Optimizing Clinical Pregnancy and Live Birth Rates with Opt-IVF Decision Support Tool: A Retrospective Cohort Study

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Background:
Success rates and costs of Assisted Reproductive Technology (ART) heavily depend on the superovulation phase. Previous studies suggest that using Opt-IVF for hormone dosing improves outcomes, including increased high-quality embryo counts, lower hormone dosages, fewer ultrasound tests, and higher pregnancy rates. This retrospective cohort study assesses the efficacy, safety, and clinical benefits of incorporating Opt-IVF in routine practice, outside of a controlled trial setting.

Objective:
The study investigates whether implementing Opt-IVF, a clinical decision support tool for hormone dosing during superovulation, improves clinical pregnancy rates and live birth outcomes in routine IVF practice.

Materials and Methods:

- **Design:** Retrospective cohort study at a single center over 12 months.
- **Duration:** Spanning 24 months**.**
- **Inclusion/Exclusion:** All patient groups were included.
- **Population:**
    - Intervention group: 204 women (aged 25-45) underwent superovulation using hormone doses guided by Opt-IVF.
    - Control group: 207 women received superovulation without Opt-IVF guidance.

Results:

- Hormone Dosage: The Opt-IVF group had significantly lower cumulative gonadotropin dosages compared to controls ($p < 0.0001$).
- Embryo Count: The Opt-IVF group had 20% more total embryos ($p < 0.001$) and 50% more high-quality embryos ($p < 0.0001$) than the control group. Primarily using day 3 embryos for implantation.
- Clinical Pregnancy Rates: Including cancelled cycles, the clinical pregnancy rate increased from 35% in the control group to 45% in the Opt-IVF group.
    - Figures 1 & 2: Show pregnancy rates by patient type and age distribution.
- Live Birth Rates: Cycle live birth rates increased from 29% in the control group to 34% in the Opt-IVF group.
    - Figures 3 & 4: Display live birth rates by patient type and age.

Conclusions:
Using Opt-IVF for hormone dosing during superovulation significantly reduced hormone dosages and etesting. This approach led to increased embryo numbers and improved pregnancy outcomes compared to traditional methods. Notably, older patients and poor responders showed marked improvements, highlighting the potential of Opt-IVF to enhance ART success in clinical practice.

Support
No financial support from any organization

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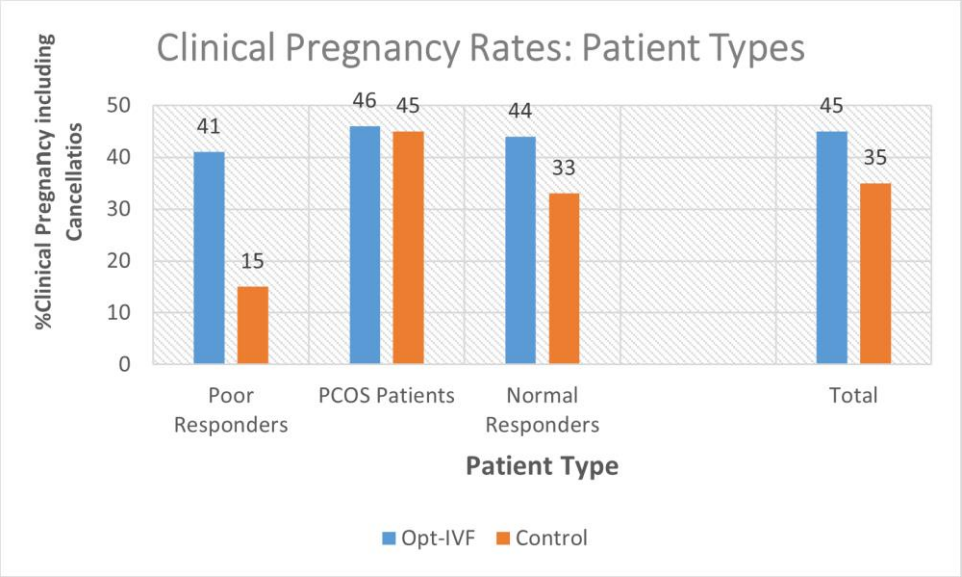

