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Towards better meta-analyses in assisted reproductive technology: Fixed, random or multivariate models?

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Abstract

AIM: Comparing the validity of the fixed, random, and multivariate meta-analytical models applied in meta-analyses in Artificial Reproduction Technique (ART).

METHODS: Based on common characteristics of IVF meta-analyses, we simulated a large number of data to compare results issued from the Fixed Model (FM) with the Random Model (RM). For multiple endpoints MA, we compared the univariate RM with the multivariate model (MM). Finally, we illustrate our findings in re-analyzing a recent meta-analysis.

RESULTS: In our review, although a homogeneous effect was excluded in 89% of the MAs (11%), FM was utilized in 41 studies (82%). From simulations, a concordance of $59 \pm 6\%$ was found between the two tests, with up to 65% of falsely significant results with FM. The Q-test on studies characterized by substantial heterogeneity falsely accepted homogeneity in 46% of studies. Comparing separate univariate RM and MM on multiple endpoints studies, MM reduces the Between Endpoint Discrepancy

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