The relationship between maternal and neonatal anthropometric measurements in term newborns.

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Abstract

OBJECTIVE: To determine whether measures of maternal lean mass, fat reserves, or a combination of both best predict the various measures of newborn size at birth.

METHODS: The population consisted of 1205 multiparous, predominantly black women at high risk for fetal growth retardation, who delivered at term at the University of Alabama at Birmingham. Maternal body mass index (BMI) was calculated using the reported pre-pregnancy weight. Maternal anthropometric measurements taken at mid-pregnancy included skinfold thicknesses, lean body mass, and mid-arm, calf, and wrist circumferences. Weight and 11 other neonatal measurements were made within 24 hours of birth and related to various maternal anthropometric measurements.

RESULTS: Reported maternal pre-pregnancy weight was the best predictor of all neonatal size measures except for the neonatal skinfold thicknesses, which were better predicted by the pre-pregnancy BMI. For example, the range between the tenth and 90th percentiles of maternal pre-pregnancy weight (46.3-86.4 kg) was associated with 295 g birth weight compared to only 188 g birth weight for a measure of lean body mass.

CONCLUSION: Most maternal anthropometric measurements were significantly associated with most neonatal measurements. However, for nearly every neonatal measurement considered, the maternal pre-pregnancy weight was the best predictor.