An ecological comparison study on the effect of the COVID-19 pandemic on semen quality based on a nationwide loosening of COVID-19 curbs in China at the end of 2022

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Abstract

Although reports have shown an association between coronavirus disease 2019 (COVID-19) and a reduction in male semen parameters, no population big-data analyses have been verified. This ecological comparative study aimed to explore the effects of the COVID-19 pandemic on semen quality. This ecological comparison study was based on the nationwide loosening of COVID-19 curbs in China on 2022-12-07, 1 month after which, an 89% infection rate was reported in Henan Province, China. We compared semen quality and serum hormone levels from 2023-01-07 to 4-30 and 2022-01-07 to 4-30 at the Reproductive Center of Henan Provincial People's Hospital. Our results indicated a significant decrease in semen volume ($P<0.0001$), sperm concentration ($P=0.0004$), total sperm count ($P<0.0001$), progressive motility ($P<0.0001$), and nonprogressive motility ($P<0.0001$) after the nationwide loosening of COVID-19 curbs. The effects on semen volume and total sperm count lasted for a long time. An increase in the rate of sperm neck defects was observed ($P<0.0001$). Infection also caused hormone disruption in prolactin ($P<0.0001$), testosterone ($P=0.0220$), sex hormone-binding globulin ($P<0.0001$), and free testosterone index ($P=0.0126$), and an increase in estrogen ($P<0.0001$), osteocalcin ($P<0.0001$), and 25-OH-VD ($P<0.0001$). The present study revealed that mild COVID-19 appeared to have a detrimental effect on semen parameters.

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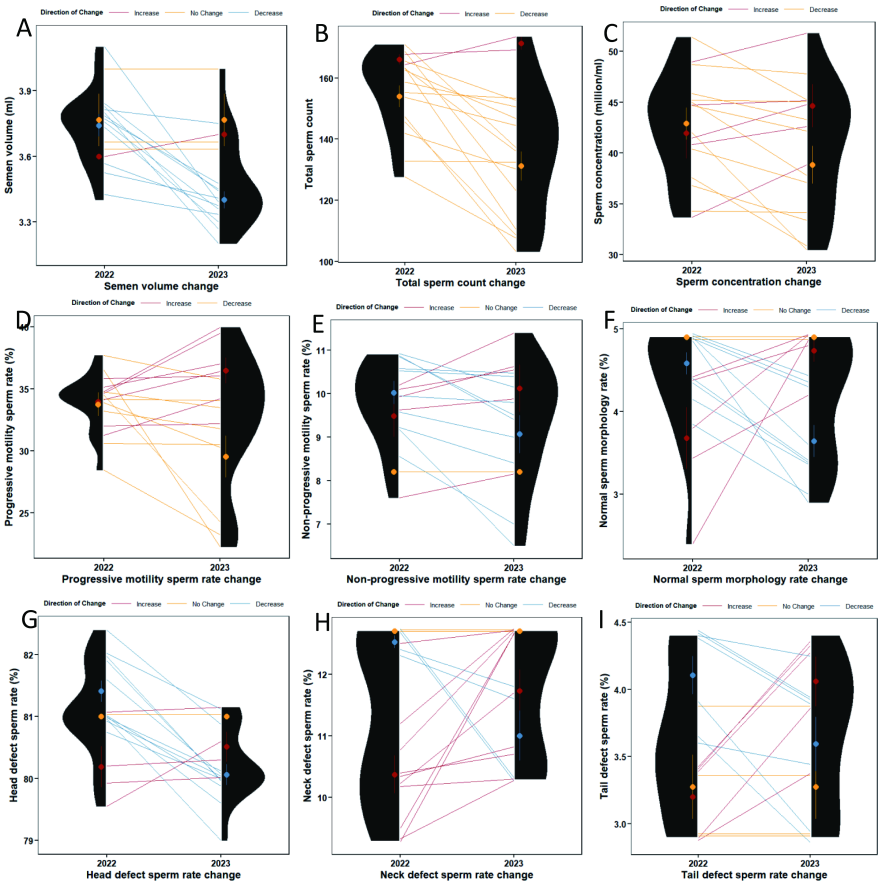

