

**Sex selection may be inadvertently performed in in-vitro fertilization-embryo transfer programmes.**

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The present study aims to ascertain whether sex selection may be inadvertently performed in human in-vitro fertilization (IVF) and embryo transfer (IVF-embryo transfer) programmes when selecting for high quality embryos (those with the fastest cleaving rates and/or the best morphology) at the fresh transfer cycle. All patients entering into the study were treated with gonadotrophins after pituitary suppression with gonadotrophin-releasing hormone agonists (GnRHa) and had intrauterine embryo transfer on day 2 post-insemination. These patients were retrospectively divided into three groups according to whether the difference in mean number of cells between embryos transferred and all embryos available for transfer in a given cycle was less than (negative selection), equal to (no selection) or greater (positive selection) than zero. In cycles resulting in singleton births, the sex ratio of the resulting babies was significantly ( $P < \text{or} = 0.005$ ) shifted toward the female (88.8%) and to the male (90.0%) in the negative and positive selection groups respectively. No shift in sex ratio was observed in cycles resulting in multiple births. Maternal age was another independent factor affecting sex ratio at birth. Sex ratio was significantly ( $P < \text{or} = 0.05$ ) skewed in favour of males (62.7%) and females (71.4%) in women  $< 35$  and  $\geq 35$  years of age respectively. Maternal age, number of embryos transferred and the event of selecting or not selecting the slowest cleaving embryos for transfer were entered automatically in a three-group discriminant model for distinguishing cycles resulting in only boys, both boys and girls, and only girls. These data suggest that (i) sex selection may be inadvertently performed in IVF-embryo transfer programmes when selecting for high quality embryos at the fresh transfer cycles; (ii) human endometria may be favourable, indifferent or hostile to either fast cleaving or slow cleaving embryos depending on maternal age; and (iii) "natural" sex selection may be performed for social, psychological or medical reasons.

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