistic regression was used to identify independent predictors.

Results

A total of 1,684 women were included: 412 eutrophic, 573 overweight, and 699 obese. The frequency of LGA increased progressively across BMI categories (3.4%, 5.6%, and 10.2%, respectively; p<0.001). In multivariate analysis, maternal obesity was independently associated with increased odds of LGA (OR=2.96; 95% CI 1.56–5.59; p<0.001), while overweight was not significantly associated with the outcome (OR=1.64; 95% CI 0.82–3.27; p=0.159). Polycystic ovary syndrome was also independently associated with LGA (OR=1.86; 95% CI 1.06–3.27; p=0.031).

Conclusions

Maternal obesity, but not overweight, was independently associated with increased risk of LGA in women with GDM. These findings suggest that the impact of maternal BMI on fetal overgrowth is primarily driven by obesity, highlighting the importance of preconception weight optimization to improve neonatal outcomes.

Variable	Eutrophic (n=412)	Overweight (n=573)	Obese (n=699)	p
Age (years) (n=1684)	31.5 ± 6.7[a]	33.4 ± 5.9[b]	32.8 ± 5.7[b]	<0.001
BMI (kg/m²) (n=1684)	22.6 ± 1.65[a]	27.4 ± 1.44[b]	35.7 ± 5.16[c]	<0.001
Fasting glucose (mg/dL) (n=1578)	87.6 ± 10.9[a]	88.9 ± 10.4[a]	93.4 ± 10.5[b]	<0.001
OGTT 0 min (mg/dL) (n=802)	88.1 ± 10.4[a]	89.8 ± 11.0[a]	93.9 ± 13.3[b]	<0.001
OGTT 1 h (mg/dL) (n=780)	162 ± 33.3[a]	164 ± 30.9[a]	169 ± 34.8[b]	0.039
OGTT 2 h (mg/dL) (n=788)	153 ± 31.3	154 ± 30.4	156 ± 37.1	0.494
Gestational age at delivery (n=1671)	37w6d ± 15d[a]	38w2d ± 14d[b]	38w ± 14d[ab]	0.040
Birthweight (g) (n=1684)	2942 ± 592[a]	3101 ± 603[b]	3156 ± 637[b]	<0.001
LGA newborn (%) (n=1684)	3.4[a]	5.6[ab]	10.2[b]	<0.001
Family history of diabetes (%) (n=1683)	48.1[a]	53.8[ab]	64.6[b]	<0.001
Previous GDM (%) (n=1237)	9.7[a]	13.1[ab]	17.0[b]	0.015
Chronic hypertension (%) (n=1684)	10.9[a]	20.2[b]	46.6[c]	<0.001
Polycystic ovary syndrome (%) (n=1558)	5.3[a]	5.6[a]	12.9[b]	<0.001
Systemic lupus erythematosus (%) (n=1668)	4.7[a]	3.3[ab]	1.7[b]	0.019
Diagnosis by fasting glucose (%) (n=1684)	43.4[a]	48.2[a]	61.1[b]	<0.001
Insulin treatment (%) (n=1682)	14.4[a]	17.5[a]	27.0[b]	<0.001
Female newborn (%) (n=1684)	46.6	47.5	49.9	0.503

Values are expressed as mean ± standard deviation or percentage. Different superscript letters indicate statistically significant differences between groups (ANOVA with Games-Howell post hoc test or chi-square test with standardized residuals).

Variable	Adjusted OR	95% CI	p
Maternal BMI			
Overweight vs eutrophic	1.64	0.82 – 3.27	0.159
Obese vs eutrophic	2.96	1.56 – 5.59	<0.001
Polycystic ovary syndrome (yes vs no)	1.86	1.06 – 3.27	0.031
Treatment (insulin vs diet)	1.55	1.00 – 2.41	0.052
Age (years)	1.02	0.99 – 1.06	0.261

Binary logistic regression with LGA newborn as the outcome. OR: adjusted odds ratio. The model was adjusted for maternal age, polycystic ovary syndrome, and type of treatment.

PD056

IS GESTATIONAL DIABETES IN TWIN PREGNANCIES DIFFERENT FROM GESTATIONAL DIABETES IN SINGLETON PREGANCIES?

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Background: Screening and diagnostic protocols are well established for singleton pregnancies. However, in twin pregnancies, the recommended management remains identical to that for singleton pregnancies. Although complications related to large-for-gestational-age (LGA) fetuses are rare in twin pregnancies, insulin resistance is more pronounced. There is little data in the literature specifically regarding this population.

Materials and Methods: A single-center retrospective study evaluating management protocols and maternal-fetal complications between 20217 and 2024. Gestational diabetes was defined according to IADPSG criteria based on risk factor screening. We performed a 1:2 matching based on BMI, age, and parity. Metabolic and obstetric data were collected from medical records.

Results: We included 139 cases of GDM in twin pregnancies and 278 cases in singleton pregnancies. Early-onset GDM was diagnosed in 53.6% of twin pregnancies compared to 51.3% of singleton pregnancies. The percentage of patients receiving insulin therapy was 30.9% and 32.6% in each group, respectively. Gestational age was 36.1 ± 3 weeks in the twin pregnancy group and 39.3 ± 1.5 weeks in the singleton pregnancy group. We were able to demonstrate that there is an increased risk of cesarean section ($p<0.001$), transfert in neonatal unit ($p<0.001$), and SGA ($p<0.0001$) in DG cases with twin pregnancies. However, there is a protective effect against LGA in twin pregnancies ($p<0.001$) . More specific analyses in the early and late GDM groups are currently underway.

Conclusion: These results show that maternal and fetal risks are more often inherent to twin pregnancy than to gestational diabetes. It is important to have additional data to propose more personalized management of these twin pregnancies with GDM

PD057

FOR WOMEN WITHOUT EARLY-ONSET GESTATIONAL HYPERGLYCAEMIA, SHOULD SELECTIVE OR UNIVERSAL SCREENING BE CONSIDERED AFTER 22 WEEKS' GESTATION? A REAL-WORLD EVALUATION OF THE FRENCH RECOMMENDATIONS.

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1. Background/Aims

In the presence of a risk factor (RF), screening for undiagnosed type 2 diabetes in early pregnancy leads to the identification of early intermediate hyperglycaemia (fasting plasma glucose ≥ 0.92-1.25 g/L), which is immediately managed in France. After 24 weeks' gestation (WG), selective screening is currently recommended (at least one RF among age ≥35 years, BMI ≥25 kg/m², family history of diabetes, personal history of gestational hyperglycaemia (GH) or macrosomic infant). Our aim was to evaluate this approach against universal screening.

2. Material and methods

Screening for HG is routinely recommended at our university hospital. We selected 4,019 singleton pregnancies from the period 2012–2016 that had no pre-existing diabetes, no HG before 22 WG, and underwent universal screening after 22 WG. We formed four groups (- depicts no; + yes): GH-RF- / GH-RF+ / GH+RF- / GH+RF+.

3. Results

The distribution of GH (n=578 (14.4%)) and women with at least one RF (n=2775 (69.1%)) was as follows: GH-RF- (n=1137 (28.8%)), GH-RF+ (n=2306 (57.4%)), GH+RF- (n=109 (2.6%); 22.5% on insulin), GH+RF+ (n=469, 11.7%; 29.4% on insulin). The sensitivity of selective screening to identify GH was 81.1%. The incidence of the composite endpoint (pre-eclampsia or macrosomia or shoulder dystocia or neonatal hypoglycaemia) differed (p<0.0001) between groups: GH-RF- 6.6%; GH-RF+ 13.3%; GH+RF- 9.9%; GH+RF+ 21.4% (GH effect p<0.001, RF effect <0.001, no GH.RF interaction p=0.72).

4. Conclusions

Selective screening after 22 WG results in approximately one in five GH being missed, although the prognosis for these is very good when they receive appropriate care. The poor prognosis associated with RF suggests that preconception weight management (the only modifiable risk factor) could improve the prognosis.

Evenements de grossesse selon le statut glycémique et des facteurs de risque

PNG, BMP, GIF, JPG, JPEG

n	HG -	HG -	HG +	HG +	Effet global			
	RF -	RF +	RF -	RF +		Effet HG	Effet FDR	Interaction DGxFDR
Critère composite :	n=1137	n=2306	n=109	n=469				
Prééclampsie ou LGA ou dystocie des épaules ou hypoglycémie néonatale (%)	6.6%	13.3%	9.9%	21.4%	< 0.001	<0.001	< 0.001	0.72
Evénements néonataux								
Prééclampsie (%)	1.1%	1.8%	1.8%	2.1%	< 0.001	0.46	< 0.01	0.72
LGA (%)	5.3%	11.2%	7.2%	17.6%	< 0.001	<0.05	< 0.001	0.64
SGA (%)	12.9%	8.5%	9.9%	8.9%	< 0.001	0.50	0.12	0.35
Dystocie des épaules (%)	0.0%	0.3%	0.9%	0.0%	0.9202			
Terme d'accouchement (SA) Prématurité (%)	36 ± 3 4.7%	37 ± 3 4.6%	36 ± 6 4.5%	38 ± 2 7.1%	<.0001 0.028	0.41 0.367	0.39 0.244	0.34 0.207
Hospitalisation néonatale (%)	16.2%	18.6%	23.4%	21.4%	<.0001	<0.05	0.85	0.28
Détresse respiratoire (%)	4.8%	4.5%	9.0%	4.6%	<.0001	0.12	0.06	0.13
Décès fetal ou néonatal (%)	0.2%	0.3%	0.0%	0.0%	0.90			
Malformation (%)	0.6%	1.0%	1.8%	0.8%	<.0001	0.36	0.76	0.19
Hypoglycémie néonatale (%)	0.6%	0.4%	0.0%	2.8%	0.93			
Ictère néonatal (%)	2.2%	1.7%	0.9%	1.9%	<.0001	0.45	0.65	0.39
Evénements maternels								
Prééclampsie (%)	1.1%	1.8%	1.8%	2.1%	<0.001	0.46	< 0.01	0.72
Césarienne (%)	15.7%	22.4%	20.7%	26.1%	<0.001	<0.05	< 0.01	0.63
Prise de poids pendant la grossesse (kg)	11.8 ± 5.0	11.4 ± 5.6	11.2 ± 4.9	9.6 ± 5.4	<0.001	<0.0001	<0.05	0.1650
Insulinothérapie (%)	-	-	22.5%	29.4%	-	-	< 0.01	-

HG : diabète gestationnel; FDR : au moins un des 5 facteurs de risque ; LGA : bébé de poids élevé pour l'âge gestationnel ; SGA : bébé de poids bas pour l'âge gestationnel

PD058

COMPARISON OF FIRST-TRIMESTER RISK FACTORS IN GESTATIONAL DIABETES MELLITUS AND PREECLAMPSIA SUBTYPES

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Aims: To characterize independent risk factors among gestational diabetes mellitus (GDM), preeclampsia (PE) complicated by GDM and PE without GDM.
Materials and Methods: From June 2024 to June 2025, participants were recruited at the Maternal and Child Health Hospital of Guangxi Zhuang Autonomous Region and classified into controls, GDM-only, PE-GDM, and PE-non-GDM. Maternal characteristics, medical history, first-trimester mean arterial pressure (MAP), and placental growth factor (PlGF) were compared using Kruskal-Wallis, χ^2, or Fisher's exact test. Post-hoc comparisons were adjusted with Dunn or Bonferroni correction. Multinomial logistic regression identified independent risk factors adjusting for age and primiparity.
Results: Of 2,174 participants, 466 (21.4%) developed GDM and 91 (4.2%) developed PE. Significant inter-group differences were observed in maternal age, pre-pregnancy BMI (pre-BMI), chronic hypertension history, PCOS, gestational hypertension history, PE history, GDM history, in vitro fertilization (IVF), MAP and PlGF (all $P < 0.05$). MAP was higher in all three case groups than controls, and higher in both PE subgroups than GDM-only. Compared with controls and GDM-only, both PE subgroups had lower PlGF, while PE-non-GDM additionally showed a higher prevalence of gestational hypertension history (all adjusted-$P < 0.05$). Multinomial logistic regression identified pre-BMI (aOR 1.10), PCOS (aOR 1.59), gestational hypertension history (aOR 1.81), GDM history (aOR 3.47) and MAP (aOR 1.05) as independent risk factors for GDM-only. Both PE subgroups shared pre-BMI (aOR 1.23, 1.21), PCOS (aOR 5.00, 3.06), gestational hypertension history (aOR 7.84, 12.84), chronic hypertension history (aOR 20.85, 8.14), PE history (aOR 10.47, 12.06), MAP (aOR 1.17, 1.14) and PlGF (aOR 0.97, 0.98) as independent risk factors (all $P < 0.05$).
Conclusions: Most first-trimester risk factors were shared between PE and GDM, implying a common underlying pathogenesis. Conversely, the distinct risk factors suggest that individual consultation is necessary for the identification of high-risk populations.

PD059

GLYCEMIC RESPONSES AND MANAGEMENT STRATEGIES FOLLOWING ANTENATAL CORTICOSTEROIDS IN GESTATIONAL DIABETES: A SYSTEMATIC REVIEW

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Background: Antenatal corticosteroids (ACS) are administered to improve fetal lung maturation in pregnancies at risk of preterm delivery. In individuals with gestational diabetes mellitus (GDM), this benefit must be balanced against steroid-induced worsening of maternal glycemia, leading to potential maternal and neonatal complications. Despite the frequency of this scenario, recommendations for post-ACS glucose management and treatment escalation remain limited.
Aims: To characterize maternal glycemic trajectories and treatment approaches after ACS administration in pregnancies complicated by GDM.
Material and Methods: Embase, MEDLINE, and CENTRAL were systematically searched in October 2025 following PRISMA guidance. Eligible studies included individuals with GDM exposed to ACS and reported glycemic outcomes, glucose monitoring, and/or pharmacologic management strategies.
Results: Twenty studies met inclusion criteria. ACS exposure was followed by a predictable period of maternal hyperglycemia. Glucose elevations most often began 9 to 16 hours after administration, were greatest between 24 and 72 hours, and could continue for up to 5 days. In individuals previously managed with medical nutrition therapy or oral hypoglycemic agents, 13% to 91% required insulin initiation. Among those already receiving insulin, 67% to 88% required dose escalation, with mean increases generally between 47% and 91%. Compared with standard adult intravenous insulin protocols, pregnancy-adapted intravenous insulin pathways were associated with improved time-in-range and fewer hypo- and hyperglycemic events. Preliminary evidence also supports structured pregnancy-specific subcutaneous insulin protocols as a potentially effective alternative.
Conclusions: In GDM, ACS administration produces a predictable post-steroid period of worsened glycemia and increased insulin requirements. Available evidence supports anticipatory, pregnancy-specific management using intensified glucose monitoring and structured subcutaneous or intravenous insulin protocols, rather than reactive treatment escalation alone.

PD060

MYGDMFRIEND: AN INTERVENTION FOR MENTAL HEALTH IN GESTATIONAL DIABETES MELLITUS

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Background/Aim: The global prevalence of Gestational Diabetes Mellitus (GDM) has increased steadily and is now estimated to be around 14%. GDM increases pregnancy stress, and related mental health issues can worsen outcomes for mother and infant. Thus, women with GDM need better mental health support. An example of a mental health tool that demonstrates potential, is the co-created web-based self-guided intervention MyDiaMate, which was developed for people with Type 1 Diabetes in The Netherlands. Adapting such evidence-based interventions may be more efficient than developing new ones, provided they are tailored to the new target population and the context. The aims of this study were to define the needs of women with GDM in a Danish setting and to outline the process by which the intervention MyDiaMate was modified to meet these needs.

