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## INVITED COMMENTARY

Semen Analysis

### Chinese student donors could be a reference population when monitoring sperm quality

Nathalie Sermondade<sup>1,2</sup>, Charlotte Dupont<sup>1</sup>

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Rao *et al.*<sup>1</sup> evaluated the semen quality of 1808 university student sperm donors during a 4-year period.

They have made a good description of a well-defined and homogenous population, with a sample of included donors that was quite large. This population was interesting since it involved young men for whom fertility status is mostly unknown. Indeed, most of the previously published studies focus on male partners of infertile couples or on fertile sperm donors. In this population, they found that the sperm quality was not optimal, with 3.4% and 0.5% of those young donors presenting oligozoospermia and azoospermia, respectively.

Literature about cutoff values for sperm parameters is huge and controversial, many authors suggesting that both physiopathological variations and limitations of the used techniques make semen analysis results of poor clinical relevance.<sup>2</sup> However, Rao *et al.*<sup>1</sup> made efforts to limit intra-individual variability (two semen samples were provided for each donor), and the accuracy of the results was guaranteed by internal quality controls and by a limited number of trained technicians that performed the semen analyses. Moreover, conventional sperm parameters clearly remain the gold standard for initial evaluation of male fertility.

This 4-year retrospective study showed a decrease in sperm concentration (from  $58.0 \times 10^6 \text{ ml}^{-1}$  in 2010 to  $41.8 \times 10^6 \text{ ml}^{-1}$  in 2013). A tendency to decreasing sperm concentration and total sperm count was found after adjusting for potential confounders (age, year, season and duration of abstinence). The authors concluded that a declining trend of the quality of sperm parameters was suspected. This interpretation can be discussed since large studies showing an alteration of sperm parameters previously published included data during

decades (20–50 years) and concerning thousands of individuals.<sup>3</sup> Although interesting and alarming, observed changes during a 4-year observation of 1808 men do not allow a formal conclusion, especially as confounding factors such as tobacco, alcohol consumption or body mass index were not considered.

Authors suggested that environmental, psychosocial and climate factors may explain the non optimal sperm quality of the analyzed population. As described in Table 5, semen quality differences were previously observed between different European countries.<sup>4</sup> Changes in sperm parameters were also observed across seasons in Europe,<sup>4</sup> but, despite huge climatic variations in Wuhan city, semen quality did not dramatically vary in Rao's study.<sup>1</sup>

Although not without limitations, this study has the merit to describe with rigorous methods the sperm parameters of a homogeneous population that is exposed to detrimental environmental factors. Being complex and fragile, human reproductive function can be considered as a "sentinel function," witness to the health impact of environment or behavior changes.<sup>5</sup> That way, sperm quality could be a health marker and student sperm donors could constitute a reference population that should be monitored in the coming years.

#### COMPETING INTERESTS

The authors declare no competing interests.

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<sup>1</sup>Reproductive Biology Department, Jean Verdier University Hospital (AP-HP), F-93143, Bondy, France; <sup>2</sup>Paris 13 University, Sorbonne Paris Cité, INSERM U557, INRA U1125, CNAM EA3200, UMR 1153 Research Team in Nutritional Epidemiology, F-93017, Bobigny, France.

Correspondence: Dr. N Sermondade (nathalie.sermondade@jvr.aphp.fr)