



AMERICAN SOCIETY FOR  
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**Title:**

**Obesity and ART: Does BMI Affect Euploidy Rates and/or Pregnancy Outcomes in Couples Undergoing IVF With CCS?**

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**Objective:**

Obesity correlates with lower implantation and live birth rates, yet higher miscarriage rates after in vitro fertilization (IVF). It's unclear whether the deleterious effect of obesity is related to oocyte/embryo quality, polycystic ovarian syndrome (PCOS), or the endometrium. This study is first ask if high BMI women have impaired outcomes when undergoing IVF with comprehensive chromosome screening (IVF-CCS).

**Design:**

Retrospective

**Materials and Methods:**

All patients who underwent an IVF-CCS from July 2002-April 2016 with  $\geq 1$  embryo biopsied were included. Euploid rate per embryo biopsied was calculated. Couples were stratified by female partner BMI (Underweight:  $< 18.49$ ; Normal Weight: 18.5-24.99; Overweight: 25-29.99; Class I Obesity: 30-34.99; Class II Obesity: 35-39.99). "Normal Weight" patients were considered the reference group. To account for age-related causes of aneuploidy, females  $>40$  were excluded. The effect was modeled by multivariate linear regression. For couples who underwent a SET, multivariate logistic regressions were performed to determine the effect of BMI, the diagnosis of PCOS, and the euploid per biopsy rate on pregnancy outcomes (biochemical pregnancy, clinical pregnancy, miscarriage, and ongoing pregnancy rates at discharge). Pregnancy outcomes were compared using Fisher's Exact test with significance set at  $p < 0.05$ .



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### **Results:**

In patients who underwent an IVF-CCS cycle (n=624), neither BMI, PCOS, nor BMI +/- PCOS was associated with euploidy rate when controlling for female age. Euploidy rate in normal weight patients was 63% in those with PCOS and 62% in those without PCOS, and in overweight/obese patients was 64% with PCOS and 65% without PCOS, which was not statistically significant. In those who underwent SET (N=580), pregnancy outcomes were not affected by BMI, PCOS diagnosis, female age, or euploidy rate. After couples were grouped by BMI category as described above, the only group that showed a significant decrease in biochemical pregnancy rate were those who were “Underweight” with PCOS (N=14); the biochemical pregnancy rate in this group was 50% whereas the biochemical pregnancy rate in all other groups ranged from 73-84%. However, there was no significant difference in any other pregnancy outcomes.

### **Conclusions:**

When controlled for oocyte age, BMI with/without PCOS does not appear to be associated with a lower euploid rate or pregnancy outcomes. While there was a significant decrease in biochemical pregnancy rate in PCOS patients with a BMI < 18.49, there were no significant differences in any other pregnancy outcome. Embryos resulting from patients with an elevated BMI do not exhibit an increased risk of aneuploidy.

### **Support:**

None

### **References:**

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