female newborns. The average nBMI was 13.0 (Range: 9.6-17.7). Female newborns had a significantly lower nBMI (mean: 12.8; range; 10.0-16.2; std 1.2) when compared to male nBMI (mean: 13.2; range: 9.6-17.7; std 1.3: $p<0.001$). There was a gradual increase in nBMI from an average of 12.3 at 37 to 13.2 at 41 weeks. Male newborns showed a gradual increase in nBMI from 12.2 at 37 weeks to 13.5 at 41 weeks, while the nBMI was essentially flat for female infants from 12.7 at 37 weeks to 12.5 at 41 weeks.

CONCLUSION: Our study documents the mean and percentiles for the nBMI by gestational age and newborn gender. Male newborns had a significantly higher nBMI than female newborns and showed a rise in nBMI from 37 to 41 weeks, while the nBMI of female newborns stayed essentially the same from 37-41 weeks.

Neonatal body mass index percentiles and gestational age

Gestation (weeks)	10th	25th	50h	75th	90th	Frequency
37	10.7	11.2	12.3	12.9	13.9	47
38	10.9	11.5	12.2	13.2	14.1	118
39	11.6	12.2	13.1	13.9	14.7	302
40	11.5	12.3	13.2	14.0	14.8	233
41	12	12.5	13.2	14.0	14.5	81

221 Impact of fetal gender on maternal weight gain during pregnancy

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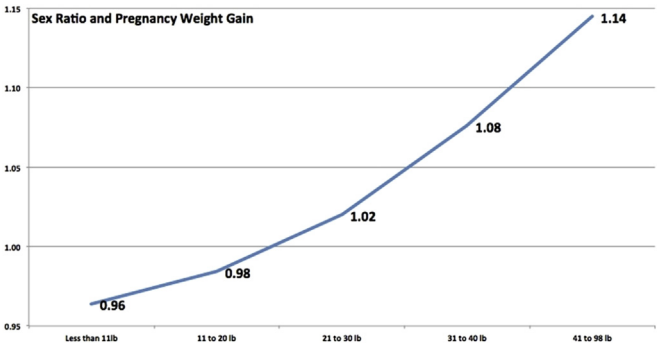
OBJECTIVE: Risk factors for maternal weight gain in pregnancy are poorly understood. This study was done to determine whether there is relationship in evidence by evaluating any association between maternal weight gain during pregnancy and the newborn sex ratio.

STUDY DESIGN: Data from the United States Centers for Disease Control's National Center for Health Statistics birth certificate data files from 2009 and 2010 were abstracted for term births (>=37 weeks and >=2500 grams). Sex ratios were calculated by dividing the number of male newborns by those of female newborns, and calculated for each maternal weight gain group during pregnancy.

RESULTS: The study population consisted of 6,493,136 consecutive term deliveries. The overall sex ratio (male:female) was 1.05 (3,324,090:3,169,046). The sex ratio increased with each weight gain increase group from 0.96 in women gaining less than 11 lb to 1.14 in women gaining over 40 lb. Sex ratios were lowest in women delivering smaller infants 2500-2599 gm with a weight gain below 11 lb (sex ratio: 0.72) and were highest in women delivering infants over 4,499 gm and gaining over 30 lb (2.32) and over 40 lb (2.25).

CONCLUSION: Women carrying a male fetus have significantly increased maternal weight gain during pregnancy when compared to women with a female fetus. The increased sex ratio remains when adjusting for each newborn weight group. The increase in maternal weight during pregnancy with male fetuses cannot be explained exclusively by the higher neonatal weights of male newborns. Our study suggests an epigenetic interaction between fetal sex and maternal weight gain during pregnancy, allowing more female infants to be born under times of stress when newborn weights are lower. Further research is needed to evaluate the impact of fetal gender on maternal weight gain during pregnancy.



Sex ratios, maternal weight gain and neonatal weight

	Newborn Weights						
Weight Gain	2500-2499 gm	3000-3499 gm	3500-3999 gm	4000-4499 gm	>=4500 gm	Male/Total (%)	Total OR (95% CI)
<11 lb	0.73	0.94	1.30	1.75	2.16	241,751/492,635 (49.1)	0.94 (0.94-0.95
11-20 lb	0.71	0.92	1.23	1.59	1.97	503,060/1,014,576 (49.6)	0.96 (0.96-0.97)
21-30 lb	0.72	0.93	1.25	1.64	1.98	967,141/1,915,823 (50.5)	1 (Reference)
31-40 lb	0.72	0.94	1.30	1.73	2.10	882,868/1,703,598 (51.8)	1.06 (1.05-1.06)
>40 lb	0.73	0.95	1.32	1.80	2.32	729,270/1,366,504 (53.4)	1.13 (1.12-1.13)

222 Fetal brain growth following in utero cardiac intervention for aortic stenosis and evolving hypoplastic left heart syndrome

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OBJECTIVE: Fetuses with hypoplastic left heart syndrome (HLHS) are at risk for neurodevelopmental delay. Prenatal aortic valve dilation improves cardiac outcomes. Little is known about the effect of cardiac intervention on fetal brain growth. The aim of this study was to assess fetal brain growth in fetuses with aortic stenosis following successful intervention.

STUDY DESIGN: Head circumference (HC), estimated fetal weight (EFW), brain volume (cBC=HC3/6π2), cephalization index (CI=HC/EFW) and growth rate were measured in fetuses undergoing intervention for aortic stenosis prior to the procedure and in follow-up. Fetuses with ultrasound data outside the peri-operative setting were included. Fetuses with successful procedures were characterized as biventricular or univentricular function post-procedure during neonatal and early childhood follow-up.

RESULTS: Of 141 fetuses who underwent aortic valve dilation, follow-up data was available at our institution for 43 with successful procedures: 11 with biventricular function, and 32 with univentricular function. There was no difference in gestational age or EFW at the time of intervention between the two groups ($p=0.14$; 0.21). Pre-intervention HC and cBV were significantly smaller in those with biventricular function compared with those with univentricular function, while CI was larger (all $p<0.05$). Post-intervention, there was no difference in GA at follow-up ultrasound, HC, EFW, CI or cBV (all $p>0.5$). However, CI decreased at a significantly faster rate