Objective
To assess whether the size of the choroid plexus at 11-14 weeks may predict handedness.

Methods
Prospective study on 66 toddlers whose choroid plexus (CP) measurements at 11-14 weeks were available. The study included a questionnaire of 15 unimanual and 15 bimanual activities. Handedness Index (HI) scores were calculated for each child for unimanual and bimanual items where \( HI = \frac{R-L}{R+L} \). Different types of transformations were applied and parametric/nonparametric approaches used to compare right-handed (RH) vs left-handed (LH) groups with respect to CP measurements. \( P < 0.05 \) was considered significant.

Results
59 RH and 7 LH toddlers were included. Mean maternal BMI, CRL, BPD, CP length, area and circumference (right and left) were available on all. The mean ± SD age of the toddlers was 2.74 ± 0.16 years. There was a significant positive correlation between unimanual and bimanual preferences (Figure 1). As such, the unimanual HI was utilized in the final analysis. Different statistical approaches were used but failed to show a significant difference. The subgroup analysis, where the RH group was analyzed alone and similarly the LH group, resulted in different yet significant results (Table 1). For the RH toddlers, the left side CP measurements were significantly greater. On the other hand, for the LH toddlers, there was no significant difference (Table 2).

Conclusion
Despite the difference between the right and left CP in the right-handed fetuses, our study is underpowered with only 7 left-handed fetuses. As such, our data is not in support of a predictive role of the fetal CP on handedness. Further prospective studies are indicated.
**Objective**
To assess the learning curve and feasibility of visualizing the middle cerebral artery (MCA) in the first trimester and determining its normogram.

**Methods**
This was a prospective study, approved by our Institutional Review Board, on 200 gravidas with spontaneous conception of singleton gestations, presenting for NT assessment between 12w0d and 13w6d at 2 centers in Lebanon. Maternal BMI, fetal CRL, BPD and NT were measured (Table 1). At our centers, a full anatomic scan is carried out at the time of NT assessment. Fetuses with an NT >95th centile, any structural abnormalities or multiple gestations were excluded from the analysis. All exams were carried out transabdominally by 2 experienced sonologists using 4-8 MHz convex high resolution probes with 2D-3D capabilities (GE Voluson E8 ultrasound systems, Kretz, Zimpf, Austria). For the identification of the MCA, the plane of BPD, caudal to the thalamus was obtained and first trimester cardiac presents, using color Doppler with high definition flow were utilized. Subsequently, the MCA’s PI and PSV were measured at the proximal 1/3 of the MCA with an angle of insonation of < 10 degrees.

**Results**
MCA was successfully visualized in 190/200 (95%). The MCA PI and PSV were obtained on 160/200 (80%) and 157/200 (78.5%) respectively. Using sets of 25, the learning curve was constructed (Figure 1) and linear regression line’s best fit defined as ($R^2$=0.9584) with %MCA seen=47+8*the order of the set. There was no significant difference ($P=0.090$) between the 2 sonologists. There was no significant effect of BMI, CRL or BPD on successful visualization of the MCA (Table 2). The normogram for the MCA PI revealed no significant relation between MCA PI and CRL (Figure 2) or BPD (Figure 3) and a best fitted linear regression modeling yield of: MCA PI=2.96–0.007CRL ($R^2=0.005$) and MCA PI=2.57–0.0065BPD ($R^2=0.0003$) respectively. The normogram for the MCA PI was established (Table 3), and that for the MCA PSV as well, which was comparable to what has been established by Tongsong et al in 2007 (Figure 4).

**Conclusion**
MCA evaluation is feasible at the time of NT assessment with gained sonographer experience as the most important factor. A reference range for first trimester MCA PI and PSV has been established. Our results encourage the incorporation of MCA evaluation at the time of NT assessment, when indicated.
EP04.46
First Trimester CPR Assessment and Normogram in an Unselected Lebanese Population
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Objective
To assess the feasibility of determining the cerebroplacental resistance (CPR) at the time nuchal translucency (NT) measurement and to establish a normogram for the CPR in an unselected Lebanese population.

Methods
This was a prospective study, approved by our Institutional Review Board, on 200 gravidas with spontaneous conception of singleton gestations, presenting for NT assessment between 12w0d and 13w6d at 2 centers in Lebanon. Maternal BMI, fetal CRL, BPD and NT were measured (Table 1). At our centers, a full anatomic scan is carried out at the time of NT assessment. Fetuses with an NT >95th centile, any structural abnormalities or multiple gestations were excluded from the analysis. All exams were carried out transabdominally by 2 experienced sonologists using 4-8 MHz convex high resolution probes with 2D-3D capabilities (GE Voluson E8 ultrasound systems, Kretz, Zimpf, Austria). For the identification of the MCA, the plane of BPD, caudal to the thalamus was obtained and first trimester cardiac presents, using color Doppler with high definition flow were utilized. Subsequently, the MCA’s PI and PSV were measured at the proximal 1/3 of the MCA with an angle of insonation of < 10 degrees. The umbilical artery (UA) was then identified using the same presets, with high definition flow, and the PI was measured in a free loop of cord at an angle of insonation of < 10°. The CPR was calculated as the ratio of the PI of the MCA to the PI of the UA. The normogram for the MCA PI (EP04.45) and CPR were constructed. Regression analysis was used to study the reference range of the CPR according to CRL and BPD. Chi-square and T-test were utilized. P < 0.05 was considered significant.

Results
The PI of the MCA (EP04.45) and UA were successfully measured and CPR calculated in 142/200 (71%) of cases. The normogram for the CPR in our population was established (Table 2). There was no significant relation between CPR and CRL (Figure 1) or CPR with BPD (Figure 2), with best fitted linear regression modeling yield: CPR =0.70 +0.004 CRL (R²=0.003) and CPR =0.31 +0.029 BPD (R²=0.0194) respectively. There was no effect of maternal BMI, fetal CRL or BPD on successful visualization (Table 3).

Conclusion
It is feasible to measure CPR in 71% of fetuses at the time of NT assessment. This may prove helpful in early assessment of fetuses with growth restriction, anemia or congenital heart defects.
Objective
To assess the impact of simulation-based training on obstetrical trainees’ progress in the Lebanese Outreach Setting.

Methods
Prospective study comparing trainee progress pre- and post- the incorporation of simulation-based training in obstetrical sonography. SANA Medical NGO utilizes Abuhamad et al.’s 6-Step Approach to obstetrical sonography in the Lebanese Outreach Setting. The number of scans needed per trainee to attain the required practical skill was compared pre- and post- the introduction of SonoSim simulation-based training. Data was compared using the Mann-Whitney nonparametric test. P < 0.05 was considered significant.

Results
There were a total of 3 trainees in the pre-simulation control group and 7 trainees in the post-simulation study group. A drastic improvement in trainees’ progress post simulation was noted where the mean of the number of scans needed for competence significantly decreased: a total of 64 live scans were required pre-simulation versus 24 live scans post-simulation based training (P=0.016). In addition, there was a notable improvement in trainee comfort in the clinical setting and in the proper identification of the required anatomic/biometric planes post simulation-based training.

Conclusion
Simulation-based training in obstetrical sonography significantly enhances trainees’ learning curve in gaining competence in the the 6-Step Approach to obstetrical sonography.

EP23.02
The Impact of Simulation-Based Training in the Lebanese Outreach Setting

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