Material and methods: Hawkins' framework for developing and evaluating complex interventions was used together with the ADAPT-guideline. As part of this process, reviews, semi structured interviews, co-creation workshops were conducted with women with GDM and health care professionals.
Results: Elements from MyDiaMate, including the use of positive and motivational language, focus on coping and reducing negative emotions, barrier identification, patient testimonials, monitoring of emotional well-being, goal setting and information provision related to food and feelings, social relations and emotional wellbeing and stress were evaluated as relevant and adapted to women with GDM. Based on the need assessment, additional content and features were added, including support for explaining GDM to others, links to useful external resources regarding the diagnosis, dietary guidance, strategies for social eating and postpartum support and an overview of local available clinical services.
Conclusions: MyDiaMate was adapted and redesigned to MyGDMfriend. Relevant content from MyDiaMate was kept, and new content was added to MyGDMfriend to meet the needs of women with GDM in a Danish setting.

PD061

DIFFERENCES IN FOOD CRAVINGS, METABOLIC HEALTH, AND BODY COMPOSITION IN THE PERINATAL PERIOD IN WOMEN WITH AND WITHOUT GESTATIONAL DIABETES: A PROSPECTIVE OBSERVATIONAL STUDY

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Background: While food cravings are a hallmark of pregnancy and are more prevalent in women with gestational diabetes mellitus (GDM), their impact on metabolic and body composition remains poorly understood, particularly in women with GDM. We conducted cross-sectional differences and longitudinal changes in food cravings, metabolic health, and body composition in women with and without GDM from late pregnancy through six months postpartum and we investigated if high food cravings in pregnancy were associated with unfavorable shifts in metabolic health and body fat distribution across the perinatal period.

Methods: This prospective observational study included 71 pregnant women (34 healthy controls (HC) and 37 women with GDM). We assessed food cravings (Food Cravings Questionnaire-Trait-reduced), metabolic health measures (weight, HbA1c, and continuous glucose monitoring over 14 days) and body composition (bioelectrical impedance analysis) during late pregnancy (24-36 weeks of gestation) and at 6 months postpartum. Analyses were adjusted for potential confounders.

Results: Participants had a mean age of 32.4±4.24 years. Women with GDM exhibited less favorable metabolic health and body composition profiles than HC throughout the study (all $p \leq 0.01$). Food craving scores were comparable between groups and remained stable from pregnancy to postpartum ($p \geq 0.12$). While both groups showed perinatal improvements in most adverse metabolic health and body composition ($p \leq 0.01$), HbA1c levels worsened in HC while remaining stable in GDM. Glucose sensor measures remained stable over the perinatal period. In both groups, higher prenatal food cravings were associated with a lower reduction in fat mass and visceral fat surface across the perinatal period (all $p < 0.05$).

Conclusions: Both groups improved their body composition, but less their metabolic health in the postpartum. Food cravings did not differ between groups, but higher prenatal cravings predicted less favorable fat and visceral fat reduction postpartum, suggesting a behavioral influence on body composition independent of metabolic health.

PD062

HEART RATE VARIABILITY 10–15 YEARS AFTER GESTATIONAL DIABETES

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Background: Gestational diabetes mellitus (GDM) is a common pregnancy-related disorder with increasing prevalence. Heart rate variability (HRV), a marker of cardiac autonomic regulation has been linked to glucose metabolism. This study examined whether women with a history of GDM exhibit altered HRV at rest or in response to an oral glucose tolerance test (OGTT).

Materials and Methods: Women who were recruited the Finnish Gestational Diabetes Study (FinnGeDi) participated a follow up study 10–15 years after the delivery. They were classified into a prior GDM group (n=118; 72 normoglycemic, 46 prediabetic) and a control group (n=125; 116 normoglycemic, 9 prediabetic). All underwent a 2-hour OGTT. Standardized 5-minute resting ECG recordings were obtained at baseline and at the end of the OGTT. Primary HRV outcomes included heart rate and standard time- and frequency-domain measures of HRV. Repeated-measures ANOVA assessed effects of time, group, and their interaction. Analyses compared GDM vs control groups and repeated within normoglycemic and prediabetic subgroups.

Results: No differences were observed between women with prior GDM and controls in heart rate or HRV parameters at baseline or post-OGTT. For example, heart rate was 71±10 vs. 72±9 bpm in the GDM group and 71±11 vs. 72±10 bpm in controls before and after OGTT, respectively (time p=0.097; group p=0.869; interaction p=0.846). Similarly, no differences in HRV measures were found between normoglycemic and prediabetic participants within either group.

Conclusions: A history of GDM does not appear to be associated with impaired cardiac autonomic function before the development of abnormal glucose metabolism. These findings underscore the importance of preventive strategies to reduce future risk of type 2 diabetes.

PD063

ASSOCIATION BETWEEN CARDIORESPIRATORY FITNESS, IMPLICIT AND EXPLICIT FOOD CRAVINGS IN EARLY PREGNANCY

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Background/Aims
Most pregnant women report food cravings during pregnancy, which may contribute to excessive gestational weight gain and adverse pregnancy outcomes. Physical activity could reduce food cravings and excessive weight gain, with cardiorespiratory fitness (CRF) as an objective surrogate. However, its relationship with food cravings in pregnancy remains unclear. This study investigated the association between CRF and implicit and explicit food cravings in pregnant women at the end of the first trimester. We also examined the relationship between explicit and implicit measures of food cravings in pregnancy.
Materials and methods
This cross-sectional study was a secondary analysis of the FOODY Play study and included 76 pregnant women between 12 and 16 weeks of gestational age. CRF was assessed using the Chester Step Test. Implicit food cravings were assessed using a gamified Go/No-Go smartphone task with food pictures of different fat and carbohydrate content, indexed by reaction time (RT) and impulsivity, defined as commission errors. Explicit food cravings were self-reported on a visual analogue scale for the same food pictures.
Results
CRF was not associated with explicit or implicit food cravings, although a borderline significant inverse association with RT emerged in adjusted analyses ($\beta = -1.1$, $p = 0.05$). RT was inversely correlated with commission errors ($r = -0.7$, $p < 0.001$) and, unlike commission errors, was positively correlated with self-reported explicit food cravings ($r = 0.3$, $p = 0.03$).
Conclusions
This study suggests that CRF is not associated with food cravings in early pregnancy but may be related to faster reaction times in a food-related Go/No-Go task, which may indicate stronger food cue reactivity in individuals with higher CRF. Implicit and explicit food cravings measures are only weakly correlated, suggesting partly distinct underlying mechanisms that may involve different levels of cognition and lead to different behavioral expressions.

PD064

THE EFFECT OF WEIGHT LOSS ON BLOOD PRESSURE AMONG WOMEN WITH OVERWEIGHT OR OBESITY PLANNING PREGNANCY - PRELIMINARY DATA FROM THE PRE-STORK TRIAL.

Oral or poster

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Background/Aims

Overweight is rising drastically worldwide, and nearly half of all women enter pregnancy with either overweight or obesity. Pregnancy with excess weight is associated with increased risks of complications, including hypertension. This study aims to investigate the effect of prepregnancy weight loss on blood pressure among women with overweight or obesity.

Material and methods Women with overweight or obesity (n=141), randomised to a 6-month lifestyle intervention before pregnancy (n=79) or standard of care (SoC) (n=62) in the PRE-STORK trial, were included in the analysis. The lifestyle intervention consisted of low-calorie diet, dietary counselling, supervised exercise and behavioural mentoring. Body mass index (BMI), systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) were measured at baseline and after six months. Associations between weight loss and changes in blood pressure were examined using linear mixed-effects models adjusted for baseline levels through inclusion of repeated measures.

Results Baseline demographics (mean±SD) were comparable (lifestyle vs. SoC): age 30.9±3.3 vs. 31.4±3.7 years; BMI 33.2±4.9 vs. 32.1±4.1 kg/m². Mean SBP, DBP and HR were within normal range, and were comparable between groups. After six months (mean (95% confidence intervals, p-value)) BMI decreased by 3.1 kg/m² (-3.5;-2.7, p<0.001) (lifestyle) vs. 0.7 kg/m² (1.2;-0.2, p<0.05) (SoC), between group difference, 2.4 kg/m² (1.8;3.1, p<0.001). SBP changed by -3.5 mmHg (-5.4;-1.6, p<0.001) (lifestyle) vs. -0.6 mmHg (-1.5;2.8, p=0.57) (SoC) between group difference 2.9 mmHg (0.03;5.8, p<0.05). DBP changed by -1.5 mmHg (-2.9; -0.1, p<0.05) (lifestyle) vs. 0.6 mmHg (-0.1;2.1, p=0.45) (SoC), between group difference 2.1 mmHg (0.01;4.1, p=0.05). No difference between groups were seen in HR (p=0.62).

Conclusion Preliminary data indicate that lifestyle-induced weight loss may reduce SBP and DBP in women with overweight or obesity planning pregnancy. This can potentially reduce hypertension-related pregnancy complications and thereby improve outcomes for mother and child.

PD065

PREDICTIVE FACTORS OF PREDIABETES 1 YEAR AFTER GESTATIONAL DIABETES: A PROSPECTIVE COHORT STUDY

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Background

Prediabetes following pregnancy represents an early marker of future metabolic risk. However, its prediction remains challenging.

Methods

Prospective cohort study included 244 women with gestational diabetes mellitus (GDM) followed at Vilnius University Hospital Santaros Klinikos between 2019 and 2024. A predictive model for 1-year prediabetes (PreDM) was developed using clinical and biochemical variables: maternal age, family history of type 2 diabetes mellitus(Hist2DM), smoking before pregnancy, gestational weight gain, pre-pregnancy body mass index, insulin therapy during pregnancy, high-sensitivity C-reactive protein (hsCRP), fasting glucose, fasting insulin, HOMA-IR, triglyceride–glucose index, triglycerides at 24–28 weeks of gestation, waist-to-height ratio (WHtR), and body mass index at 6–12 weeks postpartum.

A decision tree algorithm with automatic pruning was applied. Area under the ROC curve (AUC), sensitivity, and specificity were calculated. Several representative trees were selected for interpretation.

Results

hsCRP was the most stable across all models. The most stable model with WCHtR included (AUC 0.637, Se =1, Sp=0.40) resulted in probability of developing prediabetes after 1 year of 68% if hsCRP ≥ 2.3 mg/l and icreased to 83% with the maternal age of <31 year . The most stable model without WCHtR (AUC 0.572, Se =0.7, Sp=0.57) resulted in probability of 65% with hsCRP ≥ 2.8 mg/l and increased to 76% with Hist2DM.

Conclusions

The model has limited predictive performance. However, systemic inflammation may be relevant marker of prediabetes risk. Although WCHtR emerged as a significant predictor in one model, its physiological variability at 6 weeks postpartum is important to consider. Younger age emerged and significant risk factor together with high hsCRP which warrant further investigation.

PD066

CHARACTERIZATION OF ISLET CELL FUNCTION DURING PREGNANCY AND EARLY POSTPARTUM IN WOMEN WITH AND WITHOUT GESTATIONAL DIABETES

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Background/Aims:
We measured islet function at 14-18 (Visit 1) and 24-28 weeks gestation (Visit 2), and 6-12 weeks postpartum (Visit 3) in women with a BMI ≥ 30 kg/m^2 and HbA1c ≤ 5.6% at their initial prenatal visit and no history of diabetes/prediabetes.

Materials and Methods:
Participants were studied after an overnight fast using a frequently sampled 3-hour, 100g oral glucose tolerance test. They were then categorized as having GDM (n=17) or normal glucose tolerance (n=35) using Carpenter and Coustan criteria applied to the glucose values obtained at Visit 2.

Results:
At Visit 1 those who developed GDM had higher fasting (4.87 ± 0.09 v 4.72 ± 0.08 mmol/L, p=0.03) and peak glucose (9.71 ± 0.49 v 8.16 ± 0.47 mmol/L, p=0.02). Despite this, there was no difference in fasting or nadir glucagon concentrations. Fasting C-peptide and insulin concentrations were similar between groups at Visit 1 but peak C-peptide (4.54 ± 0.32 v 3.43 ± 0.36 nmol/L, p=0.01) and insulin (17.32 ± 2.62 v 12.32 ± 2.06 nmol/L, p=0.04) concentrations were higher in those who developed GDM.
As expected at Visit 2, those with GDM experienced progressive hyperglycemia (fasting 5.18 ± 0.13 v 4.71 ± 0.07 mmol/L, p<0.01 and peak 11.07 ± 0.27 v 8.46 ± 0.31 mmol/L, p<0.01). Glucagon, C-peptide and insulin concentrations followed a similar pattern to Visit 1.
Postpartum, there was no longer a difference in fasting glucose (5.15 ± 0.08 v 4.93 ± 0.10 mmol/L, p=0.08) but those with prior GDM had higher peak glucose (9.26 ± 0.37 v 7.33 ± 0.32, p<0.01). There was no difference in glucagon or insulin concentrations, but those with GDM had higher peak C-peptide.
Conclusions:
Women with GDM exhibit hyperglycemia in early pregnancy before the usual time of GDM diagnosis, and this is associated with significant islet cell dysfunction.

PD067

UNICORN – UNDERSTANDING THE CAUSES OF HYPERGLYCAEMIA IN PREGNANCY: A PROSPECTIVE MULTI-ETHNIC COHORT STUDY CHARACTERISING METABOLIC SUBTYPES OF GESTATIONAL DIABETES

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Background/Aims

Gestational diabetes mellitus (GDM) is a heterogeneous condition encompassing at least two distinct pathophysiological subtypes – insulin resistance and insulin secretory dysfunction – with likely differential implications for fetal growth and perinatal outcomes. Current diagnostic and management pathways apply a uniform approach irrespective of underlying mechanism. The UNiCoRN study (UNderstanding the Causes of hyperglycaemia in pRegNancy) aims to characterise these metabolic subtypes of GDM, define their distribution across ethnic groups, and evaluate associations with maternal, fetal, and neonatal outcomes.

Materials and methods

UNiCoRN is a prospective, observational, multi-site cohort study recruiting 500 pregnant women of White, Black, and South Asian ethnicity between 10+0 and 15+6 weeks' gestation, with recruitment enriched for those at higher risk of GDM. Sites include Guy's and St Thomas' and University Hospitals of Leicester NHS Trusts, and the study is funded by the Medical Research Council. Participants are phenotyped across five antenatal visits, including two five-point oral glucose tolerance tests (10–16+6 and 25–28+6 weeks) with fasting and post-challenge hormonal profiling, continuous glucose monitoring, serial fetal ultrasound with abdominal subcutaneous and limb soft tissue adiposity measurements and granular clinical data. A novel component is the serial assessment of maternal hepatic steatosis and fibrosis using transient elastography (FibroScan) across pregnancy. Blood, urine, optional stool and cord blood will also contribute to a dedicated bioresource for future mechanistic studies. GDM subtype will be classified using the Matsuda Index (insulin sensitivity) and the Stumvoll first-phase estimate (insulin secretion).

Results

Findings will be disseminated through international peer-reviewed journals and scientific meetings, including DPSG.

