



## **ABC (ASSESSMENT OF BODY CONTENT) TRIAL: PERCENT BODY FAT (%BF) IN COUPLES UNDERGOING IVF PREDICTS OUTCOMES WHEN BODY MASS INDEX (BMI) ALONE DOES NOT**

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**Objective:** BMI is derived from an individual's weight and height alone and is not sensitive to age, gender, or adiposity. Thus, BMI may be a crude tool when used to characterize reproductive outcomes. This analysis seeks to determine if %BF, which accounts for these factors, may better prognosticate outcomes in couples undergoing IVF treatment.

**Design:** Prospective cohort study

**Materials and Methods:** Females and their male partners at a single center undergoing IVF from June 2016 - April 2017 were offered utilization of the InBody 770 bioelectrical impedance analysis scale at time of vaginal oocyte retrieval to determine their body composition. Participant BMI, %BF, IVF cycle outcome, and transfer data were recorded prospectively. Both females and males were grouped by BMI (<25 kg/m<sup>2</sup> v. ≥25 kg/m<sup>2</sup>) and %BF (low/normal v. high) to determine if these parameters prognosticate cycle and ultimately pregnancy outcomes. % BF ≥31% is considered high in females while ≥22% is considered high in males (American Council on Exercise). Additionally, outcomes were compared in patients where BMI and %BF were incongruent or mismatched: (1) BMI was low/normal but %BF was high and (2) BMI was high but %BF was low/normal. Statistical analysis was performed using a t-test or chi-squared where an alpha error of 0.05 was accepted. A mixed effects model was used to account for female age.

**Results:** 862 couples participated. As male %BF increased the odds of fertilization were found to decrease (OR<sub>adjusted</sub> : 0.989 [0.980-0.998], p=0.021). Additionally, in males where BMI was high but %BF was low/normal (mismatch zone), the odds of fertilization were higher compared to males with high BMI/high %BF, demonstrating that %BF is able to prognosticate fertilization rate when BMI does not (OR<sub>adjusted</sub> : 1.252 [1.043-1.504], p=0.016). 387 couples have undergone blastocyst transfer. Again when %BF was compared amongst those patients with a high BMI (mismatch zone), female % BF was different between patients who achieved a clinical pregnancy and those who did not (39.6% vs. 41.7%, p=0.026).

**Conclusions:** As male %BF increases, the odds of fertilization in IVF decreases. Female %BF is different amongst patients with a high BMI who achieve pregnancy compared to those who fail. Both males and females in mismatch zones where BMI and %BF are incongruent may benefit from body composition analysis as %BF may have the ability to prognosticate cycle outcome when BMI does not.