the Fetal Medicine Foundation (FMF) and Indian fetal growth charts were published at the ISUOG World Congress. We compare our data to different fetal growth charts available in Astraia gmbh. We used 4 charts which are commonly used worldwide. Chitty *et al*, Hadlock *et al*, Intergrowth charts, and WHO charts. Each of the charts is shown by bell shaped curve and our biometry of 19000 patients were plotted deviation of z score.

Results: Our biometry and growth charts don't fit in to the bell shape of the popular international charts. Astraia GMBH has facility to analyse data. Local population charts will definitely reduce false positive diagnosis of FGR by 9% as well as false negative diagnosis of fetal macrosomia by 11%. NICU admission & related complications were reduced by 8%. Only AC comparison (image) submitted as per ISUOG. BPD, HC & FL also shows similar discrepancy. due to upload restriction, we are uploading only one image of AC.

Conclusions: Data suggest that if we use local population charts (Indian charts for present study) will define FGR, both < 10th centile and < 3rd centile with better accuracy. Appropriate use of charts and diagnosis will avoid unnecessary obstetric intervention and NICH admission for better outcome.

Supporting information can be found in the online version of this abstract

VP35.09
Study on prediction of birthweight in term pregnancy by ultrasonic measurement in mid-trimester

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Objectives: To establish a birthweight prediction model based on maternal BMI and ultrasound parameters measurement in the second trimester.

Methods: 2D and 3D ultrasound was prospectively performed in 1092 women with normal singleton pregnancies in 21–23 gestational weeks. The correlation between these ultrasound parameters and birth weight were calculated by Pearson correlation analysis. The participants were divided into two groups, development group (n = 700) and validation group (n = 313). Single linear regression analysis and stepwise multiple linear regression analysis was used to develop a birth weight prediction model. The accuracy of the prediction model was tested by the validation group.

Results: The inter and intra−class correlation coefficients of each parameter are higher than 0.8. Single linear regression analysis shows maternal BMI before pregnancy, fractional thigh volume, abdominal circumference of the fetus and the gestational age of the mid-trimester ultrasound scan are related to birth weight ($P < 0.05$). The equation was obtained by stepwise multiple linear regression analysis. This prediction model predicts 58.15% of the neonatal birth weight within the absolute error of ±250g and those which have a relative percentage error below 10% account for 70.29%, which is higher than that of using 2D US parameters to predict alone.

Conclusions: When we use US measurement parameters in mid-trimester to predict birthweight, combination of the fractional thigh volume by the 3D and maternal BMI, can result in a more accurate prediction model than traditional Hadlock model.

VP35.09: Table 1.

Model	*Relative error*
1	70.29%

Supporting information can be found in the online version of this abstract

VP35.10
Comparison of diagnostic definitions for selective intrauterine growth restriction in monochorionic-diamniotic twins

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Objectives: To compare the Delphi definition of selective fetal growth restriction (sFGR) in monochorionic-diamniotic (MCDA) twins to the traditional definition.

Methods: This is a retrospective analysis of MCDA twins evaluated between 2011 and 2021. Cases with fetal anomalies, TTTS and TAPS were excluded. Traditional criteria for sFGR require (i) estimated fetal weight (EFW) less than the 10th percentile and (ii) growth discordance > 25%. The Delphi definition adds (iii) abdominal circumference < 10th percentile and (iv) umbilical artery (UA) pulsatility index > 95th percentile, requiring presence of at least two criteria (or EFW < 3rd percentile alone). Pregnancy and neonatal outcomes were compared between traditional sFGR, sFGR meeting only the Delphi definition, and uncomplicated cases.

Results: 325 women were included with 37 traditional sFGR, 112 Delphi sFGR, 75 Delphi only sFGR and 213 uncomplicated twins. Traditional sFGR was associated with greater rates of abnormal UA diastolic flow (38% vs. 4%, $p < 0.01$), earlier gestational age of delivery (32 vs. 36 wks, $p < 0.01$) and more frequent delivery for deterioration of fetal status compared with Delphi only sFGR (30% vs. 5%, $p < 0.01$). Rates of spontaneous preterm labour were similar between groups. Survival rates were lower in traditional sFGR compared with Delphi only sFGR or uncomplicated cases (figure 1).

Conclusions: Application of the Delphi definition did not improve detection of pathologic growth discordance.

Supporting information can be found in the online version of this abstract

VP35.11
Fetal growth prescriptive charts evaluation: a systematic review

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Objectives: Prescriptive charts have emerged in prenatal care; nevertheless, their use remains very controversial and descriptive charts are still preferred in many countries. This systematic review aimed to assessed the methodological quality of studies that compared prescriptive fetal growth charts to other fetal growth charts.

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Methods: We undertook a MEDLINE, Scopus, Cochrane Library and Grey literature sources search for studies from 2014 and June 1, 2021. The search was carried out using combinations of the terms "fetal growth" "intergrowth" "Eunice" "WHO". All studies were assessed for i) study design (prospective/retrospective); ii) type of population (general or specific); iii) blinding in ultrasound measurements; iv) sample size calculation; v) dating methods and v) primary outcomes.