Figure 1: Clinical pregnancy rates: patient types

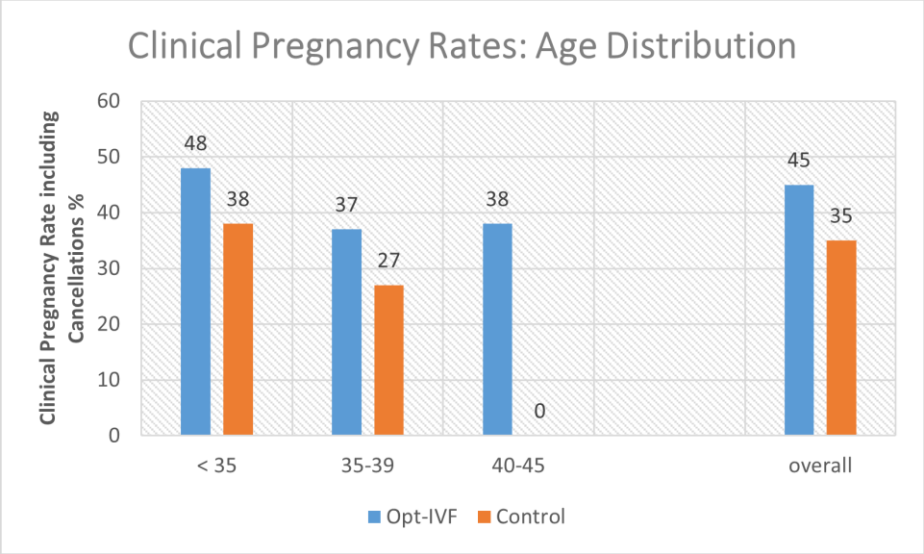

Figure 2: Clinical pregnancy rates: age distribution

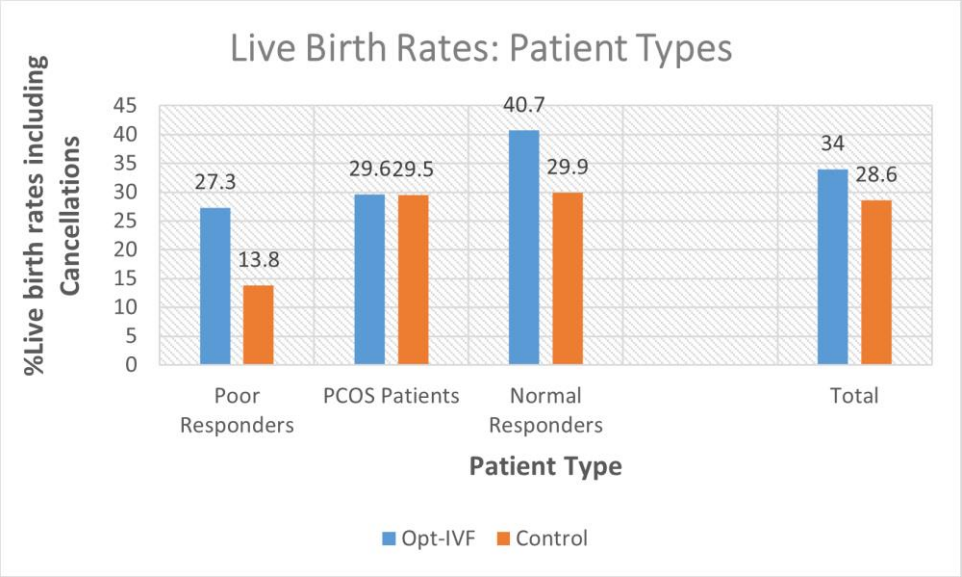

Figure 3: Live birth rates (cycle): patient types

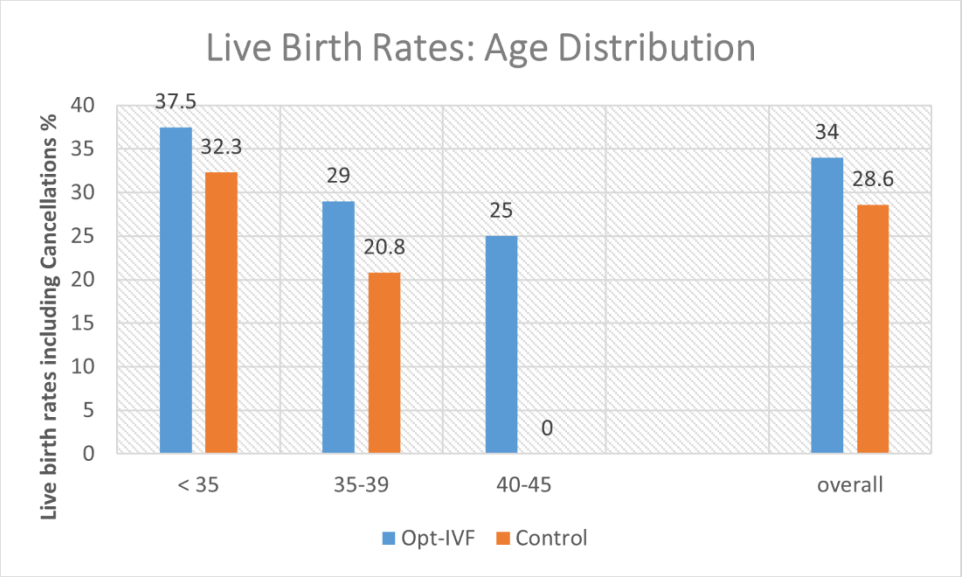

Figure 4: Live birth rates (cycle): age distribution