Conclusions

UNiCoRN will provide the first rigorous multi-ethnic characterisation of GDM subtypes, integrating maternal hormonal and glycaemic phenotyping, hepatic assessment, detailed fetal adiposity measures, and a linked bioresource. Findings will underpin personalised, physiologically targeted management to improve maternal and neonatal outcomes.

PD068

FEASIBILITY OF DIETARY ADVICE ON SPICES AND FOODS WITH GLUCOSE LOWERING EFFECT IN ROUTINE CARE IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: "MYSPICYPREGNANCY" PILOT STUDY

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Background/Aims

Outside of pregnancy, some spices and foods have shown glucose-lowering properties. Their integration into gestational diabetes mellitus (GDM) management is underexplored. This study investigated the possibility and acceptability of integrating dietary advice on specific glucose-lowering food and spices (GFS) into routine GDM care.

Materials and methods

This observational pilot study included 29 women with GDM, recruited between 26-31 weeks of gestational age. Women received advice to consume two of four GFS (psyllium, nettle, ginger, black cumin) daily until 6-8 weeks postpartum. Feasibility measures such as adherence were measured at three timepoints during pregnancy and two in postpartum using self-report diaries. Additional information was obtained through online questionnaires and semi-structured phone interviews. Exploratory associations between GFS and need for insulin treatment, were performed within participants and with a matched usual care group (n=121).

Results

Mean GFS adherence during pregnancy remained high (73.9%, 72.9%, 73.1%). In contrast mean adherence in the postpartum (49.4% and 47.7%) was lower. Ginger showed the highest adherence among the studied GFS. Barriers to daily GFS consumption included taste fatigue, preparation difficulties, and eating outside the home, while facilitators included perceived health benefits, practical support, and clear guidance. Overall, 88.9% would recommend GFS to others with GDM. Among participants, higher GFS adherence was observed in women who did not require insulin during pregnancy (70% vs 45%, p=0.01). Compared with usual care, there was a trend toward less frequent insulin treatment (27% vs 47%; BMI- and age-adjusted OR 0.38, 95% CI 0.14-1.02, p=0.05).

Conclusions

Integrating dietary advice on GFS into routine GDM care is possible and acceptable, but practical and sensory challenges affected adherence, particularly in the postpartum. Including all four GFS options may help address these barriers. Less frequent insulin treatment supports further investigation of GFS as a complementary dietary strategy in GDM management in larger studies.

PD069

PLASMA GLYCATED ALBUMIN IS ASSOCIATED WITH LARGE FOR GESTATIONAL AGE INFANTS: RESULTS FROM A PROSPECTIVE LONGITUDINAL STUDY

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Background/Aims

Predicting large for gestational age (LGA) is important to identify pregnancies at risk of delivery complications, including shoulder dystocia, birth injury, and caesarean section. Early detection enables closer monitoring and management of risk factors such as gestational diabetes, improving maternal and neonatal outcomes. Moreover, individuals born LGA are at increased risk of developing obesity and metabolic disorders later in life. Here we investigated associations of plasma glycated albumin in early and mid-pregnancy with LGA risk using targeted mass spectrometry.

Material and methods

We developed a rapid method to measure glycated albumin in plasma using liquid chromatography tandem mass spectrometry. Glycated albumin was measured in stored plasma samples collected at 10-14 and 24-28 weeks of gestation from participants (n=465) in a single center observational cohort study. Haemoglobin A1c (HbA1c) was measured routinely in whole blood at each visit. Clinical and biochemical data were used to estimate odds ratios and area under the curve for gestational diabetes mellitus (GDM) and LGA using conditional logistic regression models.

Results

Among the 465 women, 100 (n=21.5%) developed GDM (WHO 2013), and 57 (n=12%) delivered LGA infants. Higher glycated albumin levels in early and mid-pregnancy were associated with a lower risk of GDM, whereas higher HbA1c levels at the same time points were associated with an increased risk of GDM. Higher glycated albumin in early pregnancy showed a tendency toward a higher risk of LGA, with a stronger association observed in mid-pregnancy that persisted after adjustment for maternal age and pregestational BMI. In contrast, maternal HbA1c was not significantly associated with LGA at any time during pregnancy, although a positive trend was observed.

Conclusions

Higher glycated albumin levels in mid-pregnancy were associated with an increased risk of LGA, while no significant association was observed for HbA1c.

PD070

OUTCOMES IN CHILDREN OF WOMEN WITH GESTATIONAL DIABETES EXPOSED TO METFORMIN VERSUS PLACEBO DURING PREGNANCY (EMERGE MOTHER AND KIDS)- A 36 MONTH FOLLOW-UP OF THE EMERGE RCT

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Background and aims

Pregnancies complicated by gestational diabetes mellitus (GDM) are associated with increased risks of adverse perinatal outcomes, and with long-term metabolic and cardiovascular consequences for both mother and child. The EMERGE randomized controlled trial (RCT) evaluated the effectiveness of early metformin in addition to usual care in women with GDM on glycaemic control and perinatal outcomes. The EMERGE Mothers and Kids study is a longitudinal follow-up of the EMERGE trial participants, designed to investigate the long-term metabolic, cardiovascular, and neurodevelopmental outcomes in mothers and their offspring.

Materials and Methods

This was a prospective, observational cohort study of participants and their children from the EMERGE trial (NCT06327191). A single follow-up visit was conducted between 3-6 years after the index pregnancy. Maternal assessments include anthropometric data, glucose tolerance and metabolic parameters. Child assessments include growth metrics, adiposity measured via skinfold thickness, and neurodevelopmental status assessed through validated questionnaires including Social Responsiveness Scale-2, Quantitative Checklist for Autism in Toddlers, Attention Deficit Hyperactivity Disorder-5 and IV questionnaires, Behaviour Rating Inventory of Executive Function-2. Additional data on quality of life, mental health, breastfeeding, and health economics were also collected.

Results

In total 270 women from a possible 510 pregnancies attended for assessment between July 2024 and March 2026. Participants who completed the EMERGE trialin more than one pregnancy were invited to attend for follow up based on the first trial pregnancy only. The follow up including data cleaning is complete with database lock scheduled on May 30th. Information will be available to share at IADPSG conference in October 2026.

Conclusion

This study aims to provide insights into the long-term safety and efficacy of metformin use during pregnancy and its potential impact on the long term maternal and child health outcomes, contributing to evidence-based management of GDM.

PD071

GLYCEMIC CONTROL AND PREGNANCY OUTCOMES IN TYPE 1 DIABETES PREGNANCIES OVER THE PAST THREE DECADES: A SINGLE-CENTER RETROSPECTIVE COHORT STUDY

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Background/aims:
Pregnancies complicated by type 1 diabetes (T1D) have an increased risk of adverse pregnancy outcomes, particularly large-for-gestational-age (LGA) infants. In addition to delivery-related complications, LGA is associated with an increased long-term metabolic risk in offspring. A historical retrospective cohort study (n=259) at University Hospitals Leuven (1992-2014) showed persistently high LGA rates (45.2%) without improvement over time.

Material:
The recent retrospective cohort study included 158 women with T1D who gave birth at University Hospitals Leuven between 2016 and 2025. Outcomes were compared with the historical cohort to evaluate changes over time, potentially reflecting advances in diabetes technology. The primary outcome was LGA. Secondary outcomes included maternal and pregnancy-related parameters. Cohorts were compared using the Mann-Whitney U test and Fisher's exact test. All analyses were unadjusted, with no correction for potential confounders.

Results:
Preconception HbA1c was similar between cohorts (6.8 ± 0.9% vs. 6.9 ± 0.9%). Women in the recent cohort were older (31.0 ± 4.2 vs. 29.6 ± 4.2 years (p=0.002)) and had increased weight at delivery (87.4 ± 14.5 vs. 82.0 ± 11.2 kg (p<0.001)). Excessive gestational weight gain was more frequent (45.5% vs. 34.6% (p=0.030)). Rates of gestational hypertension (24.1% vs. 12.6% (p=0.003)) and preterm delivery (29.8% vs. 19.3% (p=0.017)) were higher, as was antenatal corticosteroid use (7.0% vs. 1.1%(p=0.003)). Caesarean section rates were similar at 67%. NICU admissions decreased (40.1% vs. 65.7% (p<0.001)), whereas LGA rates increased (55.1% vs. 45.0% (p=0.046)).

Conclusions:
Despite advances in diabetes technology, LGA and obstetric complication rates remain high. The observed differences may reflect changes in maternal characteristics, including higher maternal age, increased weight, and greater gestational weight gain. Further analyses will adjust for relevant maternal and pregnancy-related covariates, and longitudinal glycemic data will be incorporated to better understand these findings.

PD072

FETAL GROWTH AND MATERNAL GLYCEMIC CONTROL IN PGDM

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Background/AIM

The aim of this study was to investigate the correlation between continuous glucose monitoring (CGM) metrics in pregnant women with pregestational diabetes mellitus (PGDM) and fetal growth, assessed by MRI.

Materials and methods

This is a prospective MRI study based on the FaPDi (Fetal growth and Placental function in Diabetes) cohort. We included 45 pregnant women with PGDM and CGM metrics available during pregnancy. Fetal volume was obtained by MRI at 14-18, 25-30 and 33-38 weeks of gestation. CGM metrics (Time in Tight range pregnancy (TITR), time above range pregnancy (TAR)) were obtained at equal gestation intervals. The correlation between CGM metrics and fetal volume was investigated by multiple linear regression, adjusted for gestational age at MRI.

Results

In this population, the mean TITR was 29.7 ± 15.3% during 14–18 weeks of gestation, increasing to 67.6 ± 16.1% at 33–38 weeks of gestation. Throughout pregnancy, TITR demonstrated a negative correlation with birth weight, whereas TAR showed a positive correlation. Notably, the strength of these correlations was higher at 14–18 weeks of gestation ($R^2 = 0.35$).

At 14 - 18 weeks of gestation, fetal volume was positively associated with TITR (Coefficient ± SE: 0.40 ± 0.2, p=0.03) and negatively associated with TATR (-0.34 ± 0.2, p=0.04), both measured early at 6–10 weeks. Later in pregnancy, these correlations reversed: fetal volume became negatively correlated with TITR and positively correlated with TATR.

Conclusions

In pregnancies complicated by PGDM the influence of maternal hyperglycemia on fetal volume varies throughout gestation; during early pregnancy, elevated maternal glucose levels negatively impact fetal growth, whereas in later gestation this effect becomes positive. The correlation between maternal glycemic control and fetal growth diminishes in late gestation, indicating that additional factors may contribute to fetal development at this stage.

PD073

PREGNANCY OUTCOMES IN GESTATIONAL DIABETES MELLITUS VERSUS PREECLAMPSIA WITH OR WITHOUT CONCOMITANT GDM

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Aims: To compare pregnancy outcomes among women with gestational diabetes mellitus (GDM) alone, preeclampsia (PE) with GDM, and PE without GDM.
Materials and Methods: Participants enrolled from June 2024 to June 2025 at the Maternal and Child Health Hospital of Guangxi Zhuang Autonomous Region were classified into four groups: normotensive normoglycemic controls, GDM-only, PE with GDM, and PE without GDM. Perinatal outcomes including gestational age (GA) at delivery, birthweight, fetal growth restriction (FGR), small-for-gestational-age (SGA), and large-for-gestational-age (LGA) were compared across groups using Kruskal-Wallis test for continuous variables and χ^2 test or Fisher's exact test for categorical variables. Post-hoc pairwise comparisons were adjusted with Dunn test or Bonferroni method.
Results: Among 2,174 participants, 91 (4.2%) developed PE and 466 (21.4%) developed GDM. Significant inter-group differences were observed in birthweight, GA at delivery, FGR, and SGA (all $P < 0.05$), whereas LGA and neonatal sex did not differ. Compared with controls, both PE groups had higher rates of SGA, lower birthweight, and shorter GA at delivery, regardless of coexisting GDM. Notably, PE with GDM exhibited the highest rate of FGR. Relative to GDM-only, both PE groups had lower birthweight and shorter GA at delivery. Specifically, only PE with GDM showed a significantly higher rate of FGR than GDM-only. Although not statistically significant, PE with GDM appeared to have a numerically lower SGA rate (25.0% vs 29.8%), slightly higher birthweight (2,900 vs 2,695 g), and longer gestational age (38.0 vs 37.0 weeks) compared with PE without GDM.
Conclusions: The pregnancy outcomes differed between PE with GDM and PE without GDM, suggesting a potential modifying effect of GDM on PE development. This finding fuels an ongoing debate concerning the optimal clinical management for PE patients with GDM.

PD074

ACARBOSE FOR THE MANAGEMENT OF GESTATIONAL DIABETES MELLITUS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF MATERNAL AND NEONATAL OUTCOMES

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Background/Aims:
Gestational diabetes mellitus (GDM) is associated with significant maternal and neonatal morbidity, necessitating safe and effective pharmacological interventions. While insulin is the standard therapy, its limitations warrant evaluation of alternative agents such as acarbose. This study was performed to systematically evaluate the efficacy and safety of acarbose compared with insulin or other therapies in women with GDM.

Materials and Methods:
A systematic review and meta-analysis were conducted following PRISMA 2020 guidelines. Randomized controlled trials and observational studies assessing acarbose in GDM were included. Outcomes evaluated included gestational age at delivery, birth weight, cesarean section, macrosomia, neonatal hypoglycemia, and neonatal intensive care unit (NICU) admission.

Results:
Nine studies involving 1,457 participants were included. There were no statistically significant differences between acarbose and comparator groups across all outcomes. The pooled mean difference (MD) for birth weight was −5.75 g (95% CI: −171.64 to 160.15; I^2 = 73%), and for gestational age at delivery was 0.46 weeks (95% CI: −0.14 to 1.07; I^2 = 71%). Similarly, no significant differences were observed in Cesarean section rates (RR = 1.00, 95% CI: 0.86–1.17; I^2 = 0%), macrosomia (RR = 0.81, 95% CI: 0.44–1.49; I^2 = 10%), neonatal hypoglycemia (RR = 0.55, 95% CI: 0.30–1.02; I^2 = 4%), or NICU admission (RR = 0.64, 95% CI: 0.31–1.34; I^2 = 72%).

Conclusions:
Acarbose demonstrates comparable efficacy and safety to insulin in the management of GDM, with no increase in adverse maternal or neonatal outcomes. Given its advantages as a low-cost, oral, and non-injectable therapy, acarbose may serve as a practical alternative to insulin, particularly in resource-limited settings.

