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THE FETAL GROWTH RESTRICTED BABY: DEFINITION AND OUTCOME

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Introduction: There is growing evidence that the intrauterine environment has far-reaching consequences on life-long health. Almost all studies examining this effect have relied on birth weight centile alone. The aim of this study is to describe measured body composition at birth in growth restricted infants.

Methods: In a prospective birth cohort study (BASELINE study) infants were recruited antenatally. Weight, length, fat mass, fat free mass and percentage body fat (%BF) were measured at birth using air displacement body plethysmography (PEAPOD). Fetal growth restriction (FGR) was defined as customised birthweight centile < 10^{th}.

Results: Of the 1335 recruited neonates, 886 had %BF measured between day 1-4. 11.09% (n=148/1335) were categorised as having FGR. The overall mean (SD) %BF was 10.84 (4.21), range = (1.30, 30.10). Significant differences between FGR babies and normal controls were noted for ponderal index [mean (SD) 25.26 (2.99); 27.82 (3.22); p< .001]; gestational age [mean 38^{+5} (3.40); vs 39^{+6} (1.95); p=.000] and rate of neonatal unit admission [12.8% (19/148); 7.4% (88/1187), p=.033].In the infants with FGR the mean (SD) %BF was 7.9 (3.6), compared to 11.1 (4.2) %BF in the non-FGR group. In the total sample, %BF increased linearly ((r=.455, p< .001) across the customised birthweight quartiles (p< .001)). There were significant differences in mean %BF across the quartiles of customised birthweight centiles (Mean (SD) 0-25= 8.39 (3.77)%; 26-50=10.13 (3.40)%; 51-75=11.35 (3.77)%; 76-100=13.59 (4.17)% at p< .001.

Conclusion: Low birth weight and reduced customized birth weight centile are associated with an altered body composition and lower mean %BF.