

Study question: What is the size and distribution of per woman infertility treatment expenditures over time and the economic burden of infertility treatment per 10,000 women aged 18–50 in France?

Summary answer: The average infertility related expenditure per woman is estimated at 6996 (95% CI: 5755 - 8237) euros, the economic burden for 10,000 women at 70.0 million (IC95%: 57.5 – 82.4) euros. Infertility-related expenditures increases before the start of treatment (initial check-up), reaching its maximum 6 months later, mainly due to ovulation stimulation treatment, reaching a plateau period during semesters 2 and 3, where the share of expenses is mainly related to hospitalizations for assisted reproductive technologies (ART), and then decreases.

What is known already: Most of the recent cost studies related to infertility treatment have focused on ART expenditures, with highly contrasting results depending on the time horizon chosen, the perspective adopted, and the expenditures taken into account (hospital, outpatient cares, etc.). None has ever focused on women treated for infertility whether they received ART or lower-intensity infertility treatments, analyzing the distribution of infertility treatment expenditures over time.

Study design, size, duration: National individual medico-administrative data were used to conduct a self-controlled before-after analytic cohort analysis. A total of 10459 women aged 18 to 50 years were included. 556 of them were treated for infertility and followed during a 3,5 years period. To control for unobserved temporal effects, a A group of 9903 matched controls, without fertility disorders, were selected at random, using the exact matching method, and followed during the same period of time.

Participants/materials, setting, methods: Infertility-related expenditure was derived as a difference-in-difference (DiD), in which the difference between expenditures for patients treated for infertility and non-treated controls were regarded to be associated with the infertility event. DiD was implemented as an interaction term between time and treatment group dummy variables in a linear regression model. The health care resource considered from a societal perspective in 2020 euros were hospital care, general practice and other specialized care, tests, dispensed drugs, and others (including nursing care, midwifery, physiotherapy, dental care, transportation, medical devices and services, and cash benefits). The cases were defined as women who purchased a pharmaceutical treatment used in infertility in 2014 and did not receive any of these treatments in the previous 3 years. They were included in the study at the date of their first purchase and followed one semester before and 6 semesters after the inclusion date or at the time of early pregnancy. Controls were included if they had not purchased any fertility treatment between 2011 and 2017 and tracked over the same period of time.

Main results and the role of chance: The average infertility related expenditure per woman over 3,5 years was estimated at 6996 (IC95%: 5755 – 8237) euros. According to the linear model, the economic burden was estimated at 70.0 million (IC95%: 57.5 – 82.4) euros for 10,000 women followed during 3,5 years. The infertility related expenditures increased from 235 (IC95%: 98 - 373) euros in semester 0, i.e. before treatment, to 1509 (IC95%: 1277 - 1741) euros in semester 1, to reach a plateau in semesters 2 (1416 (IC95%: 1161 - 1670)) and 3 (1319 (IC95%: 943 - 1694)) and then decrease until semester 6 (577 (IC95%: 316 - 839) euros). While the expenditure related mainly to technical acts, consultations and biology in semester 0, the semester 1 was dominated by expenditure on medicines. In the following semesters, the share of expenditure on medicines decreased from 47% in semester 1 to 29% in semester 6, while the share of expenditure on hospitalisation rose from 15% in semester 1 to 44% in semester 5.

Limitations, reasons for caution: The expenditures may have been underestimated since a few women may have had an infertility check-up without ever starting treatment and therefore went undetected. A further limitation of this study is the failure to take into account male infertility evaluation.

Wider implications of the findings : This study informs the public authorities about the economic burden of infertility and also points out the importance of the share of drugs in the expenditure related to infertility treatment.

Study funding/competing interest(s): There is no study funding and competing interest.

Keywords: Costs and Cost Analysis; infertility; reproductive technique, assisted; ovarian stimulation