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## EDITORIAL COMMENT



Sperm counts have been declining over the past 50 years, and this issue has recently generated increased concern within the general population after a study by Levine et al demonstrated a >50% decline in sperm counts, particularly in Western countries, from 1973 to 2011.<sup>1</sup> While it has been clearly shown that sperm counts are decreasing with time, the clinical significance of this is less clear. Total motile sperm count (TMSC) is an important semen parameter commonly used by fertility providers to determine a couple's candidacy for various assisted reproductive technologies (ART), and has previously been shown to be a better predictor of pregnancy outcomes than WHO classification values.<sup>2</sup>

Here the authors aimed to evaluate trends in TMSC over time for couples presenting with subfertility. They demonstrated a decrease in the proportion of men presenting with normal TMSC, and an increase in the proportion of men with low TMSC presenting for subfertility over time. While this data raise interesting questions regarding changes in clinically relevant semen parameters, it is difficult to determine whether these trends reflect an actual change in the general population, or simply a change in selectivity of patients being referred for abnormal semen parameters.

While the authors suggest that an increase in the proportion of men with low TMSC would reflect possible changes in the type of ART required, it would be important to determine if these increases translate to actual changes in ART practices. Studies have shown that the use of ART including intrauterine insemination and in vitro fertilization have increased over time, along with the proportion of people worldwide conceived by ART.<sup>3,4</sup> Does this reflect a growing need for ART, or an improvement in access to ART services? The authors present a thought-provoking study with a large sample size, which supports the alarming trend of decreases in semen parameters over the years, and should further prompt our field to investigate reversible reasons for these declines before it's too late.

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## AUTHOR REPLY



The authors would like to thank Krzastek and Smith for the concise summary of our findings and discussion in their editorial comment.

As highlighted by Krzastek and Smith, a major limitation of this study was its retrospective design, resulting in the inability to determine if changes in clinically relevant semen parameters over time reflect a change in biology or referral patterns. Although there is no evidence to believe that the latter is the case, a prospective study is better suited to evaluate such a confounder. Additionally, future prospective studies on sperm counts in infertile and subfertile populations should investigate whether the increased utilization of assisted reproductive technologies (ART) is secondary to enhanced access to care vs a higher need for ART. As an active issue, it is unclear how access to ART has changed clinical practices in any given location. Such a future study might simultaneously evaluate the frequency of use of various ART and patients' infertility treatment insurance coverage or lack thereof. Information from clinicians regarding the degree to which management decisions are based on financial considerations may also be required.

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