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Maternal and Pediatric Nutrition

Commentary

Nutrient and Health Needs in Pregnancy

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DESCRIPTION

The female body goes through specific physiological and metabolic changes during pregnancy that promote fetal growth Gestational Weight Gain (GWG), which encompasses increases in maternal and fetal body mass as well as growth of placental tissue and changes in amniotic fluid, is a term used to describe these physiological and metabolic changes Body composition is acknowledged as a key moderator of these outcomes in a pregnant woman and her unborn child as a result of the growing medical focus on maximising maternal and fetal outcomes without making necessary adjustments or taking into account the substantial variation from the usual body composition, common procedures used to evaluate body composition in a pregnant female.

Assessment of body composition during pregnancy

Furthermore, while non-invasive and less time-consuming ways of determining body composition, Particularly Fat Mass (FM) and Fat-Free Mass (FFM), are required in research and clinical contexts, certain approaches are unquestionably more effective than others. A popular procedures for determining body composition are detailed in this article, along with their consideration for measurements in pregnant women. Changes in body composition during pregnancy using these methods are also covered.

Anthropometry

Due to the use of portable, non-specialized equipment, anthropometry by skinfold thickness measurement is a non-invasive approach of determining body composition that is appropriate for field research rough estimate of the total subcutaneous body fat can be obtained by adding the skinfold thickness measurements taken at various points on the body. These measurements specifically give an estimate of the size of the subcutaneous fat deposit that lies directly beneath the skin to reliably measure skinfold thickness and guarantee a high level of reliability both within a person over time (during pregnancy) and between individuals, the technician must have extensive training and skill additionally, it is crucial to use the required equipment properly. Examples include the anthropometry tape (Gullick), stadiometer, weight scale, skin fold callipers, anthropometer, and segmometer to identify the anatomical site for measurement in order to provide accurate, repeatable results while reducing measurement error Due to tissue stretching and expansion during pregnancy, measuring skinfold thickness provides a special challenge pregnant women who are underweight typically have thicker skinfolds than pregnant women who are overweight, and thicker skinfolds at central sites than at peripheral sites while all sites except the thigh showed little change or decreased thickness from 30 to 38 weeks gestation. Researchers reported similar observations using the summation of four anatomical sites (i.e., the triceps, biceps, subscapular, and suprailiac) taggart and colleagues demonstrated the absolute change (millimetres) in individual skinfold thickness at seven anatomical sites (i.e., suprailiac, scapular). The suprailiac location has made more progress additionally, compared to multi parae women, prim iparae women typically see a larger rise in skinfold thickness during pregnancy few studies measure total fat mass during pregnancy using skinfold thickness while some published models claim to explain a significant portion of the variability in predicting FM or per cent body fat, these models cannot be extrapolated across pregnancy instead estimate body composition from skinfold thickness also use weight and body composition however, others have claimed that only moderate multiple correlation coefficients were detected. One significant anthropometric investigation described skinfold thickness assessments at six different sites across numerous time points before and throughout pregnancy and associated total body fat the use of equate ions to measure total body fat from similar results have been established and collectively come to the conclusion that Skinfold thickness measurements may be helpful in some populations, but they are rarely acceptable for clinical or research settings in research and clinical contexts, it can be helpful to repeatedly measure subcutaneous fat and skinfold thickness throughout pregnancy while maintaining accuracy.

Bioelectrical impedance

A widely utilized non-invasive technique called bioelectrical impedance (BIA) is based on theories and connections between

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the electrical characteristics of biological tissues typically, electrodes are positioned on the wrist and ankle during BIA, allowing low-amperage current to flow freely throughout the body the volume of conductive tissue can be calculated from the resistance of the electrical signal throughout the body because the conductivity of the electrical current is determined by how much water the biological tissue issue contains. Tissues with higher water content, like muscle, are more conductive than tissue with lower water content, like bone, or fat.

Accordingly, BIA enables measurement of total body water and, in turn, estimations of FM and FFM Bio impedance spectroscopy, which estimates internal and extracellular water and, consequently, Total Body Water (TBW) by adding the two cellular water compartments, operates on a similar concept to BIA in a validation study for pregnant women, Lof and Forsum used wrist-to-ankle bio impedance spectroscopy at different stages of pregnancy (14 and 32 weeks, 2 weeks postpartum), and they reported similar early estimates of TBW measured by BIA versus deuterium dilution (the gold standard), but the estimate of TBW by BIA was underestimated later in pregnancy.

CONCLUSION

The inherent issue with BIA is that it bases its assessment of body composition on TBW, which fluctuates throughout pregnancy therefore; in addition to fluid changes brought on by pregnancy, which are highly variable across and within individuals, hydration status can significantly influence BIA measurement therefore, it's crucial to standardise the time of day and comprehend each person's level of hydration because changes in TBW occur simultaneously with changes in overall composition, this complicates the issue of precision and accuracy and calls into question the viability of using BIA to measure body composition throughout pregnancy otherwise, BIA is a quick, non-intrusive, and affordable method a technique for calculating body composition that is acceptable for use in the field sadly, it is incapable impossible to distinguish between fetal and maternal contributions.