הכינוס השנתי ה-67 של
האגודה הישראלית לחקר הפוריות (איל"ה)
12 במאי 2025, מלון דיוויד אינטרקונטיננטל, תל אביב
האגודה הישראלית לחקר הפוריות (איל"ה)
THE ISRAEL FERTILITY ASSOCIATION (IFA)
الجمعية الإسرائيلية لأبحاث الخصوبة

Sperm Characteristics and Embryo Morphokinetics in Assisted Reproductive Technology : A Meta-Regression Analytical Approach

Raneen Sawaid Kaiyal[a], Inshirah Zgayer [a,b], Ina Borik[a] , Manal Abu Shqara[a], Michele Compagnone [c], Sofia Markdorf [a], Hala Aslih [d], Shlush Ekaterina [a], Lior Lowenstein [a,b], Rossella Cannarella [c,e]

[a]Department of Obstetrics and Gynecology, Galilee Medical Center, Nahariya, Israel ,[b] Azrieli Faculty of Medicine, Bar Ilan University, Safed, Israel , [c] Department of Clinical and Experimental Medicine, University of Catania, Catania, Italy, [d] Department of Obstetrics and Gynecology, Nazareth Hospital EMMS, Nazareth, Israel, [e] Glickman Urological and Kidney Institute, Cleveland Clinic Foundation, Cleveland OH, USA.

INTRODUCTION

Infertility affects a significant proportion of couples globally, with male factors contributing to nearly half of the cases(1). While time-lapse imaging has advanced our understanding of embryo development(2), the specific influence of sperm quality on morphokinetic parameters remains unclear due to inconsistent findings across studies(3).

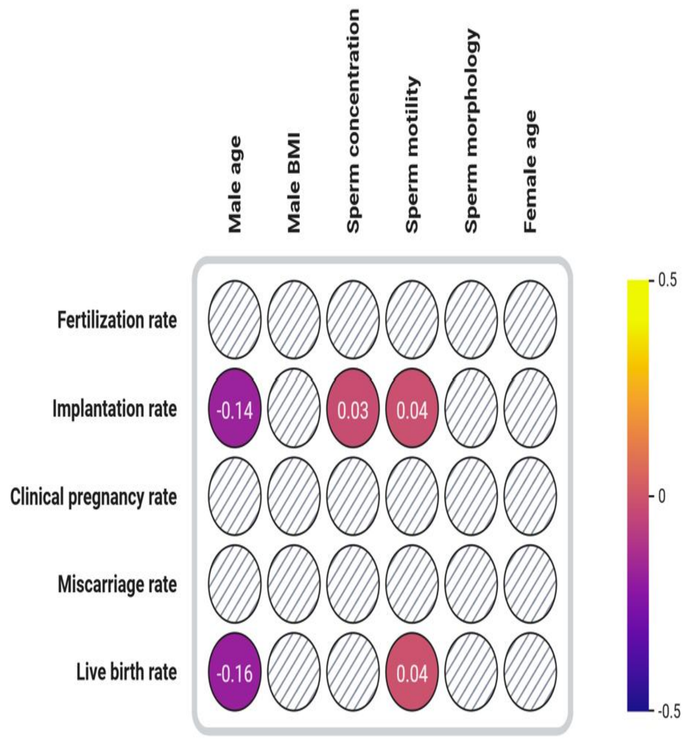
This meta-analysis aims to systematically assess the association between sperm characteristics and embryo morphokinetics, as well as IVF/ICSI outcomes. By integrating data from multiple studies, we aim to clarify the paternal role in embryonic development and inform strategies for improved embryo selection and ART success.

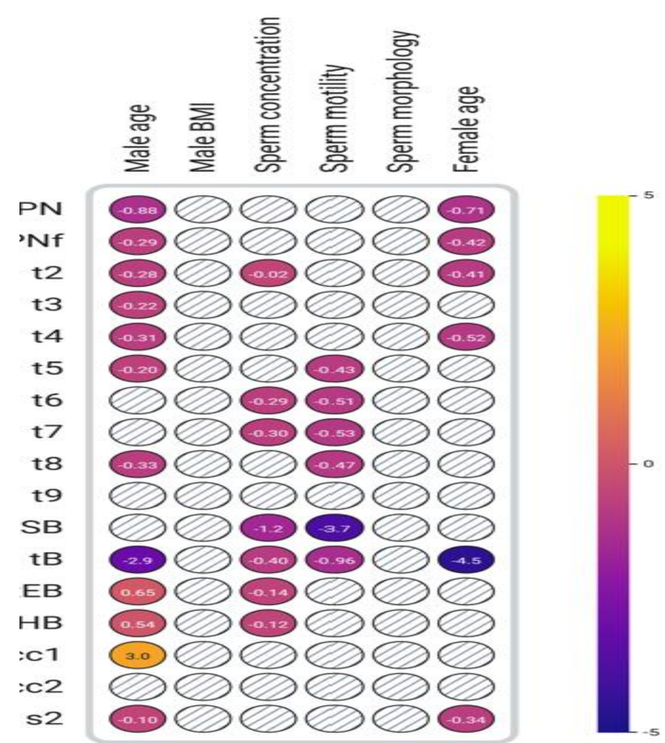
METHODS

We conducted a systematic review and meta-analysis of nine observational studies including IVF/ICSI cycles with recorded sperm parameters and embryo morphokinetic outcomes. Morphokinetic parameters (t2–tB) and ART outcomes (fertilization, implantation, pregnancy, and miscarriage) were analyzed. Meta-regression was performed to assess the influence of male and female clinical variables.

RESULTS

Embryos derived from males with poor sperm parameters showed significant delays in cleavage (t5–t7) and blastocyst formation (tSB, tB) ($p < 0.0$ Sperm motility and concentration were negatively associated with these delays. While no differences were observed in fertilization, implantation, or live birth rates, the miscarriage rate was significantly higher in the poor sperm quality group (OR 3.03, $p = 0.034$).Male age also emerged as a significant predictor of delayed morphokinetics and reduced live birth rate.





CONCLUSION

Sperm quality, particularly motility and concentration, significantly affects later-stage embryo development and miscarriage risk in ART. These findings support integrating advanced sperm assessment into routine fertility evaluations and highlight the role of paternal factors in embryo viability and clinical outcomes.

REFERENCES

1-C M Cox, M E Thoma, N Tchangalova, G Mburu, M J Bornstein, C L Johnson, J Kiarie, Infertility prevalence and the methods of estimation from 1990 to 2021: a systematic review and meta-analysis, Human Reproduction Open, Volume 2022, Issue 4, 2022, hoac051, https://doi.org/10.1093/hropen/hoac051.

2-Giménez C, Conversa L, Murria L, Meseguer M. Time-lapse imaging: Morphokinetic analysis of in vitro fertilization outcomes. Fertil Steril. 2023 Aug;120(2):218-227. doi: 10.1016/j.fertnstert.2023.06.015.

3-Mangoli E, Khalili MA, Talebi AR, Ghasemi-Esmailal S, Hosseini A. Is there any correlation between sperm parameters and chromatin quality with embryo morphokinetics in patients with male infertility? Andrologia. 2018 Jun;50(5):e12997. doi: 10.1111/and.12997.

CONTACT

Dr. Raneen Sawaid Kaiyal, IVF unit, Galilee Medical Center, Nahariya raneens@gmc.gov.il

https://ayala.cme-congresses.com/