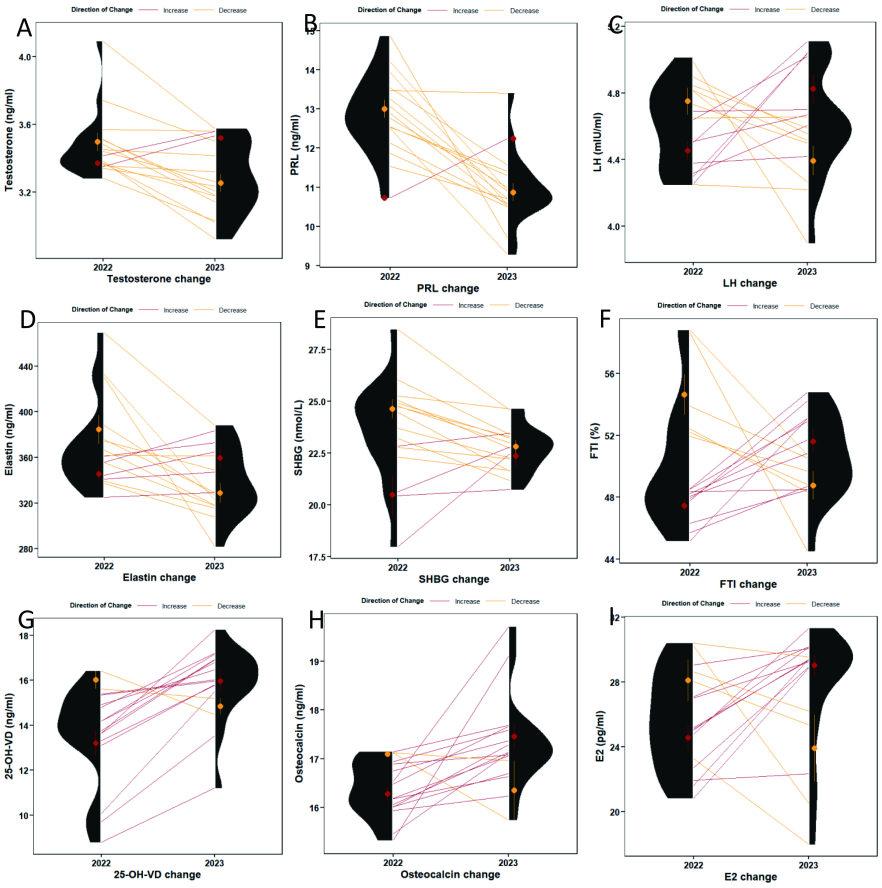

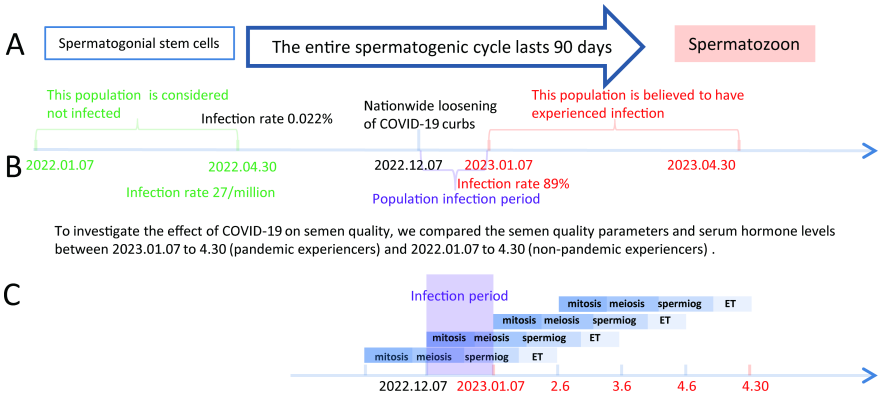

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