PD075

PREVALENCE OF FETAL GROWTH ABNORMALITIES, LARGE FOR GESTATIONAL AGE (LGA) SMALL FOR GESTATIONAL AGE (SGA), FETAL GROWTH RESTRICTION (FGR) WITH /WITHOUT DIABETES IN AN ETHNICALLY DIVERSE POPULATION IN NY, USA

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Prevalence of fetal growth abnormalities, large for gestational age (LGA) small for gestational age (SGA), fetal growth restriction (FGR) with/without diabetes, in an ethnically diverse population in Queens, NY, USA

Background/Aim

This research project examines variations in fetal growth abnormalities among pregnant women of Asian, Haitian, Caribbean, Hispanic/Latino, and Black American heritage. The study investigates whether ethnicity independently contributes to fetal growth abnormalities in the absence of impaired glucose tolerance (IGT), gestational diabetes mellitus (GDM), type 2 diabetes mellitus (T2DM), and obesity. The Hyperglycemia and Adverse Pregnancy Outcome Study (HAPO) demonstrated a continuous association between sub-diagnostic maternal hyperglycemia and fetal growth patterns like those observed in GDM pregnancies like LGA and complications associated with that. Sub analysis showed that LGA lead to increase in childhood obesity. In contrast Barker's hypothesis identified a link between in utero starvation to early cardiovascular disease. Building on those findings, this novel study evaluates ethnicity as an independent determinant of fetal growth abnormalities to guide ethnicity-specific management strategies. **Methods:**

We conducted a 28-month retrospective study (January 1, 2024–April 30, 2026) of pregnant women undergoing ultrasound evaluation after 28 weeks' gestation. Records were reviewed for 1-hour glucose screening, 3-hour glucose tolerance test (GTT) results, BMI, parity, and insulin therapy in patients with GDM and/or T2DM. Growth ultrasounds were assessed for large for gestational age (LGA; AC >90%), small for gestational age (SGA; AC <25%), fetal growth restriction (FGR; AC <10%), and for umbilical artery Dopplers. Self-reported race categories were classified according to National Institutes of Health race-reporting definitions. **Results:**

2400 patient charts were reviewed. There were 26.66% SGA, FGR 15.25%. and 4.3% LGA in total patient cohort. BMI and diabetes status, GA UA dopplers data will be presented by ethnicity.

Conclusion:

We have previously shown ethnic differences in insulin sensitivity and fasting C peptide content may affect fetal growth patterns, and response to diabetes management during pregnancy. The findings support the potential need for ethnicity-specific approaches to monitoring and managing fetal growth abnormalities.

PD076

MATERNAL BODY COMPOSITION, MUSCULAR STRENGTH, AND CARDIOMETABOLIC HEALTH IN WOMEN WITH GESTATIONAL DIABETES: IMPLICATIONS FOR ABNORMAL BIRTH WEIGHT

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Background/Aims: Pregnancies complicated by gestational diabetes (GDM) are at increased risk of fetal overgrowth and hence large-for-gestational-age (LGA) birth. From a maternal perspective, fetal overgrowth increases the risk of delivery complications. Additionally, several neonatal complications are possible, such as low Apgar scores, respiratory distress, neonatal hypoglycemia, and higher rates of intensive care unit admission. However, there is remarkable variability in the clinical outcomes of the GDM women, and it is becoming clear that a glucose-centered paradigm alone can only explain part of GDM heterogeneity and risks related to abnormal birth weight. Aim of this study was analyzing mother's body composition and physical fitness (assessed by muscular strength and cardiometabolic health) to identify the possible associations with an abnormal birth weight. **Materials and methods:** GDM women recruited in MySweetHeart study (Trial Registration: NCT02890693) were analyzed (*n*=209). Maternal body composition was assessed by bioelectric impedance analysis, BIA (providing BIA-related resistance and reactance, fat-free mass, fat mass, and fat mass percentage), and by skinfolds measures (at different sites: biceps, triceps, subscapular, iliac). Muscular strength was assessed by handgrip strength dynamometer (on both left and right hand), and cardiometabolic health was assessed by Chester step test (providing average and maximum heart rate, rate of perceived exertion, maximal oxygen uptake). In total, the indicated measures provided 21 variables (input variables), which were analyzed with penalized regression analysis (Elastic Net) to build regression models of the outcomes (birth weight, birth weight percentile, LGA). **Results:** Proper combinations of the input variables provided significant regression models for the continuous outcomes, i.e., birth weight and birth weight percentile (correlation coefficient of 0.44 and 0.41, respectively, $p<0.0001$). Significant model was also found for LGA (receiver operating characteristic area-under-the-curve of 0.78, $p<0.0001$). **Conclusions:** In GDM, body composition and physical fitness information can contribute to high birth weight risk assessment.

PD077

YOUNG WOMEN AT THE TRANSITION OF CARE FROM PAEDIATRIC ENDOCRINOLOGIST TO THE DIABETES CLINIC

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Background and Aim. Excellent metabolic control, complication management, and folic acid supplementation are essential for a successful pregnancy in women with pregestational diabetes. However, many women still begin pregnancy suboptimally prepared. We evaluated pregnancy preparedness in young women with Type 1 diabetes (T1D) transitioning from paediatric to adult diabetes care.

Materials and Methods. We identified female T1D patients born between 2001 and 2005 scheduled for transfer to the adult diabetes clinic (ADC) between 2019 and 2024. Transition was planned at age 18, with a joint consultation followed by a second visit within 4 months.

Results: Of 252 young women (46.3% of 544 young T1D adults), 194 (77%, CI 71.2–82.0) attended at least one ADC visit, with a median lag of 6.8 (4.5–9.2) months from the last paediatric visit. Median age at first ADC consultation was 18 (18–19) years, median diabetes duration 9 (6–12) years; 84% were of Italian descent and 92.8% lived in Milan or neighbouring provinces. Pump therapy use increased progressively across birth cohorts (21.2% in 2001 to 65.1% in 2006). HbA1c and BMI at last paediatric visit did not differ between those who did and did not transition (7.1% vs 7.2%; 23.45 vs 23.4 kg/m²). Only 54% had HbA1c <7.0%, and 30% of transitioning women were overweight or obese vs 27.28% of non-transitioning women. No association was found between age at onset, diabetes duration, or descent and successful transition.

Conclusion: A shared paediatric-adult clinic achieved a satisfactory transition rate (77%) (i.e. a first attendance in ADC), but many women of childbearing age lacked adequate glycaemic control for a safe pregnancy. Strategies to ensure that young women not attending (1:4) receive nevertheless good care should be implemented. Transition clinics represent an opportunity to implement structured education on contraception and pregnancy planning not addressed under paediatric care.

PD078

CONTINUOUS GLUCOSE MONITORING FOR THE DIAGNOSIS OF GESTATIONAL DIABETES MELLITUS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: There is a lack of consensus on the diagnostic criteria for gestational diabetes mellitus (GDM). Nevertheless, the oral glucose tolerance test (OGTT), performed between 24 and 28 weeks gestation, remains the internationally accepted gold standard for diagnosis.
However, whether a more convenient, tolerable, and reproducible diagnostic method exists remains an area of interest. Continuous glucose monitoring (CGM) is increasingly used in the management of diabetes during pregnancy, and recent studies have explored its potential as an alternative method for diagnosing GDM. We performed a systematic review and meta-analysis evaluating whether CGM-derived glycemic parameters during pregnancy can predict GDM diagnosis by OGTT.

Methods: This systematic review was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results: Ten studies met the inclusion criteria, of which eight were included in the final analysis. In pooled analysis of eight studies, GDM diagnosed by either 100g OGTT or 1- or 2-step 75g OGTT, was associated with a higher mean CGM glucose (mean difference [MD] 0.39 mmol/L, 95%CI 0.13–0.06, P=0.003, I^2=91). In pooled analysis of six studies, GDM was also associated with higher CGM values for time above range (MD 2.87%, 95%CI 0.40–5.33, P=0.02, I^2=92), glucose standard deviation (MD 0.24 mmol/L, 95%CI 0.14–0.35, P<0.00001, I^2= 85%) and coefficient of variation (MD 3.28%, 95%CI 2.04–4.52, P<0.00001, I^2=42%). In sensitivity analyses excluding studies with transformed CGM-metric data, only glucose standard deviation and coefficient of variation remained associated with GDM diagnosis by OGTT. Subgroup analysis by CGM timing showed that mean glucose and time above range were more strongly associated with GDM diagnosis when measured before 24 weeks of gestation than later in pregnancy.

Conclusions: Our findings show slightly higher CGM glucose levels and greater glycemic variability among those diagnosed with GDM compared with those without GDM.

PD079

MATERNAL PREDICTORS OF SMALL-FOR-GESTATIONAL BIRTHWEIGHT IN PREGNANCIES AFTER BARIATRIC SURGERY -A LARGE-SCALE CASE-CONTROL STUDY

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Aim: The rates of small-for-gestational-age (SGA) birth weight and preterm births (PTB) have been reported to be high in pregnancies after metabolic bariatric surgery (MBS). The aim of this study was to evaluate (1) maternal and neonatal outcomes compared with controls and (2) independent predictors for SGA and PTB.

Methods: In this multicenter case-control study, 338 cases were recruited between 2022 and 2025. Controls were selected by propensity score matching (BMI, age, parity, and year of delivery). Maternal data were collected before conception and during pregnancy; neonatal data were obtained after delivery.

Results: Types of MBS was gastric banding in 5.1%, sleeve gastrectomy (SG) in 36.5%, and Roux-en-Y bypass (RB) in 58.7% of the cases, 19% was performed <1 year before conception. Obesity rate was 48.5%. Supplements were not taken by 34.2% of the women, and nutrient deficiency was not assessed in 36.1%. Anemia was present in 40.1%, with the highest rate after RB. There were no relevant differences between cases and controls in gestational diabetes (GDM) (21 vs. 18%), pregnancy induced hypertension (PIH) (3.9vs5.9%), PTB (9.9vs.10.1%), and NICU admission (14.1vs.10.9%). Weight gain (GWG) below or above the NAM recommendation was more frequent in cases (27.2vs.22%; 51.9vs.44.5%) as were anemia (40.1vs.22.2%), SGA (21.4vs.6.2%), and C-section (44.1vs.26.4%). In contrast, LGA was lower (6.3 vs. 14.3%). In multiple regression analyses, MBS and GDM were independent predictors of SGA in the total cohort (MBS: OR 1.14, 95% CI 1.07–1.22; GDM: OR 0.90, 95% CI 0.85–0.96). In subgroup analyses among cases, elastic net analysis was applied considering all maternal parameters with potential effect on fetal growth. Variable selection identified PIH and surgery for abdominal complications (mostly switch SG in RB) between bariatric surgery and conception as risk factors SGA, GDM was associated with a reduced risk of SGA.

Conclusion: There was a higher rate of SGA but not of PTB. In the cohort of cases and controls, MBS was the strongest predictor of increased SGA risk, whereas GDM appeared protective. In pregnancies after MBS, PIH and surgery for abdominal complications between bariatric surgery and conception were associated with an increased risk of SGA, interval surgery-conception, GWG,
type of MBS, supplement intake seem not be to relevant.

PD080

BEYOND DIAGNOSTIC THRESHOLDS: PATTERNS OF 75G OGTT GLYCEMIC PROFILE IN WOMEN WITH GDM - DATA FROM A CLUSTER ANALYSIS IN A SINGLE-SITE COHORT

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Background/Aims

To explore glycemic profile patterns during 75 g OGTT and their relationships with cardiometabolic risk and perinatal outcomes in women with GDM.

Materials and Methods

A retrospective analysis of routine care data from a single-site cohort of 1174 women with single pregnancies and GDM diagnosed using the IADPSG criteria, who delivered at a tertiary referral center. Data included 3-point 75 g OGTT readings, first-trimester FBG, participants' anthropometric characteristics, medical and reproductive history, maternal complications, family history of CVD or DM, perinatal outcome. K-modes clustering on categorical data using 75gOGTT glucose levels at 0, 60, and 120 min, dichotomised as normal/high by IADPSG thresholds, identified seven optimal components via an EM algorithm.

Results

Baseline cohort characteristics; *mean±SD or median(25th; 75th percentile)*: age: 32.8±4.9 years; pre-pregnancy BMI: 26.8±6.0 kg/m2; 1st trimester FBG: 89.3±12.2 mg/dl; gestational age at 75gOGTT: 22(6.0; 40) weeks; 75gOGTT-0': 91.1±12.9 mg/dl; 75gOGTT-60': 165.8±37.5 mg/dl; 139.0±35.6 mg/dl; insulin treatment: 34.0%; primiparity: 45.5%; pre-pregnancy obesity: 23.3%, chronic hypertension: 5.7%, past GDM: 6.9% of multiparous participants, hypertensive disorders of pregnancy: 13.3%; family DM history: 34.3%; family CVD history: 45.5%.

Cluster sizes and descriptive characteristics: C1=115 participants, predominantly isolated high75gOGTT-0' ; C2=102 participants, all 75gOGTT values normal (GDM diagnosed from FBG); C3=348 participants, predominantly all 75gOGTT values abnormal; C4=156 participants, 75gOGTT-0' and 75gOGTT-120' abnormal; C5=136 participants, isolated 75gOGTT-120' high; C6=154 participants, predominantly isolated 75gOGTT-60' abnormal; C7=163 participants, abnormal 75gOGTT-60' and 75gOGTT-120.'

Clusters differed significantly in maternal baseline characteristics: age ($p<0.0001$), pre-pregnancy BMI ($p<0.0001$), fasting glycemia in early pregnancy ($p<0.001$), and GA at GDM diagnosis ($p<0.0001$). Clustering was also linked to fetomaternal outcomes: insulin treatment ($p<0.0001$), gestational hypertension/PET ($p<0.001$), gestational weight gain ($p<0.001$), birthweight ($p=0.019$), and cholestasis ($p=0.04$).

Conclusions

1/ Data mining using routine care data helps to identify heterogeneous GDM phenotypes with different profiles regarding short-term perinatal outcomes and long-term cardiometabolic risks.

PD081

MENTAL WELL-BEING IN WOMEN WITH NEWLY DIAGNOSED TYPE 2 DIABETES ACCORDING TO PREVIOUS GESTATIONAL DIABETES

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1. Background/aims

Women with gestational diabetes (GDM) face an increased risk of developing diabetes as well as psychiatric morbidity, particularly depression and anxiety, later in life. Diabetes is linked to poor mental well-being, which may be further compromised in women with diabetes and a history of GDM. Thus, we investigated whether previous GDM was associated with poor mental well-being in women with newly diagnosed type 2 diabetes.

2. Material and methods

We used data from Danish health registries and Danish Centre for Strategic Research in Type 2 Diabetes (DD2), which is an ongoing national cohort enrolling individuals with type 2 diabetes diagnosed within the last two years. Previous GDM exposure was based on hospital diagnosis codes. Poor mental well-being at DD2 enrollment was defined as: 1) self-reported poor mental well-being based on questionnaire data (SF12 and/or WHO5); and/or 2) clinically defined poor mental well-being based on hospital diagnosis codes (depression and/or anxiety) and/or redeemed prescriptions (antidepressants and/or anxiolytics).

3. Results

In total, 2,865 parous women with type 2 diabetes were included; 173 women (6.0%) had GDM previously. Questionnaire data were available for 920 women; 64 women (7%) had previous GDM. Women with previous GDM were significantly younger at type 2 diabetes diagnosis compared to women without previous GDM (43.5 vs. 56.3 years, p-value <0.001). Using women without GDM as reference group, women with previous GDM had an OR for poor self-reported and poor clinically defined mental well-being of 0.82 (95% CI 0.43-1.60) and 0.89 (95% CI 0.62-1.27), respectively. Adjustment for age at DD2 enrollment, BMI and smoking status did not significantly impact the overall findings.

4. Conclusions

In this Danish cohort, previous GDM was not associated with a higher risk of poor mental well-being in women with newly diagnosed type 2 diabetes.

