Reviewer's report

Title: Joint modeling of success and treatment discontinuation in in vitro fertilization programs: a retrospective cohort study

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Reviewer: Michael Obermeier

Reviewer's report:

The authors report on the results of a joint analysis of shared and possibly opposite effects on successful birth after IVF and IVF-treatment discontinuation. The paper is nicely written and offers with its supplementary material very useful information to get into the performed analyses. With the “shared random effect model" a Bayesian approach has been used in this study, which is certainly applicable to the objective of the research.

Major Compulsory Revisions

Therefore I have no major points concerning the applied statistics in this article, but one general and major remark on the conclusion of the authors. I am wondering what is the central point the authors want to state: if it is only the result that success and discontinuation processes were significantly linked in one centre but not in the other, it seems a bit sparse to me and not very relevant neither for research nor for clinical practise.

The authors offer in the middle of the discussion-part a reasonable explanation for the result, which seems to me being worth to be discussed more extensively. But what follows from this finding? One reasonable conclusion might be of methodological kind: “discontinuation” in centres surrounded by many other centres might not mean real “discontinuation” but probably only a change of the centre. This stresses that interpreting results of IVF-studies using data of such centres needs care, possibly also a more sophisticated definition of “discontinuation” is necessary. Summarized the interpretation of the results and their implications on clinical practise and further studies should be discussed much more detailed.

Minor Essential Revisions

There are two additional minor points concerning the results:

- Authors wrote that the proportion of treatment discontinuation was significantly higher in the Parisian centre: the performed test was not described in the method section and no test statistic resp. p-value was given. This should be caught up. Have univariate testing been performed also for other variables?

- The figures are described unsatisfactorily: there is no labelling of the y-axis and no explanations how the boxes and whiskers have to be interpreted.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests