**The realism of men and women's expected IVF live birth rates**
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**Study question:**

Which live birth rates (LBR) do IVF-patients expect and are they in line with their IVF-prognosis and affected by their gender and general optimism?

**Summary answer:**

During IVF women and especially men expect unrealistically high IVF-LBRs and the difference between men and women is not explained by general level of optimism.

**What is known already:**

The general public is known to overestimate in vitro fertilisation (IVF) success rates. Qualitative interviews showed that well informed women cryopreserving their oocytes were unrealistically optimistic about their chances on a live birth as they thought they and/or their gynaecologist would perform better than average (de Groot et al., 2016). To the best of our knowledge, the LBRs expected by patients during their IVF-cycle have yet to be studied and compared to patient’s personalized IVF-prognosis. In addition, whether these expected LBRs are affected by factors like gender and level of optimism is unknown.

**Study design, size, duration:**

We prospectively surveyed the expected LBRs and degree of general optimism of 69 couples having an oocyte aspiration in our clinic between March and December 2019. Men and women were asked to each fill out their own questionnaire. Additionally, couples’ personalized IVF-prognosis was calculated using the van Loendersloot prognostic model (van Loendersloot et al., 2013, Sarais et al.,2016) after validation and calibration on our clinics data (c-statistic of 0.74).

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

Eligible couples completed at least one 2nd-6th IVF-cycle with own gametes after a previous IVF-cycle with the same partner in our clinic. The level of general optimism was assessed with the reliable ‘LOT-R’ questionnaire (Scheier et al., 1994). The degree of mis-estimation was calculated with the following formula: (expected IVF-LBR - prognosis)/prognosis. A positive sign shows overestimation, a negative sign shows underestimation and the absolute value quantifies the extend of mis-estimation.

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

The 67 participating couples(participation rate=97.10%) had a mean IVF-prognosis (i.e. calculated LBR per completed IVF-cycle, including fresh and frozen embryo transfers) of 31.8% (range=4.8%-59.4%; SD=16.9). Eighty-five percent of women over-estimated their IVF-LBR (mean overestimation 33.66%; SD=20.02) and 47.8% even expected their IVF-LBR to be more than double their calculated IVF-prognosis (mean overestimation 46.47%; SD=16.10). Eighty-eight percent of men over-estimated their IVF-LBR (mean overestimation 38.81, SD=21.84) and 53.7% even expected their IVF-LBR to be more than double their calculated IVF-prognosis (mean overestimation 51.10%; SD=17.75). Men expected significantly higher IVF-LBRs compared to their female partners (64.4% vs. 58.6%; Paired t-test; p=0.028) and their degree of mis-estimation was also significantly higher (2.3 vs 1.8; Paired t-test; p=0.013). Male and female partners did not differ in level of optimism (Paired t-test; p=0.074) and the correlation between the level optimism and expected IVF-LBR was rather weak (Pearson correlation coefficient in women: 0.428; p=0.000 and in men: 0.254; p=0.038). The correlation between the IVF-prognosis and the level of optimism was also weak (women: Pearson correlation coefficient of 0.022; Men: Pearson correlation coefficient of -0.163).

**Limitations, reasons for caution:**

Recruitment is ongoing to end up with a larger scale prospective cohort study with follow-up until the studied IVF-cycle is completed, by achieving a live birth or a negative pregnancy test after the transfer of the last (fresh and frozen) embryo.

**Wider implications of the findings:**

This study documents (the extend of) the interesting overestimation of IVF-LBRs by couples going through IVF. Whether couple’s overestimation leads to distress and ultimately IVF-discontinuation, as suggested by qualitative interviews (Peddie et al., 2005), and is associated with actual LBRs will be followed up.

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