PD082

LONG-TERM EFFECTIVENESS OF A REMINDER SYSTEM TO STIMULATE POSTPARTUM SCREENING FOR GLUCOSE INTOLERANCE IN WOMEN WITH GESTATIONAL DIABETES: THE "SWEET PREGNANCY" PROJECT

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Background and aims. Women with a history of gestational diabetes (GDM) have an increased risk to develop type 2 diabetes. We aimed to evaluate the long-term feasibility and effectiveness of a GDM recall register to stimulate postpartum screening for (pre)diabetes.

Methods. We evaluated the Sweet Pregnancy GDM recall register, implemented in the northern part of Belgium, from 2009 to 2025. Women with a history of GDM received annual reminders for fasting plasma glucose (FPG) screening in primary care. Response rates, self-reported screening uptake, and the cumulative incidence of prediabetes and diabetes were analysed.

Results. 27,173 women were registered with a mean follow-up of 4.4 years. Median age was 31.8 years, 28.5% was overweight and 28.1% had obesity. Yearly response rates declined from 48.4% in year one to 27.6% in year ten. Among responders, screening uptake increased from 74.6% to 91.0% over ten years. In the group of responders with a minimum follow-up of 3 and 5 years, at least one screening by a general practitioner was performed in 70.7% and 66.8%, respectively. Non-responders were more likely to be under 30 years (45.4% vs. 42.0%) and have obesity (32.6% vs. 24.8%). Digital reminders were associated with higher response rates compared to standard mail (44.3% for email vs.19.8% for postal mail after one year). Among responders, screening uptake was comparable with 84.7% and 84.2%, respectively. After 10 years, the cumulative incidence of diabetes was 11.0% (95% CI 10.1–12.0), and impaired fasting glucose was 34.7% (95% CI 33.1–36.4).

Conclusion. This large-scale register implemented in normal routine, with up to 10 years of follow-up, indicated a feasible and effective reminder system to stimulate postpartum diabetes screening in women with prior GDM. The high cumulative incidence of (pre)diabetes underscores the importance of long-term follow-up and targeted interventions to prevent progression to type 2 diabetes in this at-risk population.

PD083

METABOLIC DYSFUNCTION-ASSOCIATED STEATOTIC LIVER DISEASE (MASLD) 11–15 YEARS AFTER GESTATIONAL DIABETES MELLITUS (GDM): FINNGEDI FOLLOW-UP STUDY

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Background: Metabolic dysfunction-associated steatotic liver disease (MASLD), previously termed non-alcoholic fatty liver disease (NAFLD), is the most common chronic liver disease and is closely linked to metabolic dysfunction. Gestational diabetes mellitus (GDM) is an early indicator of future cardiometabolic risk. However, studies examining the association of GDM with later MASLD have reported inconsistent findings, and data using the updated MASLD criteria and quantitative liver imaging are limited. We aimed to examine the prevalence of MASLD and steatotic liver disease (SLD) and their association 11–15 years after GDM.

Materials and methods: A prospective case-control cohort study including 212 women with prior GDM and 204 controls, with a mean follow-up duration of 13.3 years after index pregnancy. Hepatic steatosis was assessed primarily by magnetic resonance imaging (MRI), with transient elastography used when MRI was unavailable (6%). MASLD and SLD were defined according to the 2023 updated criteria. Logistic regression analyses were performed to evaluate the association between prior GDM and the presence of MASLD/SLD at follow-up.

Results: The prevalence of MASLD was higher among women with prior GDM compared with controls (65.1% vs 44.6%), as was the prevalence of SLD (67.5% vs 48.5%) (both $p<0.001$). Women with prior GDM had higher odds of MASLD (odds ratio [OR] 2.31, 95% CI 1.54–3.45), which remained significant after adjustment for age and lifestyle factors. Similar results were observed for SLD. Women with prior GDM also had a more adverse metabolic profile, including a higher prevalence of prediabetes, type 2 diabetes, dyslipidemia, and hypertension.

Conclusions: In this prospective cohort of women followed 11–15 years after pregnancy, prior GDM was associated with a higher prevalence of MASLD and SLD. These findings highlight the long-term hepatic implications of GDM and suggest that liver health should be considered as part of long-term follow-up after GDM.

PD084

ANALYSIS OF RISK FACTORS FOR RECURRENT GESTATIONAL DIABETES MELLITUS

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Gestational diabetes mellitus (GDM) is a pregnancy metabolic complication, with variable prevalence depending on ethnic groups, socio-economic conditions, and diagnostic criteria. GDM is linked to a higher risk of recurrence in subsequent pregnancies. Aim of this retrospective observational study was to compare women with recurrent GDM(RGDM) in two consecutive pregnancies with a group of women who only experienced GDM in their first pregnancy(NRGDM).
Clinical data, metabolic parameters, weight gain during pregnancy, therapy, maternal and fetal pregnancy outcome were collected.
305 women with two subsequent pregnancies were selected: 91% RGDM, 9% NRGDM ; 64% of RGDM develop GDM early in pregnancy.
RGDM showed a higher BMI before the second pregnancy(26.9±6.2 vs 25.2±5.9 kg/m^2 p<0.05); during the first pregnancy showed significant higher glycemia at OGTT (basal 90,1 vs 85,4mg/dl, p0.013; 60' 174,5 vs 160,8mg/dl, p 0.033 ; 120' 144,5 vs 138,2mg/dl, p=NS) .At followup they showed higher glycemia (90.9±8.9 vs 83.3 ±6.2mg/dl at baseline p <0.05; 153.5 ±25.2 vs 132.0 ±17.5mg/dl at 30' p<0.05; 141.9±35.5 vs 110.2±26.5mg/dl at 60' p<0.05 and at 120' 102.7±23.9 vs 92.4±22.0 mg/dl p<0.05), insulin curve showed a late pick in RGDM compared to NRGDM at 60' with respect to 30' and 20% had an abnormal glucose tolerance As for risk factors (family history of type 2 diabetes, age, obesity or overweight) no differences were found between the two groups. Maternal and fetal outcomes were comparable in the two groups RGDM need more frequently insulin therapy during the first pregnancy (27,5% vs 3.5% p 0.010)
RGDM are characterized by a higher BMI in subsequent pregnancy, higher rate of insulin therapy during previous gestation and higher glucose levels during OGTT for screening and follow up and an impaired insulin secretion.
To reduce weight retention lifestyle intervention is necessary in order to improve the rate of recurrent GDM.

PD085

CULTURALLY TAILORING GESTATIONAL DIABETES MELLITUS CARE: ALIGNING MIGRANT WOMEN'S NEEDS WITH HEALTH SERVICE PROVISION IN THE NETHERLANDS

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Background Gestational diabetes mellitus (GDM) healthcare is additionally challenging in the growing group of migrant women in the Western world, due to language and socioeconomic barriers and lower healthcare utilisation, resulting in higher perinatal morbidity. Limited awareness among healthcare professionals and a lack of care-individualisation, compounded by time shortages and understaffing, hamper mutual understanding between caregiver and patient.

Aim This qualitative study examines how multidisciplinary care addresses the needs of migrant women with GDM in southeast Amsterdam, the Netherlands. Combining patient and provider perspectives, it identifies discrepancies in expectations and cultural responsiveness, and makes recommendations for inclusive, culturally-tailored practices to improve alignment and health outcomes.

Materials and Methods Women with GDM from non-Western migrant population attending the outpatient department of a Dutch tertiary obstetric hospital and two community midwifery clinics, along with GDM care providers from the same institutions, were recruited. Semi-structured interviews explored migrant women's needs and culturally-tailored care. Inductive and deductive coding and exploratory analysis identified recurring themes in patient-provider alignments and misalignments.

Results Interviews with 16 migrant women and 15 healthcare professionals revealed four themes: incomplete GDM understanding, self-management challenges, cultural responsiveness, and recommendations for practice change. Alignments included shared belief in GDM care and overall service satisfaction. Misalignments involved delayed diagnosis explanation, insufficiently tailored diet advice, limited translator use and lack of continuity in care.

Conclusion The study highlights persistent challenges in communication, cultural adaptation, and continuity of care, while recognising existing strengths and ongoing efforts towards culturally inclusive and responsive practice. Our findings provide specific directions for improvement of care.

PD086

INDEPENDENT RISK FACTORS DIFFER AMONG PREECLAMPSIA SUBTYPES COMPLICATED BY GESTATIONAL DIABETES MELLITUS

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Aims: To compare the risk factors among preeclampsia (PE) subtypes with gestational diabetes mellitus (GDM).

Materials and Methods: Participants were enrolled between June 2024 and June 2025 at the Maternal and Child Health Hospital of Guangxi Zhuang Autonomous Region, and were categorized into five groups: controls, preterm PE-GDM, preterm PE-non-GDM, term PE-GDM, and term PE-non-GDM. Maternal demographic characteristics, medical history, first-trimester mean arterial pressure (MAP) and placental growth factor (PlGF) were analyzed between groups using one-way ANOVA or Kruskal-Wallis test for continuous variables, and χ^2 test or Fisher's exact test for categorical variables, as appropriate. Post-hoc pairwise comparisons were adjusted using Dunn test or Bonferroni correction. Independent risk factors were identified using multinomial logistic regression adjusted for age and primiparity.

Results: Among 2,174 screened pregnant women, 91 (4.2%) developed PE (32 preterm PE, 59 term PE) and 466 (21.4%) developed GDM. Overall comparisons revealed significant differences in maternal age, pre-pregnancy BMI (pre-BMI), history of chronic hypertension, polycystic ovary syndrome (PCOS), gestational hypertension history, PE history, in vitro fertilization (IVF) conception, PlGF, and MAP at first trimester (all $P<0.05$). In the multinomial regression analysis, preterm PE-GDM and -non-GDM shared most of the risk factors, including pre-BMI, history of chronic hypertension, PCOS, history of PE, MAP, and PlGF. Additionally preterm PE-non-GDM was significantly related to history of gestational hypertension (Aor 7.74). Term PE-GDM and -non-GDM also shared risk factors, such as pre-BMI, history of gestational hypertension, and MAP. In addition, term PE-GDM was strongly aligned with PCOS (Aor 4.31), PlGF (Aor 0.97), and history of chronic hypertension (Aor 13.06), and term PE-non-GDM was correlated with history of PE (Aor 14.22).

Conclusions: PE subtypes with or without GDM exhibited distinct independent risk factor profiles. These findings indicate heterogeneous underlying pathophysiology across PE-GDM phenotypes and suggest risk-stratified surveillance strategies in clinical practice.

PD087

MICRONUTRIENT STATUS IN EARLY PREGNANCY: ASSOCIATIONS WITH OBESITY, AND PRE-EXISTING DIABETES IN A MULTI-ETHNIC SPANISH COHORT

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Background:
Micronutrient deficiencies are common in women of reproductive age and may worsen during pregnancy due to increased fetal demands. Such deficiencies are linked to adverse maternal and neonatal outcomes. While supplementation is established for iron and folate, evidence for other nutrients, such as zinc, is less consistent, and prevalence data are heterogeneous. This study aimed to characterize micronutrient deficiencies in early pregnancy and examine associations with obesity, diabetes mellitus (DM), and socio-demographic factors in a multi-ethnic cohort.

Methods:
We conducted a retrospective observational study including 151 pregnant women at their first gestational visit (mean age 33±6.1 years; gestational age 13.5±5.3 weeks; BMI 33.0±8.8 kg/m²). Serum vitamin D, zinc, magnesium, vitamin B12, and folate were measured. Associations with obesity, DM, and ethnicity were assessed using chi-square/Fisher's exact tests and t-tests. Logistic regression was performed for vitamin D deficiency.

Results:
The cohort was 46% Caucasian; 57.3% had obesity, and 27.3% had pre-existing DM. Vitamin D deficiency was highly prevalent (<30 ng/mL: 92.3%; <20 ng/mL: 72.0% <10 ng/mL: 34.3%). Zinc, magnesium, and vitamin B12 deficiencies were observed in 63%, 55.9%, and 31.5% of participants, respectively, while folate deficiency was rare (2.1%). In multivariable analysis, BMI remained independently associated with vitamin D deficiency <20 ng/mL (adjusted OR 1.10 per kg/m², 95% CI 1.04–1.15), while Caucasian ethnicity was protective (adjusted OR 0.40, 95% CI 0.18–0.87). Vitamin B12 deficiency was significantly more frequent in non-Caucasian women and those with lower educational level (OR 0.32 and OR 0.21 for Caucasian ethnicity and higher education, respectively). No significant associations were observed for folate, magnesium, or zinc.

Conclusions:
Micronutrient deficiencies are highly prevalent in early pregnancy. Vitamin D deficiency is strongly associated with adiposity, and ethnicity influences vitamin D and B12 status. Early, individualized nutritional assessment is warranted, particularly in obese and multi-ethnic populations.

PD088

THE EXPERIENCES OF PARTNERS IN SUPPORTING HEALTHY LIFESTYLE BEHAVIOURS DURING PREGNANCY. A SCOPING REVIEW.

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Background

Maintaining a healthy lifestyle during pregnancy, including adequate nutrition and physical activity, is essential for maternal and child health. Increasing evidence highlights the importance of partner support in maintaining a healthy lifestyle, given partners' role in shaping daily routines, providing encouragement, and facilitating or hindering healthy choices. This scoping review aimed to explore partners' experiences in supporting healthy dietary and physical activity behaviours during pregnancy.

Methods

A scoping review was conducted following PRISMA-ScR guidelines and the Joanna Briggs Institute methodology. A search was performed in PubMed, Embase, CINAHL, Web of Science, and Scopus, as well as grey literature sources. Studies were included if they examined partners' experiences related to supporting adequate nutrition and/or physical activity during pregnancy. A total of 1,592 records were identified, of which 14 studies were ultimately included in the review after screening, eligibility assessment, and backward and forward snowballing.

Results

Partner support was shaped by interacting factors across multiple levels. At the individual level, perceiving pregnancy as a shared responsibility, having sufficient knowledge of dietary and physical activity recommendations, and being motivated to support healthy behaviours facilitated partner support. At the interpersonal level, support depended on relationship dynamics, including communication patterns and shared (un)healthy behaviours. Open communication facilitated support, whereas avoidance of sensitive topics, such as diet or weight gain, limited support. Cultural norms influenced expectations regarding partner roles during pregnancy. Environmental factors, including time constraints and limited access to healthy foods, often hindered the adoption of healthy behaviours despite positive intentions. At the healthcare system level, a lack of partner-inclusive information on dietary behaviours and physical activity reduced confidence to provide effective support.

Conclusion

Partner support for healthy lifestyle behaviours during pregnancy is influenced by a complex interplay of factors at multiple levels. Future interventions should adopt a couple-based approach, informed by partners' experiences, and actively involve partners to enhance lifestyle support and optimise health outcomes for the whole family.

PD089

SELF-TITRATION OF NPH INSULIN IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A PATIENT SAFETY AND SATISFACTION SURVEY

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Background Gestational diabetes mellitus (GDM) affects approximately 6,5% of pregnant women in Sweden. When lifestyle modifications are insufficient, NPH insulin is initiated. Conventionally, dose titration is performed weekly by an obstetrician using Glooko-monitored fasting glucose values. This study examined whether women could safely self-titrate their insulin dose using a structured written protocol, without direct clinician involvement.

Methods A web-based survey was distributed to 63 women who were currently pregnant or had delivered within the preceding four months and were independently titrating their NPH insulin dose. Five Likert-scale statements assessed perceived safety, adequacy of information received, anxiety levels, satisfaction with nursing support, and sense of participation in care. Response options ranged from *completely agree* to *do not agree at all*.

