

**O-178**

**The impact of male partner age on cumulative incidence of live birth following in vitro fertilization**

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**Study question:**

How does male partner age impact the cumulative incidence of live birth among couples undergoing in vitro fertilization (IVF)?

**Summary answer:**

There was an independent effect of male age on the cumulative incidence of live birth in couples with a male partner age >35.

**What is known already:**

Increasing female age is clearly associated with declines in the cumulative incidence of live birth. However, these analyses have not accounted for the age of the male partner, and it is unknown whether similar declines are seen with increasing male age.

**Study design, size, duration:**

This retrospective study analyzed up to six cycles from women age 18–<42 years of age whose first fresh autologous cycle began between January 2000 and March 2014; outcomes were assessed through December 2014. Women who used donor sperm (n=801) and those without a male partner or whose male partner's age was not documented (n=6,195) were excluded. In total, 18,802 cycles from 7,753 couples were analyzed.

**Participants/materials, setting, methods:**

Patients were treated at a large, academically-affiliated center. A competing-risk regression model was used to estimate the cumulative probability and 95% confidence interval (CI) of the first live birth in up to 6 cycles within strata of male and female age, with IVF cycle number as the time metric. Age groups were defined as follows: <30, 35–<35, 35–<40, 40–<42, and (men only) ≥42 years of age.

**Main results and the role of chance:**

Cumulative incidences of live birth were lowest among couples whose female partner was 40–<42 (range: 35.7–42.6); male age had no impact within this female age group (all  $p \geq 0.58$ ). However, within the other strata of female age, the cumulative incidence of live birth declined with increasing male partner age. Among couples whose female partner was <30, male partner age 40–<42 was associated with a significantly lower cumulative incidence of live birth (45.5, 95% CI: 27.6–67.9) compared to male partner age 30–<35 (73.3, 95% CI: 68.9–77.4;  $p=0.01$ ). For couples whose female partner was 30–<35, male partner age  $\geq 35$  was associated with significantly decreased cumulative incidences (range: 61.9–63.7) compared to couples whose male partner was 30–<35 (70.4, 95% CI: 68.1–72.7; all  $p \leq 0.04$ ). Among women 35–<40, the cumulative incidence was lower in couples whose male partner was 40–<42 (48.6, 95% CI: 43.8–53.7;  $p=0.04$ ) and higher for male partner age <30 (70.0, 95% CI: 55.6–83.2;  $p=0.01$ ) compared with male partner age 30–<35 (54.4, 95% CI: 49.9–59.0). Among couples whose primary diagnosis was male factor infertility, cumulative incidence of live birth tended to decrease with increasing male age; this decline was most pronounced among couples whose female partner was <30.

**Limitations, reasons for caution:**

Using categories of age instead of continuous age could result in residual confounding; additional analyses will be conducted to assess this possibility. Additionally, some cells had small sample sizes, especially when stratifying on male factor infertility, which resulted in wide confidence intervals and potentially inadequate power to detect true differences.

**Wider implications of the findings:**

These findings provide evidence of an independent effect of male age on the cumulative incidence of live birth following IVF. Together with previous work calculating the cumulative incidence by female age, these results can be used to provide more informative counseling for couples pursuing IVF.

**Trial registration number:**

Not applicable

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