

# The Relationship Between Total Motile Sperm Count (TMSC) on Intrauterine Insemination (IUI) Day and Pregnancy Rates: A Retrospective Single-Center Cohort Study

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## INTRODUCTION

To evaluate the relationship between total motile sperm count (TMSC) on the day of intrauterine insemination (IUI) and subsequent pregnancy outcomes, and to determine whether TMSC serves as an independent predictor of IUI success.

## MATERIALS AND METHODS

This retrospective study analyzed 2,183 patients who underwent IUI between July 2013 and August 2025 at a single fertility center under the supervision of a single physician. Patients were stratified into four TMSC categories: <5 million, 5–10 million, 10–15 million, and >15 million. Baseline characteristics—including patient age, number of previous IUI attempts, and number of ovulation follicles—were compared across groups. Statistical analyses confirmed no significant differences among groups (all  $p > 0.05$ ), ensuring comparability. Pregnancy rates were calculated for each TMSC category and compared using chi-square testing, with statistical significance defined as  $p < 0.05$ .

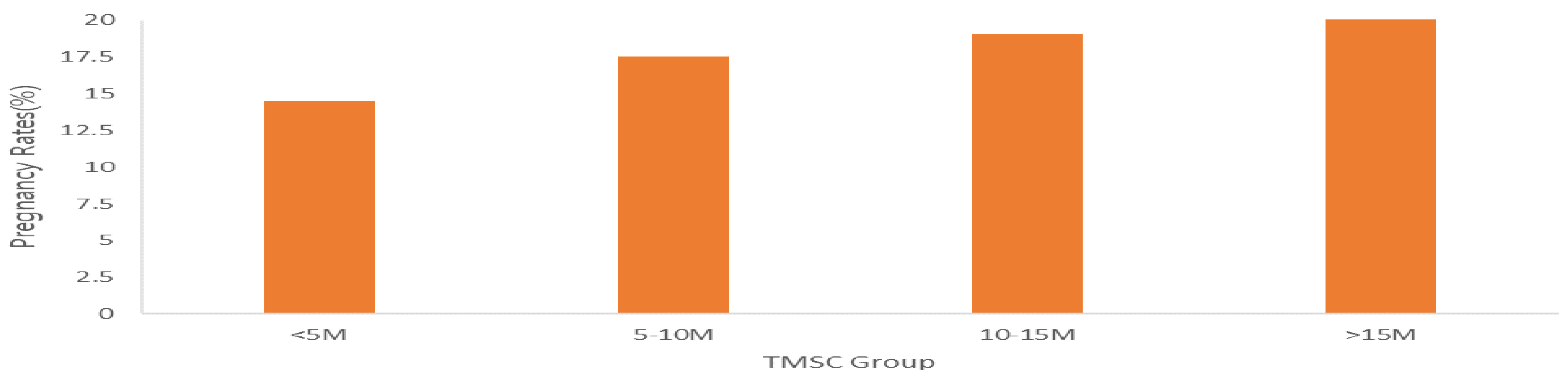
## RESULTS

The overall pregnancy rates was 18.55% (405/2,183). Pregnancy rates increased progressively with higher TMSC categories, showing a significant dose-response effect ( $p < 0.05$ ).

Table 1. Pregnancy outcomes according to TMSC group

TMSC Group	No. of Patients	No. of Pregnancies	Pregnancy Rates(%)
<5M	214	31	14.49
5-10M	508	189	17.52
10-15M	819	156	19.05
>15M	642	129	20.09
Total	2,183	405	18.55

Fig. 1 Pregnancy rates(%) according to TMSC group



## CONCLUSIONS

TMSC on the day of IUI is a statistically significant and independent predictor of pregnancy outcome. A dose-response relationship was observed, with higher TMSC consistently associated with increased pregnancy rates.

## IMPACT STATEMENT:

This study highlights TMSC as a simple, measurable, and clinically relevant prognostic marker. These findings enable personalized patient counseling, optimization of IUI strategies, and earlier identification of patients who may benefit from advanced reproductive technologies.