Results Twenty-nine women (46%) responded. Of these, 22/29 (76%) felt safe self-titrating their insulin dose, and 24/29 (83%) reported receiving sufficient information. Anxiety or fear was absent in 24/29 (83%) of respondents. Satisfaction with support from the diabetes nurse was high, with 24/29 (83%) rating it as sufficient. Additionally, 22/29 (76%) reported feeling actively involved in their own care.

Conclusions The majority of women with GDM who self-titrated NPH insulin reported feeling safe, well-informed, and engaged in their care. These findings suggest that structured self-titration protocols may be a feasible and acceptable approach, potentially reducing the clinical burden on obstetric teams. Larger prospective studies are warranted to confirm safety and efficacy.

PD090

HYBRID CLOSED-LOOP SYSTEMS IN TYPE 1 DIABETES PREGNANCY: INSULIN REQUIREMENTS AND PERINATAL OUTCOMES

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Objectives: Achieving strict glycemic targets in pregnant women with Type 1 Diabetes Mellitus (T1DM) is challenging due to progressive changes in insulin requirements. This study aimed to evaluate insulin requirement variations using Hybrid Closed-Loop (HCL) systems and their impact on glycemic control and perinatal outcomes.
Materials and methods: We conducted a retrospective monocentric study including 20 pregnant women with T1DM using HCL systems at Careggi University Hospital (2020–2025). Total daily insulin units (TDIU) and metabolic parameters (TIRp, TAR, TBR, GMI) were evaluated from preconception to delivery.
Results: Insulin demand increased from week 13, with an approximate 15% monthly rise, reaching a 100% increase at the end of pregnancy. Optimal glycemic target (TIRp >70%) was achieved by week 8 without increased risk of hypoglycemia. Median gestational age at delivery was 38.1 weeks. Labor induction was performed in 61.1% of patients, while the cesarean section rate was 38.9%, with no shoulder dystocia casers or severe perineal lacerations. The most prevalent maternal complications were gestational hypertension (10%) and preeclampsia (5%). Median birth weight was 3350g, with no reported cases of macrosomia. LGA rate was 22.2% and no SGA newborns were reported. Neonatal outcomes were favorable, with 27.7% NICU admissions.
Conclusions: HCL systems demonstrated efficacy and safety in managing insulin requirements during pregnancy by mimicking physiological adaptations, thereby facilitating optimal glycemic control and favorable perinatal outcomes. The success of this therapeutic approach is closely dependent on treatment personalization and integrated multidisciplinary management.

PD091

THE EFFECT OF MATERNAL DIABETES ON FETAL HEPATIC FAT ASSESSED BY MRI

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Background/Aims

Maternal diabetes is associated with maternal metabolic dysfunction and increased maternal liver fat. However, the effect of maternal diabetes on fetal liver fat remains to be explored. MRI-based proton density fat fraction (PDFF) provides detailed information on liver fat content in both mother and fetus. This study aims to compare fetal hepatic fat between pregnancies with and without diabetes when assessed by MRI.

Material and methods

This prospective study is part of the FaPDi (Fetal growth and Placental function in Diabetes) cohort with MRI-scans performed at gestational week (GW) 25-30 and 33-38. We included 55 pregnant women (control=22 and diabetes=33) with assessment of fetal and maternal fat fraction by the IDEAL method that has shown to accurate measure fat content in the liver. We measured fat fraction within a region of interest (ROI) (350-450 pixels) placed in the lower right lobe of the maternal liver and the largest possible ROI for the fetal liver. The association between fetal hepatic fat and maternal diabetes status, maternal hepatic fat, and maternal HbA1C was investigated by multiple linear regression, adjusted for maternal age and BMI.

Results

Maternal diabetes was associated with higher fetal fat fraction. However, it only reached statistical significance at the first visit (mean (SD): 2.42 (0.58) vs 1.94 (0.46), p=0.01).

Fetal fat fraction showed a positive linear correlation with maternal HbA1c at GW 25-30 (β=0.03, p=0.002, R^2=0.24) and GW 33-38 (β=0.03, p=0.022, R^2=0.13); but no association was found with maternal BMI or maternal hepatic fat fraction.

Conclusion

This small pilot study suggests that maternal diabetes has significant metabolic consequences for the developing fetus. Maternal diabetes is associated with increased fetal hepatic fat fraction, and fetal fat fraction showed a positive correlation with maternal glycemic control. Our findings need to be further explored in larger cohorts stratified on diabetes types.

PD092

DEPRESSIVE SYMPTOMS IN WOMEN WITH PREGESTATIONAL DIABETES IN EARLY PREGNANCY: INSIGHTS FROM THE DANISH DIABETES BIRTH REGISTRY 2 (DDBR2)

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Background/aims: Previous studies have shown that depression is common in pregnancies affected by pregestational diabetes. However, these studies were limited by small sample sizes, and the representativeness of included samples remains unclear, limiting generalizability. Therefore, this study aimed to 1) examine the representativeness of women completing the depression questionnaire, 2) assess whether early depression scores differed between women with type 1 and type 2 diabetes, and 3) explore associations between depression and HbA1c in early pregnancy.
Materials and methods: This study used data from the Danish Diabetes Birth Registry 2 (DDBR2), a nationwide 5-year prospective cohort study (2023-2028). Women eligible for the questionnaire study with a first pregnancy in DDBR2 between 2023-2025 were included. Depressive symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS). A cut-off score of ≥11 was used to define elevated depressive symptoms.
Results: Of the 640 eligible women, 349 (55%) completed the early pregnancy EPDS. Compared with women who did not complete the EPDS, women who completed the questionnaire had a higher educational level (43% vs. 32%). No differences were observed between groups for age, diabetes duration, diabetes type, ethnicity, pre-pregnancy body mass index and HbA1c before and in early pregnancy. Among women completing the EPDS, 20% had elevated depressive symptoms. Depression scores did not differ between women with type 1 and type 2 diabetes and were not associated with HbA1c levels around week 12.
Conclusions: Women completing the EPDS had a higher educational level than non-participants. As a lower educational level is a known risk factor for depression, the observed prevalence of elevated depressive symptoms may be an underestimation. Nevertheless, the prevalence appeared high and warrants attention given the increased risk of adverse maternal and neonatal outcomes.

PD093

INFANT FEEDING EXPERIENCES ACROSS THE PERINATAL PERIOD IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A QUALITATIVE LONGITUDINAL STUDY

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Background/Aims

Breastfeeding is associated with improved maternal glycaemic outcomes and reduced long-term risk of type 2 diabetes (T2D) following gestational diabetes mellitus (GDM). However, women with GDM have lower breastfeeding initiation and duration rates. This study explored longitudinal infant-feeding experiences among women with GDM and how decisions evolved in relation to postnatal recovery and metabolic risk.

Materials and Methods

A qualitative longitudinal study was conducted with 23 women diagnosed with GDM, recruited during pregnancy across the UK. Semi-structured individual interviews were conducted at 35 weeks' gestation, three months, and 12 months postnatally. Data were analysed longitudinally using reflexive thematic analysis.

Results

Participants reported strong antenatal intentions to breastfeed, with many undertaking antenatal colostrum harvesting. Motivation was primarily driven by perceived infant health benefits, particularly neonatal glycaemic stability, alongside perceived responsibility to provide optimal nutrition. Some recognised longer-term benefits, including reduced risk of T2D. Postnatally, these intentions were challenged by systemic barriers, limited practical breastfeeding information, and fragmented care with minimal access to specialist lactation support. Women described growing ambivalence: wanting to continue whilst managing psychological and physical challenges. Feeding decisions were shaped by embodied experiences, psychological wellbeing, and competing demands including recovery, sleep deprivation, infant care and wider responsibilities. While some women continued breastfeeding at three and 12 months, sadness and guilt were common among women who transitioned to mixed or formula feeding earlier than planned. Early cessation was often due to a combination of physical challenges, pain, and limited support.

Conclusions

Infant feeding after GDM is complex, with implications for maternal and infant metabolic health. Persistent ambivalence and early challenges may contribute to shorter breastfeeding duration. Postnatal care should extend beyond glycaemic monitoring to include sustained infant feeding support. Improving education on breastfeeding's role in reducing future T2D risk offers a clear opportunity to improve long-term maternal and infant outcomes.

PD094

RISK PERCEPTION OF DIABETES AND ITS INFLUENCE ON POSTPARTUM SCREENING ATTENDANCE AMONG WOMEN WITH GESTATIONAL DIABETES: A LONGITUDINAL QUALITATIVE STUDY

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Background:
Gestational diabetes mellitus (GDM) is associated with an increased risk of type 2 diabetes (T2D). Postnatal screening is recommended to support early detection and prevention, however, attendance at follow-up screening remains suboptimal. Little is known about how women's perceptions of risk and engagement with screening evolve. This study explored longitudinal changes in risk perception and screening experiences in the first year postnatal.

Methods:
A qualitative longitudinal study was conducted with 23 women diagnosed with GDM in the UK. Semi-structured interviews took place during pregnancy, at three months- and one year- postpartum. Data were analysed using reflexive thematic analysis focused on changes in T2D risk perception and screening experiences.

Results:
Three preliminary themes were identified:
1. T2D risk displaced within postnatal life and maternal priorities: Although women were informed of increased T2D risk, this knowledge rapidly lost salience postpartum. The demands of early motherhood, alongside a moral/identity tension to prioritise infant health over self-care, meant women focused on their baby's needs rather than their own risk.
2. Uncertain and contested understandings of T2D risk: Risk was understood in fragmented and sometimes contradictory ways. Women expressed uncertainty about likelihood and timing, alongside a tension between agency and fatalism, describing attempts to reduce risk while viewing T2D as inevitable due to genetic factors.
3. Screening as structurally unsupported and individualised: Screening was not simply missed but experienced as structurally unsupported. Women reported minimal proactive follow-up, unclear care pathways, and breakdowns in continuity. Responsibility for initiating screening was implicitly shifted onto women, who were expected to organise follow-up amidst competing demands of early motherhood.

Conclusions:
T2D risk perception after GDM is dynamic but characterised by loss of salience, uncertainty, and structural gaps in follow-up. Improving screening requires system-level approaches that reduce reliance on individual agency and better integrate maternal health into postnatal care.

PD095

PREVALENCE OF METABOLIC SYNDROME 11-15 YEARS AFTER GESTATIONAL DIABETES – FINNGEDI FOLLOW-UP STUDY

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Background/Aims:
Gestational diabetes (GDM) has been associated with adverse metabolic outcomes later in life. This study examines the prevalence of metabolic syndrome (MetS) among women with a history of GDM compared to controls 11-15 years after their index pregnancy.

Material and methods:
We followed the Finnish prospective case-control cohort 11-15 years after the index pregnancy, including 213 women with a history of GDM and 204 non-GDM controls. The mean (SD) follow-up time was 13.3 (0.6) years for women with GDM and 13.3 (0.8) years for controls. The mean (SD) age was 45.3 (5.1) years and 43.2 (5.2) years, respectively. Metabolic syndrome was defined according to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III 2005) criteria. MetS was defined if ≥ 3/5 of the following measures were met: waist circumference ≥88.0 cm, fasting glucose ≥5.6 mmol/l or diabetes, blood pressure ≥130/85 mmHg (or medication), high-density lipoprotein <1.3 mmol/l and triglycerides ≥1.7 mmol/l (or medication). Logistic regression, adjusted for age, socioeconomic status (SES), smoking, and body mass index (BMI), was performed.

Results:
Of women with a history of GDM 45.5% (n=97) had MetS compared to 20.6% (n=42) among controls (OR 3.23, 95% CI 2.09–4.98). After adjustments for age, SES and smoking the results were similar (OR 3.07, 95% CI 1.96–4.81). Even after additional adjustment for body mass index (BMI), women with a history of GDM had 2.75-fold higher odds (95% CI, 1.57–4.80) of MetS compared with controls.

Conclusion:
Metabolic syndrome was alarmingly common on average 13 years postpartum, affecting almost half of women with a history of GDM. This highlights the clustering of metabolic risk factors associated with GDM and emphasises the importance of postpartum screening and targeted preventive measures before long-term health consequences develop.

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PD096

CGM-ASSESSED HYPOGLYCEMIA AFTER METABOLIC BARIATRIC SURGERY IN THE GENERAL AND PREGNANT POPULATION: A SYSTEMATIC REVIEW AND META-ANALYSIS.

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Background and aims

Post-bariatric hypoglycemia is an increasingly recognized complication of metabolic bariatric surgery, yet its true burden remains uncertain. Continuous glucose monitoring (CGM) captures real-world hypoglycemia exposure. This review provides an estimate of the prevalence of hypoglycemia following metabolic bariatric surgery using CGM.

Materials and methods

We performed a systematic literature search across seven electronic databases: PubMed, Embase, Web of Science, Scopus, Cochrane, Clinicaltrials.gov and ICTRP, from inception to 12 March 2025 for studies reporting CGM-derived hypoglycemia after Roux-en-Y gastric bypass or sleeve gastrectomy. Outcomes included (1) overall prevalence of hypoglycemia, (2) time spent below glucose thresholds, and (3) frequency of hypoglycemic episodes. Random-effects meta-analyses were performed.

Results

We identified 3,214 records and removed 1.811 duplicates and three retracted records. We reviewed 1,400 titles and abstracts and selected 43 full text articles for assessment. Based on predefined criteria, we included 22 studies with a total of 610 individuals (196 sleeve gastrectomy, 414 gastric bypass). One study in pregnancy, comprising 23 participants after gastric bypass, was included. Pooled analysis showed that hypoglycemia occurred in 51.9% of participants (95% CI 41.3–62.4%) with moderate heterogeneity (I^2=62.2%). The mean percentage of time spent in hypoglycemia was 3.12% (95% CI 2.18–4.06%), with high heterogeneity (I^2=95.5%). In the small pregnancy study, trimester specific values were 1.5% (SD 2.5%), 3.1% (SD 4.5%) and 3.0% (SD 4.9%) of time spent in hypoglycemia. Within-study comparisons indicated that gastric bypass likely results in a slight increase in both the prevalence of hypoglycemia and the proportion of time spent spent in hypoglycemia compared to sleeve gastrectomy.

Conclusions

Hypoglycemia appears common after metabolic bariatric surgery when assessed by CGM and may be under-recognized. Data in pregnancy are limited and do not allow firm conclusions. These findings support further research to quantify and clarify the clinical significance of CGM-detected hypoglycemia.

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PD097

TO WHAT EXTENT DOES HBA1C FROM EARLY GESTATION PREDICT EXCESSIVE FETAL GROWTH AND GROWTH TRAJECTORIES IN PREGNANCIES WITH PREEXISTING DIABETES?

