ALWAYS IN SEASON: SEASONALITY IS NOT ASSOCIATED WITH IN VITRO FERTILIZATION (IVF) CYCLE OUTCOMES AT A LARGE ACADEMIC-AFFILIATED CENTER IN THE NORTHEAST

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INTRODUCTION

Prior studies have reviewed the correlation between season (Spring, Summer, Fall, Winter) and IVF outcomes.

- One study in Brazil noted a nearly 50% increase in the fertilization rate in women undergoing IVF during the Spring [1].
- Similarly, Rojansky et al. supported that fertilization and good-quality embryos were the highest in the Spring and the lowest in the Fall [2].

However, these studies included more outdated protocols that do not reflect current practice today.

OBJECTIVE

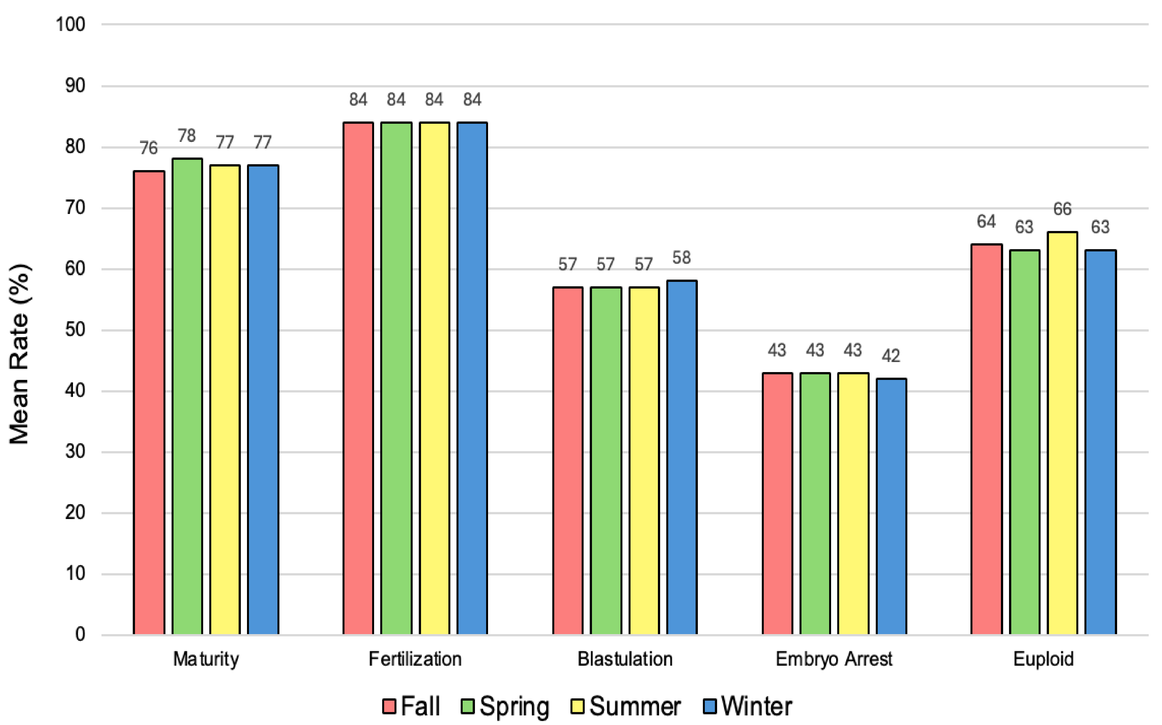
The purpose of this study was to determine if the season at the time of controlled ovarian hyperstimulation (COH) impacts embryology outcomes.

METHODS

- Retrospective cohort study of all patients undergoing embryo cryopreservation with PGT-A , January 2020 – December 2023, at an academic-affiliated IVF center
  - Season coding: Spring (March, April, May), Summer (June, July, August), Fall (September, October, November), or Winter (December, January, February)
- Outcomes:
  - Primary: blastulation rate per fertilized zygote
  - Secondary: maturation rate per oocytes retrieved, fertilization rate per M2 oocyte, embryo arrest rate per fertilized zygote, and euploidy rate per blastocyst developed
- Statistical analysis:
  - ANOVA and Chi-squared tests
  - Post-hoc comparisons
  - Multivariate logistic regression adjusted for maternal age, body mass index (BMI), anti-Mullerian hormone (AMH), and sperm source

RESULTS

Figure 1. Embryology Outcomes by Season



5,679 IVF cycles were analyzed:

- 1,456 cycles in Fall
- 1,470 cycles in Spring
- 1,446 cycles in Summer
- 1,307 cycles in Winter

Baseline characteristics were similar between the seasons with mean age 35.6 years, BMI 26.8 kg/m2, and AMH 3.34 ng/ml.

The COH protocol was significantly different between Fall and Winter, however > 80% of all cycles in all seasons followed an antagonist protocol. There was an overall mean blastulation rate of 57%.

There were no significant differences in maturity, fertilization, blastulation, embryo arrest, or euploidy rates between the seasons (Figure 1).

Multivariate analysis showed no significant difference in the probability of day of blastulation: day 5 (p=0.09), day 6 (p=0.22), and day 7 (p=0.12).

CONCLUSIONS

In a region with distinct seasonal variation, **there was no association** between seasonality and IVF cycle outcomes.

This research underscores that **IVF outcomes remain consistent across all seasons** and ambient weather conditions, highlighting the resilience and reliability of modern reproductive technologies.

REFERENCES