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P-734 How common is spontaneous pregnancy after In vitro Fertilisation (IVF) Livebirth? Systematic review and meta-analysis
A. Thwaites¹, J. Hall¹, G. Barrett¹, J. Stephenson¹

¹University College London, Institute for Women’s Health, London, United Kingdom

Study question: How common is spontaneous pregnancy after IVF resulting in livebirth? How can this evidence inform future pregnancy planning by women who have successful IVF?

Summary answer: Current evidence suggests that spontaneous pregnancy occurs in at least one in five women in the first three years after having a baby via IVF.

What is known already: It is known that some women having IVF go on to conceive naturally. This reproductive history is of media interest often described as “miracle” pregnancies (1). Women with this experience also identify themselves as a rarity, and their subsequent pregnancies include rapid-repeat, unplanned and unwelcomed pregnancies (2).

1. Secondary Fertility: 4 Amazing Stories of ‘Natural’ Pregnancy After IVF. Parents.com 03/13/19
2. Thwaites A, Hall J, Barrett G, Stephenson J. Contraception after in vitro fertilisation (IVF): qualitative study of the views of women who have had spontaneous pregnancies after successful IVF. Reproductive Health. Accepted for publication 21/02/22.

Study design, size, duration: An initial scoping review revealed few, heterogeneous studies reporting rates of spontaneous pregnancy or livebirth after successful IVF. These studies suggested that this event is not rare, prompting this first systematic review and meta-analysis. This aims to identify, appraise and synthesise the current evidence on the rate of spontaneous pregnancy after successful IVF.

Participants/materials, setting, methods: Ovid Medline, Embase and PsycINFO were searched on 24/09/2021 using a strategy containing thesaurus and free text terms for the concepts of spontaneous pregnancy, assisted reproduction and livebirth. The search was limited to English language, human studies and publications from 1980. Results were de-duplicated and managed in EndNote, screened by title/abstract and then full text. Random-effects meta-analyses were used to produce a pooled effect estimate of the incidence of spontaneous pregnancy after IVF livebirth.

Main results and the role of chance: 1108 distinct references were identified, reducing to 54 when screened by title and abstract. On evaluation of full text, 11 studies were included in this review. Rates of spontaneous pregnancy after IVF livebirth ranged from 10-33% of women. However, studies varied
widely according to methodology, population, cause of subfertility, type and outcome of fertility treatment and length of follow-up. Different covariates were investigated and inconsistently found to be associated with spontaneous conception after IVF including younger age, shorter duration of subfertility, fewer number of treatment cycles prior to first delivery and specific causes of subfertility (unexplained, no male factor). The pooled estimate for the rate of spontaneous pregnancy after IVF livebirth was 19% (95% CI, 16%-22%). The pooled estimate was robust when stratifying by IVF/intracytoplasmic sperm injection (ICSI), outcome measure and follow up period. It is a likely underestimate as some studies reported on livebirths (i.e. excluding adverse pregnancy outcomes) and did not include spontaneous births that occurred outside of the study region. Moreover, no studies gave due consideration to contraception, plannedness of pregnancies, change in partner, nor serial spontaneous pregnancies in the same woman.

**Limitations, reasons for caution:** The current evidence is relatively scarce and diverse. Sample sizes are typically small with only two studies of over a thousand women. Better evidence, in the form of national, data-linked studies, is needed to provide more accurate estimates of this rate, analysis of associated factors and trends over time.

**Wider implications of the findings:** These findings refute a widely held misconception that spontaneous pregnancy after IVF livebirth is a rare phenomenon. They should be used to counsel women having babies via IVF and inform their decision-making regarding the timing and mode of conception of future pregnancies and contraception use.

**Trial registration number:** N/A