

## Study provides insight into why severely obese women have difficulty getting pregnant from IVF

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One third of American women of childbearing age are battling obesity, a condition that affects their health and their chances of getting pregnant. Obese women often have poor reproductive outcomes, but the reasons why have not been clearly identified. Now, a novel study led by Catherine Racowsky, PhD, director of the Assisted Reproductive Technologies Laboratory at Brigham and Women's Hospital (BWH), and performed by Ronit Machtinger, M.D., of BWH, in collaboration with Catherine Combelles, PhD, of Middlebury College, gains further insight into the underlying mechanisms. The study will be published online on September 11 in the journal *Human Reproduction*.

Racowsky and her colleagues examined 276 mature <u>human eggs</u> that failed to fertilize from women who were undergoing in vitro fertilization (IVF) procedures. Of these, 105 eggs were from severely obese women, defined as having a <u>body mass index</u> (BMI) between 35.0 and 50.1 kg/m2, and 171 eggs were from women with a normal BMI, defined as between 18.5 and 24.9 kg/m2. BMI is calculated from a person's height and weight and is considered a reliable indicator of body fatness for most people.

"This study is the first to shed light on how BMI might adversely affect egg quality in women," said Dr. Racowsky. "These observations provide novel insight into a possible cause for the reduced likelihood of success with IVF in severely obese women."



According to Dr. Racowsky, in order for an egg to have the best chance of fertilizing and supporting <u>embryo development</u>, it should be "mature" with one spindle (a critical egg structure) on which is attached one organized set of chromosomes. This study found severely <u>obese women</u> have a much greater chance of having eggs with multiple spindles and disorganized chromosomes. Specifically:

- Nearly 60 percent of the eggs from the severely obese group had two spindles, while only 35 percent of the eggs from the normal BMI group had two spindles.
- Among the eggs with one spindle, nearly 30 percent of the eggs from the severely obese group had disorganized chromosomes, while only 9 percent of the eggs from the normal BMI group had disorganized chromosomes.

Dr. Racowsky points out that this study only used eggs that were stimulated through IVF and that failed to fertilize, so it is not known if these results can be broadly applied to all eggs.

"More research is needed to determine what is causing the spindle abnormalities and disorganized chromosomes," said Dr. Racowsky.

## Provided by Brigham and Women's Hospital

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