Results: The electronic search yielded 25125 citations. We finally included 30 studies (21 retrospective and 9 prospective). In none of the studies were the measurements taken for research reasons only. Only two studies had as primary outcome the comparison of the effectiveness between the curves. The highest potential bias was identified in inclusion and exclusion criteria of population. No studies had systematic ultrasound quality-control measures nor blinding. No study is performed blinded to the ultrasound measure. In none of the studies were the examiners blinded either to the measured values or to the expected normal values of the charts they used. The method for pregnancy dating is very heterogeneous. These studies found a wide disparity in the rate of SGA screening by prescriptive curves from 3% to 15.9%.

Conclusions: There is profound methodological and clinical heterogeneity in studies assessing the effectiveness of prescriptive charts. The vast majority of them were performed for other purposes, and therefore were not fitted to the methodological requirements of such a comparison. Thus, their results may not be applicable.

VP35.12

Accuracy of the calculating gestational age by Crown–rump length: critical appraisal of a 30-year-old formula

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Objectives: The most accurate methods of establishing gestational age (GA), other than fertility treatments, is by a first trimester ultrasound (US) study and measurement of the Crown–rump length (CRL) based on Salim Daya's 1993 formula. We aimed to assess the accuracy of this 30-year old formula for the estimation of GA in first trimester US.

Methods: A retrospective analysis of ultrasound records of women who underwent *in vitro* fertilisation treatments in a single centre in Toronto, ON. All of the women had between 2-6 US examinations in the first trimester. Polynomial regression analysis was performed in order to find the optimal model.

Results: 180 women and 892 US examinations were included in the study, with the majority being frozen embryo transfers (170/180, 94.4%) on day 5 (162/180, 90%). In polynomial regression analysis, the R^2 of linear, quadratic and cubic models were 0.967, 0.989 and 0.991, respectively. The cubic model was superior to the Daya formula in the tested population, but mainly in CRL's >60 mm (figure 1). Out of the 892 US examinations, the cubic model was the most accurate in 288 (32.3%), the Daya formula in 267 (29.9%), the quadratic model in 229 (25.7%) and the linear model in 108 (12.1%). The most significant differences between the cubic model and Daya formula were noted before 8 weeks and after 13 weeks of gestation.

Conclusions: The new formula presented, based on the cubic model ($GA = 37.26 + 1.38*CRL - 0.013*CRL^2 + 0.00006*CRL^3$) is more accurate than the Daya formula for estimating gestational age based on CRL in the first trimester. Yet, the performance of the Daya formula is still quite accurate.

Supporting information can be found in the online version of this abstract

VP35.13

Pulmonary vascular response to oxygen in growth-restricted fetuses

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Objectives: The aim of this study was to comprehensively study the pulmonary vasculature in normoxia and after maternal hyperoxygenation in fetal growth restriction (FGR).

Methods: Prospective cohort study of singleton pregnancies including 87 FGR (defined as birthweight below 10th centile) and 42 normally grown fetuses matched with cases by gestational age at ultrasound. Fetal pulmonary vasculature was assessed at 24–37 weeks of gestation using ultrasound including main pulmonary artery (pulsatility index (PI), diameter, peak of systolic velocity (PSV) and acceleration and ejection times (AT and ET)) and intrapulmonary artery (PI and peak of end-diastolic reverse flow (PEDRF). Ultrasound was performed in baseline conditions (women breathing room air) and repeated after the administration of oxygen 100% at a rate of 15 L/min for 10 min.

Results: FGR cases showed a significant reduction in the main pulmonary artery PSV (FGR (mean ± SD) 67.6 ± 13.2 vs controls 77.4 ± 13.2, $p < 0.001$) and an increase in intrapulmonary artery PI (FGR 4.33 ± 1.78 vs controls 3.60 ± 0.89, $p = 0.008$) as compared to controls in basal conditions. After 10 min of maternal hyperoxygenation, FGR showed a significantly lower intrapulmonary artery PEDRF (FGR -12.0 ± 4.11 vs controls -11.8 ± 3.98, $p = 0.048$). When computing the delta change before and after hyperoxia, a smaller PEDRF variation was observed in FGR (FGR -2.01 ± 5.05 vs controls -2.50 ± 5.15, $p = 0.043$).

Conclusions: Doppler ultrasound enables to detect significant changes in pulmonary vasculature in FGR at baseline and after maternal hyperoxygenation. Future studies are warranted to assess the potential clinical applicability of these measures in the diagnosis and prediction of pulmonary complications in FGR.

VP35.14

Ultrasound-based assessment of fetal growth in a North Indian population compared with known growth standards: a hospital-based longitudinal study

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Objectives: Assessing fetal growth during pregnancy is important for monitoring the well-being of the fetus. In this study we describe longitudinal fetal growth patterns in a North Indian population and estimate the prevalence of small for gestational age using growth charts available globally.

Methods: Data on 2780 pregnancies with accurate dating information and singleton live births were collected in a hospital-based GARBH-Ini pregnancy cohort, Haryana, India from May 2015 to June 2020. We obtained fetal biometry at 18–20, 30–32 and 35–37 weeks. Fetal weight (EFW) was estimated using Hadlock-3 formula. Fetal growth trajectories were constructed using GAMLSS model. We used the Fetal Growth Percentile software (FetalGPSR package) to calculate the EFW percentile against five standards (WHO, Intergrowth 21st (IG21st), NICHD, FMF and Hadlock) and calculated the proportion of small for gestational age (SGA).

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