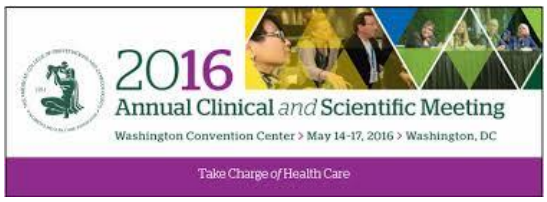

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Title

Is there an association in humans between maternal BMI and the likelihood of a male versus a female embryo implanting?

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Objective:

Recent human studies suggest maternal body mass index (BMI) and energy storage influence the sex ratio of live births and may potentially trigger epigenetic changes that are manifested in their offspring(s). In some animal models, a male embryo exerts a greater demand for energy to achieve a successful pregnancy. Maternal nutritional status may serve as a gender determinant at time of conception, and energy availability could bias females' ability to reach a full term birth. This study sought to understand if maternal BMI influenced the probability of male versus female embryo implantation.

Material & Methods:

Patients who underwent an in vitro fertilization (IVF) cycle from 7/17/2002 – 9/6/2014 and achieved live births were included. BMI level cohorts were recognized (Normal: 17.0-24.9; Overweight: 25-29.9; Obese: >30). Male and female live birth rates were primarily assessed.

Results:

A total of 4,467 women (Normal: n=3223; Overweight: n=784; Obese: n=460) were evaluated. Minimal differences were observed in male and female live birth rates for all cohorts (Normal: 51.6% vs 48.4%; Overweight: 53.1% vs 46.9%; Obese: 49.1% vs 50.9%).

Conclusions:

In this study, we demonstrated that with regard to human maternal BMI, there is no signification alteration in the sex ratio of live birth rates, and no change in the likelihood of a male or female embryo implantation. While a healthy nutritional status is essential for optimizing the maternal and fetal health, maternal BMI does not alter implantation rate based on embryonic sex.

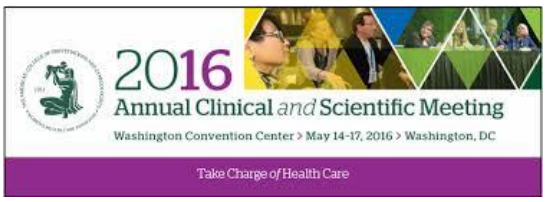

Table 1

	17.0-24.9 (n=3223)	25 -29.9 (n=784)	>30 (n=460)
Age	35.458 ± 4.996	36.064 ± 5.347	35.917 ± 5.411
BMI	21.563 ± 1.845	27.012 ± 1.445	34.113 ±3.382
Fert Rates (2PN counts)	8.164 ± 41.619	7.399 ± 6.211	7.537 ± 5.409
# ET Count	7430	1837	1041
# ET Average	2.3 ± 1.16	2.3 ± 1.17	2.26 ± 1.14
Total Live Birth Rate	100.0% (4004/4004)	100.0% (999/999)	100.0% (566/566)
Male Live Birth Rate	51.60% (2066/4004)	53.05% (530/999)	49.12% (278/566)
Female Live Birth Rate	48.40% (1938/4004)	46.95% (469/999)	50.88% (288/566)
1 (Singleton) Male	51.91% (1191/2294)	54.24% (288/531)	44.52%(138/310)
1 (Singleton) Female	48.08% (1103/2294)	45.76% (243/531)	55.48% (172/310)
2 (Twinning preg rate) Male	51.12% (842/1647)	51.80% (230/444)	56.03% (130/232)
2 (Twinning preg rate) Female	48.88% (805/1647)	48.19% (214/444)	43.97% (102/232)
3 (Triple preg rate) Male	52.38% (33/63)	50% (12/24)	41.67% (10/24)
3 (Triple preg rate) Female	47.62% (30/63)	50% (12/24)	58.33% (14/24)