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## Secondary Sex Ratio Variations at Artificial Reproduction Techniques: Effect of External Factors

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Secondary sex ratio (SSR) is sex ratio after birth which calculated as male proportion. It is different than primary sex ratio (PSR) which is calculated as the sex ratio at the conception. SSR has been used as a simple and noninvasive way to monitor population health and fertility, with its strengths being easy to measure, frequently recorded, and rarely subject to recall bias. Studies have shown that SSR is associated with many biological and environmental factors. In the advent of ART, sex ratio were also skewed by the ART technique itself. If the transferred embryo is not selected by gender preferences with Prenatal Genetic Diagnosis (PGD), the SSR were affected by many factors such as the fertilization techniques (IVF or ICSI), the stages of the embryo, and even the preparation and substances that being used during ART can bias the sex ratio, This study will be focused on external factors affecting the SSR during ART.

Present study concluded that IVF skew the SSR toward male, while ICSI skew the SSR toward female. But ICSI with embryo transferred in blastocyst stage might increase the SSR, while embryo transferred in cleavage stage might lower the SSR. But we need to study more aspects during the IVF/ICSI protocols that might affecting the SSR. To the present, factors such as sperm quality, culture media, chemicals that being used, ICSI techniques, BMI, etc has been known that they might skew the SSR.

### Recent Publications

1. Zhou X, Hesketh T. High sex ratios in rural China: declining well-being with age in never-married men. *Philosophical Transaction Royal Society B*. 2017;372.
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5. Bae J, Lynch CD, Kim S, Sundaram R, Sapra KJ, Louis GMB. Preconception stress and the secondary sex ratio in a population-based preconception cohort. *Fertility and Sterility*. 2017

### Biography

Ivander Ramon Utama is an OBGYN which has an expertise in Ultrasound and Infertility. His interest in fertility treatments made him a passionate obgyn which develop an excellent communication skill with his patient. His passion in ultrasound and fetal development made him also monitoring the babies development after the succesfull fertility treatment especially IVF.

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