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Aim:
In pregnancies complicated by pre-existing diabetes, excessive fetal growth remains common even when glycemic control is adequate. This study aimed to: (1)assess the risk of large-for-gestational-age (LGA) birth in relation to maternal parameters and HbA1c levels across each trimester; (2)identify predictors of fetal growth trajectories; and (3)determine when growth deviations emerge during pregnancy.
Materials and methods:
We prospectively analyzed pregnancies with pre-existing diabetes from 2010 to 2024.
Maternal data included BMI, age, parity, insulin therapy, preexisting hypertension, gestational weight gain, and HbA1c. Fetal growth was evaluated by ultrasound using abdominal circumference(AC) and estimated fetal weight(EFW) at predefined gestational intervals. LGA risk was modeled with logistic regression using trimester-specific HbA1c as the main exposure, while longitudinal analyses were used to characterize growth patterns.
Results:
The study included 939 pregnancies: 64.2% with type 1 and 36.9% with type 2 diabetes. Obesity was more prevalent in type 2 diabetes, LGA rates were higher in type 1 diabetes (38.4%vs.25.0%; p<0.001). HbA1c levels were significantly higher in all trimesters (all p<0.001), preconception values did not differ. Maternal age, BMI(OR 1.04), parity(OR 1.31), and HbA1c were independently associated with increased LGA risk. HbA1c in the third trimester showed the strongest effect (OR 1.74, 95% CI 1.4–2.1). Trajectory modeling based on EFW and AC revealed significant associations with BMI and HbA1c, with growth rates accelerating as pregnancy progressed. HbA1c explained 0.49% (R2) of the unique variance in EFW and 0.65% in AC; BMI 0.36% of the unique variance in EFW. HbA1c thresholds for the lowest LGA rate at about 20% were <6.2% in the first trimester, <6.0% in the second, and <5.8% in the third. Differences in fetal growth between LGA and non-LGA pregnancies became apparent in mid-gestation and persisted thereafter.
Conclusion:
Growth deviations can be identified from mid-gestation, with excessive growth largely linked to maternal HbA1c from early pregnancy and increasing impact later in gestation. Trimester-specific HbA1c thresholds may help guide clinical management.
However, fetal growth variability is only partly explained by HbA1c.

PD098

IDENTIFYING EFFECTIVE COMPONENTS OF DIGITAL HEALTH INTERVENTIONS FOR REDUCING POSTPARTUM WEIGHT RETENTION: A SYSTEMATIC REVIEW

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Background/Aims: Postpartum weight retention (PPWR) is a key contributor to long-term maternal obesity, increasing the risk of chronic conditions such as type 2 diabetes and cardiovascular disease. Although digital health interventions, delivered via apps, SMS, or wearable devices, offer a promising and scalable approach for postpartum support, more knowledge is needed about the specific components driving their effectiveness. This systematic review aims to Identify and evaluate the most effective components of mobile health (mHealth) interventions used to reduce PPWR.

Materials and Methods: A systematic search was conducted across five databases: PubMed, Embase, Scopus, Web of Science, and CINAHL. Eligible studies were randomized controlled trials (RCTs) examining digital intervention components targeting PPWR in women aged 18 or over. Two independent reviewers screened all records, with disagreements resolved by consensus. Data extraction is currently underway using a pre-tested form informed by the TIDieR checklist, covering intervention components, mode of delivery, and weight-related outcomes.

Results: After removing duplicates, titles and abstracts of 2148 articles were screened. Following full-text assessment of 96 studies, 34 RCTs met the inclusion criteria and are currently undergoing data extraction. Findings will be ready to present at the conference.

Conclusions: This review will provide a comprehensive overview of the effectiveness of digital intervention components, such as self-monitoring, goal setting, feedback, and gamification, in reducing PPWR. Findings will inform the design of evidence-based, user-centered digital tools to improve postpartum care, with implications for clinical practice, research, and public health policy.

PD099

HEMOGLOBIN–MORPHOLOGY DISCORDANCE IN GESTATIONAL DIABETES: ARE WE MISCLASSIFYING ANEMIA IN SUPPLEMENTED POPULATIONS?

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Background/Aims

Meta-analytic data from South Asia report a low prevalence of anemia in gestational diabetes mellitus (GDM) (~6%) despite widespread antenatal iron supplementation. Hemoglobin (Hb), the primary screening tool, is influenced by hemodilution, supplementation, and inflammation, limiting its specificity for iron deficiency. Ferritin interpretation is similarly constrained in this setting due to supplementation and its role as an acute-phase reactant, raising the risk of misclassification. In this context, peripheral smear offers a pragmatic morphological correlate of iron status less affected by these confounders. We evaluated concordance between Hb-defined anemia and smear morphology in routinely supplemented women with GDM.

Materials and Methods

In this cross-sectional study, 100 women with GDM at a tertiary care center in India, all receiving prophylactic iron from 12–14 weeks' gestation, were evaluated. GDM was diagnosed using DIPSI criteria. Anemia was defined by WHO thresholds (Hb <11 g/dL). Peripheral smears, independently reviewed by blinded pathologists, were categorized as microcytic hypochromic or normocytic normochromic as a pragmatic morphological proxy for iron status in the absence of reliable biochemical markers in supplemented, inflammation-prone settings. Agreement between Hb and morphology was assessed (κ statistic), and correlations between Hb and glycemic parameters were examined.

Results

Hb-defined anemia was present in 6% (6/100), whereas microcytic morphology was identified in 3% (3/100). Among anemic women, only 50% demonstrated microcytosis, with the remainder normocytic—indicating etiological heterogeneity. Agreement between Hb and smear findings was substantial ($\kappa = 0.65$) yet incomplete. Hb showed a strong positive correlation with glycemic parameters ($r = 0.75$, $p < 0.001$), indicating that Hb variation tracks glycemia and may reflect metabolic influences independent of iron status. Microcytosis was infrequent and clustered in women with identifiable clinical risk factors.

Conclusions

In routinely supplemented GDM populations, Hb alone may misclassify anemia etiology in a clinically relevant subset. The observed hemoglobin–morphology discordance challenges the assumption that anemia in GDM equates to iron deficiency and raises concern for indiscriminate iron therapy. Peripheral smear provides a pragmatic, low-cost adjunct to refine etiological classification and supports a shift from blanket supplementation toward targeted, physiology-informed ("precision") nutrition strategies, particularly in high-supplementation settings. These findings warrant validation in larger, biomarker-integrated cohorts.

PD100

EVALUATION OF DISCHARGE SUMMARIES TO GENERAL PRACTICE IN WOMEN WITH PREECLAMPSIA

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Background/Aims
Women with prior preeclampsia have a 2-3 fold increased risk of cardiovascular disease. In Denmark, structured follow-up is recommended but remains insufficient, potentially due to inadequate cross sectoral communication. This study aims to evaluate the quality of discharge summaries for women with prior preeclampsia in Denmark.
Materials and methods
In this cross-sectional audit, 478 women with preeclampsia who delivered at hospitals in the Central Denmark Region between May 1, 2024 and October 1, 2025 were identified, and their inpatient discharge summary and outpatient clinical letter were reviewed. Each document was assessed for the presence of diagnostic documentation, follow-up recommendations, antihypertensive treatment at discharge, and information on long-term cardiovascular risk and lifestyle counselling. A composite score (0–3) was constructed per woman across both document types, assigning one point for each of the following: (1) documentation of preeclampsia diagnosis, (2) documentation of a follow-up plan, and (3) documentation of antihypertensive medication at discharge.
Results:
Overall, 314 (65.7%) fulfilled all three composite criteria, 149 (31.2%) showed partial fulfilment, and 15 (3.1%) fulfilled none. Preeclampsia diagnosis was documented in inpatient discharge summary for 431 (90.2%) women and in outpatient clinic letter in 176 (36.8%), while 38 (7.9%) women had no diagnostic documentation. A follow-up plan was absent in 118 (24.7%). Among women with a follow up plan, 57.1% had a tapering plan and instructions for blood pressure monitoring, whereas 33.8% were recommended follow-up in general practice. Cardiovascular or renal risk information appeared in 16 (3.4%) and lifestyle counselling in 0.2% across either document. Additionally, 7.7% of women discharged with antihypertensive medication had no follow-up plan.
Conclusions:
Discharge summaries for women with preeclampsia are of inadequate quality, with inconsistent follow-up planning and minimal communication of long-term risk. These findings highlight a need to strengthen cross-sectoral communication to support appropriate follow-up after preeclampsia.

PD101

TEMPORAL DISTANCE AND THE EXPERIENCE OF GESTATIONAL DIABETES IN THE PERINATAL PERIOD: A LONGITUDINAL QUALITATIVE ANALYSIS

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Background/Aims

Gestational diabetes mellitus (GDM) has predominantly been approached through a biomedical lens, with emphasis on glycaemic management, perinatal and neonatal outcomes. However, a growing body of research demonstrates that its psychosocial *sequelae* and embodied consequences extend beyond the pregnancy and birth, including disordered eating, reproductive anxiety, or persistent vigilance towards the maternal body. Drawing on anthropological theories of embodied memory and illness experience, and on the concept of GDM as a "haunting" that outlasts diagnostic closure, this paper examines how the passage of postpartum time reshapes women's narrative and embodied relationship to their GDM pregnancy, their body, and their baby. Specifically, we explore whether and how, temporal distance functions as narrative re-emplotment through which the affective and bodily residue of GDM is renegotiated.

Materials and methods

This study draws on longitudinal qualitative data from the TANGO study, an NIHR-funded programme co-designing a mother–infant dyad intervention to reduce type 2 diabetes risk. Semi-structured interviews were conducted at three timepoints: during pregnancy (TP1), three months postpartum (TP2), and twelve months postpartum (TP3). Data were analysed using reflexive thematic analysis, with a longitudinal, within-in case approach to examine temporal shifts in narrative framing and embodied self-understanding.

Results

Within-case analysis revealed temporal shifts in how GDM was narrated and embodied. At TP1/TP2, women described GDM as disruptive and surveilled, characterised by intensive bodily monitoring, moral responsibility, and anxiety about fetal and future health. Narratives were immediate and constrained. By TP3, accounts loosened, while the affective imprint persisted, it was recontextualised within broader life narratives. For example, some women described reduced dietary vigilance while others reframed earlier anxiety as temporary. Some, who had initially ruled out future pregnancy because of the negative impact of GDM, later expressed renewed openness. The "haunting" of GDM remained but was re-narrated over time.

Conclusions

Postpartum time operates not merely as healing but as active narrative labour. Longitudinal qualitative designs are essential to capture how GDM's embodied memory is remade. Understanding how women's experiences evolve can inform more temporally responsive interventions, supporting improved screening uptake and engagement with type 2 diabetes prevention after GDM.

PD102

IMPACT OF OBESITY IN WOMEN WITH GESTATIONAL DIABETES

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Background
The management of gestational diabetes (GDM) requires strict glycemic control to mitigate maternal-fetal-neonatal complications. Even with optimal metabolic control, adverse outcomes persist.
Aims: To analyze the clinical and obstetric characteristics and associated maternal-fetal complications in women with GDM according to the treatment used. To evaluate postpartum metabolic status.
Materials and methods: A multicenter, observational, analytical study based on the records of pregnant women with GDM (ALAD/NICE criteria) included in EDUGEST-2. Data from QUALIDAB-GEST were analyzed, including cardiovascular risk factors, obstetric history, clinical and metabolic indicators, treatment, mode of delivery, newborn characteristics, maternal and fetal-neonatal complications, and postpartum reclassification at 6 weeks. Descriptive analysis used mean ± standard deviation (SD) or proportions; differences were assessed using parametric and non-parametric tests, as appropriate.
Results: A total of 2030 women with gestational diabetes were included (age: 30.3 ± 6.1 years; BMI: 30.9 ± 6.7 kg/m²); 44.0% were obese. 33.0% required insulin after diagnosis. Women who began pregnancy with a BMI of 32.7 ± 6.8 kg/m² required insulin for metabolic control, unlike those with a BMI of 29.9 ± 6.5 kg/m² ($p < 0.000$) who did not. Insulin-treated women had higher rates of cesarean section (67.1% vs. 59.3%), preeclampsia, and pregnancy-induced hypertension ($p < 0.000$). Newborns showed higher rates of macrosomia, respiratory distress, hypoglycemia, and hyperbilirubinemia. In reclassification at 6 weeks postpartum, metabolic abnormalities were more frequent in women who required insulin during pregnancy in women who required insulin during pregnancy (type 2 diabetes: 6.9% vs. 2.0%; prediabetes: 21.8% vs. 14.8%; $p < 0.001$).
Conclusions: In women with gestational diabetes mellitus (GDM), obesity is a critical risk factor for adverse pregnancy outcomes and predicts the development of postpartum prediabetes and diabetes (28.7% vs 16.8% p<0.001) , even when optimal glycemic control is achieved. This underscores the need for interventions beyond standard metabolic management.

PD103

SOCIAL DEPRIVATION AND PERINATAL OUTCOMES: DIFFERENTIAL EFFECTS IN WOMEN WITH AND WITHOUT HYPERGLYCAEMIA IN PREGNANCY

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1- Background/Aims

Socioeconomic deprivation, a risk factor for hyperglycaemia in pregnancy (HIP), may be associated with adverse perinatal outcomes differently by HIP status. Our objective was to quantify deprivation as risk factor for HIP and adverse perinatal outcomes.

2- Material and methods

We used the data from French healthcare insurance database to examine, with multi-level logistic regression, the role of individual level (complementary healthcare coverage (CMUc) users) and neighborhood (French deprivation index, FDep) deprivation in (i) HIP prevalence and (ii) 10 adverse outcomes, in all women or by HIP status in case of interaction between HIP and CMUc.

3- Results

We included 97% of the deliveries after 22 gestational weeks in European France in 2015 (700,812 mother and child dyads). HIP was more prevalent in case of individual (CMUc vs no: odds ratio (OR) 1.23 [95% confidence interval 1.20-1.26]) and neighborhood (most vs least deprived FDep quintile OR 1.29 [1.24-1.35] deprivation. Regardless of HIP status (no interaction), CMUc was associated with caesarean delivery (OR 1.46 [1.43-1.48]), neonatal hypoglycaemia (OR 1.10 [1.07-1.14] and neonatal intensive care unit admission (OR 1.13 [1.09-1.17]). The association between CMUc and the following outcomes differed by HIP status (interaction). CMUc was positively associated with pre-eclampsia (No HIP: OR 1.34 [1.27-1.41]; HIP: OR 1.29 [1.15-1.46]) and preterm delivery (No HIP: OR 1.27 [1.23-1.30]; HIP: OR 1.20 [1.12-1.29]); negatively ((No HIP: OR 0.92 [0.90-0.94]) or positively (HIP: OR 1.18 [1.13-1.24]) with large-for-gestational-age infants. Finally, CMUc was associated with shoulder dystocia (OR 0.94 [0.91-0.96]) and small-for-gestational-age infants (OR 1.25 [1.23-1.28]) only in women without HIP. The results were globally similar for neighborhood deprivation.

4- Conclusions

HIP status may influence the impact of deprivation on adverse pregnancy outcomes.

PD104

GENETIC RISK FOR CORONARY ARTERY DISEASE IN WOMEN WITH PRIOR GESTATIONAL DIABETES

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Background/Aims: Women with gestational diabetes mellitus (GDM) face an increased risk of coronary artery disease (CAD). A polygenic score (PGS) captures cumulative genetic susceptibility and may identify individuals at elevated CAD risk. We examined whether a CAD-PGS in women with prior GDM was associated with: 1. maternal and perinatal characteristics during pregnancy 2. the cardiometabolic risk-profile later in life, and 3. development of CAD.

Materials and methods: We included 370 women with prior GDM (1978-1996) who participated in a clinical follow-up (2000-2002) a median of 11 years after pregnancy, including assessment of cardiometabolic risk-profile (anthropometrics, blood pressure, lipids, and glucose tolerance). CAD diagnoses were obtained from national registries (until 2019) a median of 30 years after pregnancy. A CAD-PGS was calculated for all participants. Associations with maternal and perinatal characteristics and cardiometabolic risk factors were examined per 1 SD increase in CAD-PGS using linear and logistic regression, while the predictive ability for CAD was assessed by receiver operating characteristic area under the curve (ROC AUC).

