INVESTIGATING THE ASSOCIATION BETWEEN CLINIC VOLUME AND PRE-IMPLANTATION GENETIC TESTING (PGT) UTILIZATION IN US-BASED ASSISTED REPRODUCTIVE TECHNOLOGY (ART) PROGRAMS

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Background:
PGT is a technique used to test embryos created through in-vitro fertilization (IVF) to identify those with chromosome abnormalities and/or specific genes predicted to confer a disorder. PGT use has dramatically expanded, but factors driving its utilization have not been well established. Given this, we wanted to evaluate clinic and patient characteristics that influence utilization of PGT in completed IVF transfers. There are limited data around the relationship between a clinic's IVF volume and its outcomes, and no studies exist to identify the relationship between IVF volume and PGT utilization.

Objective:
To evaluate the association between Centers for Disease Control and Prevention (CDC)-reported IVF clinic volume and utilization of PGT in completed transfers.

Materials and Methods:
ART outcomes by clinic, including total IVF cycles, PGT rates in completed transfers, and patient age distribution were extracted from the 2021 CDC National ART database. Clinics with missing cycle data were excluded. Clinic volume was delineated by quartiles. Pearson correlation and chi-square analyses were performed to identify the relationship between clinic age distribution and IVF volume. In addition, the relationship between clinic volume and PGT utilization, while controlling for age, was calculated using a Kruskal-Wallis test.

Results:
444 clinics met inclusion criteria. The median volume per clinic was 151 cycles for lowest-volume clinics (quartile 1), 379 for quartile 2, 701 for quartile 3, and 1710 for quartile 4. Higher-volume clinics served an older patient population with a median age of 37.2 in quartile 1 and 37.4 in quartile 4 ($p=0.02$). Higher-volume clinics were significantly more likely to have transfers that utilized PGT compared to smaller-volume clinics. Quartile 1 had a median PGT rate of 39.5% of transfers, quartile 2 51.6%, quartile 3 53.2%, and quartile 4 60.5% ($p<0.01$). Across all age groups, higher-volume clinics reported significantly higher PGT rates ($p<0.01$ for all groups). PGT rates increase with age, with the exception of the 40+ years old group (Table 1).

Table 1.

	Quartile 1	Quartile 2	Quartile 3	Quartile 4	
Median volume in cycles (IQR)	151.0 (83.5-195.5)	379.0 (312.0-440.5)	701.0 (576.5-880.0)	1710.0 (1394.0-2633.0)	
Median patient age (IQR)	37.2 (36.8-37.8)	37.4 (36.9-37.4)	37.3 (36.9-37.7)	37.4 (37.1-37.8)	p=0.02
Median PGT rate: all age groups	39.5%	51.6%	53.2%	60.5%	p<0.01
Median PGT rate: <35 years old	29.2%	49.5%	47.4%	58.7%	p<0.01
Median PGT rate: 35-37 years old	36.4%	58.1%	61.9%	67.8%	p<0.01
Median PGT rate: 38-40 years old	46.6%	59.0%	63.9%	70.8%	p<0.01
Median PGT rate: 40+ years old	12.6%	41.7%	50.0%	48.8%	p<0.01

Conclusions:
Although higher-volume IVF clinics treat a slightly older patient population, their completed transfers utilize significantly more PGT overall and across all age groups. Notably, the lower rates of transfers using PGT in the 40+ year old group likely reflect cycles with no euploid embryos available and do not necessarily indicate limited adoption of PGT in older IVF populations.

Despite randomized trials suggesting lack of benefit from the addition of PGT in patients < 35 years old, larger-volume clinics appear to utilize it more commonly (59% PGT rate in highest-volume clinics compared to 29% in lowest-volume clinics). This association between larger clinic volume and increased PGT utilization may reflect a standardization of PGT use at larger-volume clinics over medically-driven, age-guided protocols.

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References:

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