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**P-288   COVID vaccination in women and IVF treatment outcomes**

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**Study question:** Does COVID-19 vaccination (mRNA or viral vector) in women affect outcomes following IVF treatment?

**Summary answer:** There was no difference in both pre-clinical and IVF clinical outcomes in women who received vaccination (1 or 2 doses) compared to those unvaccinated.

**What is known already:** The COVID-19 vaccination rollout has been unprecedented and commenced in the UK in December 2020.

Compared to the general population, pregnant women have higher risk of morbidity following COVID-19 infection. There is a drive by public health authorities for women of reproductive age to be vaccinated. However, there has been hesitancy in the uptake of vaccination amongst certain patient populations including those who are trying to conceive.

Emerging data has shown that follicular function is unaffected by COVID-19 vaccination, although this data is limited. IVF treatment is unique as we can evaluate both pre-clinical embryological outcomes and clinical outcomes.

**Study design, size, duration:** We conducted a retrospective analysis of 474 women undergoing IVF treatment between Jan and Dec 2021. COVID-19 vaccination status was recorded including: vaccination type, number of vaccine doses, and whether they had previously contracted COVID-19. We recorded pre-clinical and clinical outcomes: such as number of oocytes retrieved, fertilisation rate and clinical pregnancy.

**Participants/materials, setting, methods:** Women were categorised in the three cohorts- unvaccinated (Group 1), defined as the reference group, women who had first dose of COVID-19 vaccine (Group 2) and patients who had two doses of the vaccine (Group 3). Patients whose vaccination status were not known were excluded. Statistical analysis was performed through STATA software. Outcomes were modelled with multivariable logistic and negative binomial regressions and adjusted for the following confounders: age, BMI, parity and past COVID-19 infection.

**Main results and the role of chance:** Data from women was analysed, 22.6 % had completed 2 doses, 9.5 % had one vaccine and 9.7% were unvaccinated. Among these women 24.7% had previous COVID-19 infection prior to their IVF cycle.

The median number of oocytes retrieved for the entire cohort collected was 10.0 (inter-quartile range (IQR) 6.0, 14.0). There was no significant difference in the number of oocytes retrieved between women who had 1 vaccination dose, 2 doses compared to unvaccinated women (Incidence rate ratios (IRR) 1.18, 95% Confidence Interval (CI) [0.93,1.50] and 0.94, 95% CI [0.76,1.15] respectively).

There was no significance difference in the fertilisation rate between women who had one vaccination dose, 2 doses and unvaccinated women (IRR)1.02, 95% CI [0.83, 1.24] and 1.11 95% CI [0.93, 1.31] or failed fertiisation rates (Odds ratio (OR) 0.74, 95% CI [0.09, 6.09] and 0.71, 95% CI [0.12, 4.18].

With regards to clinical outcomes, 51.7% of the cohort had a positive urine pregnancy test. There was no significant difference in clinical pregnancy rate between women who had first vaccination dose and those who had both doses compared to unvaccinated women (OR 3.06, 95% CI [0.37, 3.68] & OR 1.7, 95% CI [ 0.64, 4.52] respectively).

**Limitations, reasons for caution:** This is a retrospective study and further accumulated data is warranted to validate the findings. Many patients at the time of analysis were still pregnant, hence we await live birth outcomes.

**Wider implications of the findings:** This is the first study to analyse the impact of COVID-19 vaccination on IVF outcomes. These initial findings are reassuring to patients and fertility clinicians on the safety of vaccination.

**Trial registration number:** not applicable