Results: The CAD-PGS was associated with higher pre-pregnancy BMI (β=0.78 kg/m^2 (95% CI: 0.15; 1.40)) and lower birthweight z-score (β=-0.22 (95% CI: -0.37; -0.07)) at index pregnancy and lower HDL cholesterol (β=-0.05 mmol/L (95% CI: -0.09; -0.02)), and higher odds ratio (OR) for type 2 diabetes (1.41 (95% CI: 1.11; 1.80)) at clinical follow-up.
Overall, 10.5% (n=39) had a CAD diagnosis in the registries (median age: 61.7 years). OR for CAD was 1.48 (95% CI 1.05; 2.08) per 1 SD increase in CAD-PGS. The predictive ability of CAD-PGS for CAD development was 0.607.

Conclusions: Genetic susceptibility to CAD may be reflected in clinical characteristics during pregnancy and later cardiometabolic risk-profile among women with prior GDM.
However, the CAD-PGS had limited predictive ability of CAD development, which may reflect the relatively low age at register follow-up

PD105

PLASMA METABOLOMIC PROFILES IN GESTATIONAL DIABETES MELLITUS (GDM): STUDY IN CROATIAN POPULATION

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Background and aims: Gestational diabetes mellitus (GDM) is characterized by profound metabolic alterations; however, plasma metabolomic profiles associated with GDM are not yet fully understood. Untargeted metabolomics enables comprehensive profiling of metabolite changes that may not be detected by conventional targeted approaches. This study used two complementary untargeted metabolomic platforms to comprehensively analyze plasma metabolic profiles of women with GDM and those with normal glucose tolerance (NGT). We also performed preliminary biostatistical and bioinformatic analyses to identify metabolites and metabolic pathways associated with GDM.

Materials and Methods: The study included 220 women from the PlaNS cohort established in Zagreb, Croatia. Of these, 86 women were diagnosed with GDM according to International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria, while 134 women had NGT. Blood samples were collected at the end of pregnancy, in the morning after an overnight fast. Plasma metabolomes were analyzed using gas chromatography–mass spectrometry (GC–MS) and liquid chromatography–mass spectrometry (LC–MS). Data were subjected to standard quality control and normalization procedures. Metabolite annotations were based on reference databases and are putative. Both multivariate and univariate statistical approaches were applied to identify discriminative metabolites and associated metabolic pathways.

Results: Preliminary analyses revealed metabolomic differences between GDM and NGT groups, particularly in amino acids and their derivatives, phospholipids, fatty acids and other lipids. Pathway-level analyses suggested alterations in multiple biological processes in women with GDM, including redox homeostasis, mitochondrial dysfunction, inflammatory signaling, amino acid metabolism, and energy metabolism, including gluconeogenesis, lipid signaling, and lipolysis.

Conclusion: These findings indicate that GDM is associated with a distinct plasma metabolomic signature at term, consistent with insulin resistance and increased metabolic stress, providing a better understanding of the metabolic alterations underlying GDM.

PD106

MATERNAL BONE TURNOVER MARKERS AND FETAL GROWTH IN PREGNANCY FOLLOWING ROUX-EN-Y GASTRIC BYPASS: POST-HOC ANALYSIS OF A PROSPECTIVE COHORT STUDY

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Background/Aims
Pregnancy following Roux-en-Y gastric bypass (RYGB) is associated with an increased risk of small-for-gestational-age (SGA) neonates and reduced fetal femur length. Maternal bone metabolism during pregnancy after RYGB remains poorly investigated. In this post hoc analysis of the Bariatric surgery and consequences for mother and baby in pregnancy (BAMBI) study, we examined longitudinal changes in maternal bone turnover markers after RYGB and their association with fetal growth.
Materials and methods
Twenty-three pregnant women with RYGB and 23 BMI- and parity-matched pregnant controls were prospectively studied. Fasting blood samples were collected in the first and third trimester to measure C-terminal telopeptide of type 1 collagen (CTX-1; bone resorption) and procollagen type 1 N-terminal propeptide (P1NP; bone formation). Fetal ultrasound was performed in all trimesters. Neonatal anthropometrics were recorded at birth, and neonatal dual-energy X-ray absorptiometry (DXA) scans were performed within three days postpartum. Regression analyses assessed associations between maternal CTX-1 and P1NP levels and femur length and birthweight.
Results
Women with RYGB had higher first-trimester CTX-1 (389 [338–509] vs. 352 [261–415] pg/mL, p=0.02) and lower third-trimester P1NP (48 [43–57] vs. 68 [50–156] ng/mL, p<0.01) than controls. CTX-1 increased during pregnancy in both groups, whereas P1NP increased only in controls. Neonates of women with RYGB had lower birthweight (3365 (3035-3695) vs. 3630 (3355-3920) g, p=0.08), lower femur length percentiles (week 32: 34 (16-48) vs. 69 (33-84), p<0.01, week 36: 52 (33-61) vs. 77 (65-91), p<0.01), and lower bone mineral content (57 [54–61] vs. 65 [64–70] g, p=0.02). No significant associations were found between maternal bone turnover markers and fetal growth.
Conclusions
Pregnancy after RYGB was associated with altered maternal bone turnover and reduced fetal growth, but bone turnover markers were not significantly associated with fetal growth. Larger studies are needed to clarify these relationships.

PD107

OFFSPRING BODY COMPOSITION AND METABOLIC HEALTH 12 YEARS AFTER THE RANDOMIZED TREATMENT OF OBESE PREGNANT WOMEN (TOP) LIFESTYLE INTERVENTION

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Background/Aims

Maternal obesity is associated with increased risk of obesity and adverse metabolic health in offspring. In the Treatment of Obese Pregnant Women (TOP) study, lifestyle intervention during pregnancy reduced gestational weight gain (GWG), but the extent to which this affects offspring fat mass index (FMI), body composition, and cardiometabolic health remains uncertain.

Materials and methods

The 12-year follow-up included 245 (66%) of 377 eligible children from the TOP study, in which pregnant women with obesity were randomized 1:1:1 to physical activity plus dietary intervention (PA+D), physical activity (PA), or standard care. Offspring body composition was assessed by dual-energy X-ray absorptiometry; anthropometry and blood pressure were measured, and fasting blood samples were collected. BMI SDS and ISO-BMI categories were derived using sex- and age-specific references. Linear regression models compared intervention groups with controls, adjusting for age, sex, and pubertal stage.

Results

Offspring mean (SD) age was 13.8 (0.4) years; 51% were male. Mean BMI SDS was 0.78 (1.20) in boys and 1.10 (1.22) in girls. In total, 73 (29.8%) were overweight and 21 (8.6%) obese, corresponding to 94 (38.4%) with ISO-BMI ≥25. Groups did not differ in BMI SDS, body composition, blood pressure, HbA1c, glucose, insulin, C-peptide, HOMA-IR, or lipids. However, PA+D offspring had higher ISO-BMI ≥25 than controls (β=0.16, 95% CI 0.01–0.32; p=0.039). Maternal pre-pregnancy BMI was positively associated with offspring FMI (β=0.20; p<0.001) and HOMA-IR (β=0.08; p=0.005), while GWG was positively associated with total cholesterol (β=0.03; p<0.001), LDL cholesterol (β=0.02; p<0.001), and triglycerides (β=0.01; p=0.035).

Conclusion

Lifestyle intervention during pregnancy in women with obesity was not associated with improved adolescent body composition or cardiometabolic health. However, the unexpected association between physical activity plus dietary intervention and offspring overweight warrants cautious interpretation. Maternal pre-pregnancy BMI and GWG were positively associated with adolescent offspring adiposity and cardiometabolic risk markers.

PD108

MATERNAL DIABETES TYPE 1 AND 2 INFLUENCE NEONATAL FAT MASS MEASURED BY AIR-DISPLACEMENT PLETHYSMOGRAPHY

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Background/Aims: Offspring of mothers with diabetes have an increased risk of overweight and metabolic diseases later in life. The mechanisms are not fully understood. These offspring are often born with higher birth weight, but it is unclear whether this reflects increased fat mass (FM), lean mass, or both. FM has previously been assessed using skinfold thickness, whereas neonatal body composition can now be measured more precisely using air displacement plethysmography (Pea Pod). Understanding whether increased birth weight is driven by FM or lean mass is important for understanding early growth and metabolic programming.
The aim of this study was to examine the association between maternal diabetes and neonatal FM in infants born to mothers with Type 1 diabetes (T1D), Type 2 diabetes (T2D), or without diabetes (control).
Methods: This prospective cohort study included 52 infants of mothers with T1D, 31 with T2D, and 52 controls. Infant body composition was assessed using Pea Pod, and associations with maternal diabetes were analyzed using multiple linear regression.
Results:
Maternal pre-pregnancy BMI was (mean ± SD, kg/m²); 26.0 ± 4.9 in the T1D group, 36.0 +/- 7.4 in T2D, and 23.5 ±3.8 in controls. Birth weight (mean ± SD, g) was 4003±512, 3669±487, and 3567±495 in the corresponding groups. Infants born to mothers with diabetes (combined T1D and T2D) had a higher neonatal FM compared with controls (mean (95% CI))(289 (181-397) g, p <0.001). FM was significantly higher in infants born to mothers with T1D compared with controls (325 (221-429) g, p <0.001). In contrast, infants born to mothers with T2D did not show a significant difference in FM compared with controls (78 (-70-226) g, p = 0.2982).
Conclusion:
Neonatal fat mass is increased in offspring born of mothers with T1D, but not T2D, when comparing with offspring born of mothers without diabetes.

PD109

THE ASSOCIATION OF MATERNAL PHYSICAL ACTIVITY AND NEONATAL ESTIMATED FAT MASS WITH OFFSPRING BMI IN THE FIRST YEAR OF LIFE: INSIGHTS FROM THE DALI STUDY

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Maternal obesity affects pregnancy outcomes and offspring obesity risk. Maternal physical activity (PA) might mitigate this risk. Therefore, the association between maternal PA and child's body mass index (BMI) in the first year of life was investigated.
This secondary analysis of the DALI study included women with pre-pregnancy BMI ≥29 kg/m² randomized to healthy eating, physical activity, both, or usual care during pregnancy, with offspring follow-up data in the first year of life (N= 174). Sex- and age-specific BMI z-scores (zBMI) were calculated from children's height and weight. Moderate-to-vigorous PA (MVPA) and sedentary time (ST%) were assessed with accelerometers at three time points during pregnancy. Estimated neonatal fat mass (EFM) was derived from skinfolds. Linear regression models were performed, adjusting for maternal pre-pregnancy BMI, maternal age, breastfeeding, GDM and sex.
Results showed no significant differences in offspring zBMI between intervention and control groups. In normal glucose tolerant mothers there was an inverse association between ST% at <20 weeks and offspring zBMI (β= -0.035; 95% CI: -0.068, -0.001; N=43), which was not observed in GDM mothers. No further associations between offspring zBMI and MVPA or ST% at other timepoints were found. Offspring zBMI did not differ between GDM and non-GDM mothers, irrespective of the timing of GDM development. Offspring zBMI was positively associated with neonatal EFM (EFM (grams): β= 2.285; 95% CI: 1.005, 3.565; EFM (%): β= 0.114; 95% CI: 0.047, 0.181).
In conclusion, maternal PA or GDM did not influence offspring BMI one year after birth. Counterintuitively, in women with normal glucose tolerance, greater sedentary time was associated with lower offspring BMI. In future analyses, differences in offspring growth curves over 5 years will be assessed. These findings warrant further investigation into the long-term effects of maternal lifestyle, prenatal factors and early childhood adiposity in cohorts with broader BMI and metabolic profiles.

PD110

INTERPREGNANCY COACHING FOR A HEALTHY FUTURE (INTER-ACT) – LESSONS LEARNED FROM A MULTICENTER RCT OF AN EHEALTH SUPPORTED INTERPREGNANCY LIFESTYLE INTERVENTION IN WOMEN WITH EXCESSIVE GESTATIONAL WEIGHT GAIN.

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Gestational weight gain (GWG) influences long-term weight retention, which may act as a risk factor for future family health. The INTER-ACT RCT (n=1,450) evaluated the effectiveness of app-based lifestyle intervention combined with face-to-face coaching designed to support women with prior excessive GWG between and during pregnancies. The primary outcome was a composite end score of pregnancy-induced hypertension, gestational diabetes mellitus, caesarean section, and large-for-gestational-age infant. This paper summarizes the results from 11 peer-reviewed publications that emerged form the INTER-ACT RCT.

The intervention did not significantly reduce the primary composite outcome, although higher engagement and adherence was associated with a 50% reduced odds of adverse pregnancy outcomes in both trial arms. Within the intervention group, improvements in dietary behavior, particularly reduced energy intake, reduced uncontrolled eating, and enhanced restrained eating, were associated with greater reductions in body weight, fat percentage, and waist circumference. Mental health analyses showed no overall intervention effects on anxiety or quality of life, but short term improvements in depressive symptoms and sense of coherence were observed in the intervention group, with effects differing by pre pregnancy BMI. Across the postpartum and interpregnancy periods, mental health symptoms increased, particularly among women with a subsequent pregnancy, while improved sense of coherence was associated with lower pre pregnancy BMI and fat percentage. Higher engagement with app based self monitoring, especially weight and mental health logging, was linked to greater postpartum weight loss and lower odds of substantial postpartum weight retention.

Findings from the INTER ACT RCT suggest that the postpartum and interpregnancy periods are modifiable windows of opportunity, but also highlight that achieving reductions in pregnancy outcome risks requires improved engagement strategies and longer follow up, in addition to individual coaching and mHealth tools.

PD111

A PROSPECTIVE FOLLOW-UP STUDY OF MOTHERS WITH GDM AND THEIR OFFSPRING UP TO 11 YEARS OF AGE

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Background/Aims
Gestational diabetes mellitus (GDM) represents a risk factor for both mother and child, both in the short term (peripartal morbidity) and in the long term (development of postpartum diabetes or fetal programming). Our research group has been following a group of mothers with GDM (and a control cohort) and their children for a long time with the aim of mapping the offspring's further development and the mother's health status.

Materials and methods
A total of 831 women (376 controls, 455 GDM) were included in the study. 635 of them were invited to fill out 2 electronic questionnaires – 1) focused on child's development from birth to 11 years of age (weight, height, head circumference, psychomotor development, morbidity, need for medication/hospitalization, need for monitoring by a specialist), vaccination status and lactation period. All offspring´s parameters were obtained from the child's health card. 2) monitor of health status of mothers: current weight, number of children in total, number of pregnancies with GDM, undergoing oGTT after delivery, psychological state of the mother after delivery, morbidity, diet.

Results
Out of the total number of respondents (635), 41 (6.5%) women filled out the questionnaire. No statistically significant differences in any parameter at mothers and at offspring were found between GDM and control group (P=NS, Chi square test).

Conclusion
The compliance of the respondents was very low, so any comparison of the development of the offspring and their mothers with and without GDM is therefore not statistically evaluable. The interesting (alarming) point of mother health in general is a high percentage of psychological problems after delivery (34%), which are not solved.