The Health of 200 000 Volunteers Tracked by Inserm

Over two-hundred thousand. That is the number of people living in France who have enrolled in Constances since 2012. This unparalleled record makes the cohort the country’s largest epidemiology and public health research project, with few equivalents on the international level. Performed in partnership with Inserm, the French national health insurance fund, the French national retirement pension fund and the universities of Versailles-Saint-Quentin-en-Yvelines and Paris Descartes, Constances aims to track the long-term health of its volunteers in order to deepen our understanding of the factors that influence it, such as diet, environment or working conditions. Constances is a research infrastructure that is funded within the framework of the Investments for the Future programs.

Constances represents:

- 205 000 participants – almost 97% of whom accept to be paired to the databases of the French National System for Health Data
- several thousand variables for each individual
- 80 research and public health projects ongoing
- over 190 researchers working on its data in France, Germany, UK, Spain, Finland, Italy, Sweden, Canada, Denmark and the USA
- participation in 11 French and international research consortiums
- a rapidly growing number of scientific publications

"With the surge in Big Data and Artificial Intelligence, if public research is to inform public decision-making on such sensitive issues as pesticides or mobile telephones, we need powerful and secure research instruments like Constances," explains Marie Zins, Scientific Director of the cohort.

Constances: a living project

Seven years after the launch of Constances, new projects are being created in order to improve yet further its contributions to research. The collection of biological specimens to form a biobank began at the end of 2018, with almost 95% of the participants approached who gave their consent. In 2019, the volunteers will complete their online “residential calendar” with the addresses of everywhere they have ever lived since birth, which will open up immense perspectives for studying the effects of the environment (atmospheric pollution, pesticides, light pollution, etc.) on health. It does not stop there. Constances is also contributing to the French Plan for Genomic Medicine, thanks to the whole genome sequencing of a subsample of participants to constitute a database of genetic variations in our populations.

The cohort’s researchers will present their latest findings at a scientific day held on May 23, in Paris. The topics covered will include work stress and the risk of benzodiazepine misuse, the epidemiology of NASH in France, the use of e-cigarettes and the long-term reduction of smoking, and the link between depressive symptoms and vegetarian diets.
Constances: advancing research to improve health

- **Link between depressive symptoms and vegetarian diets**

While vegetarian and vegan diets (which exclude the consumption of certain animals or any products of animal origin) appear to be generally good for physical health, some studies have reported a link to an increased frequency of depressive symptoms. In just over 90,000 subjects from the Constances cohort, the researchers revealed such a link with pesco-vegetarian diets (which allow the consumption of fish) and lacto-ovo-vegetarian diets (which allow the consumption of eggs and dairy), even when sociodemographic and health-related factors were taken into account. However, this link was not present in frequent consumers of legumes (lentils, chickpeas, soya, etc.) or in those following such diets “for their health”. What is more, this link was not specific to the exclusion of animal products in particular but was observed irrespective of the food group excluded. For example, the increased probability of depression found with a diet low in vegetables was twice as high as that observed with a diet low in meat. These findings, which cannot affirm a causal relationship, suggest that depression is linked to a tendency to restrict the variety of foods consumed, whatever those foods might be.

Study reference: [http://dx.doi.org/10.3390/nu10111695](http://dx.doi.org/10.3390/nu10111695)

- **Benzodiazepines: chronic consumption and work stress**

Benzodiazepines are the most prescribed drugs worldwide due to their anxiolytic effects. However, their treatment indications are limited, and it is not recommended to use them for long periods of time due to the risk of dependency and their numerous side effects. The subjects most exposed to these side effects are chronic users. Based on data on treatments dispensed in pharmacies to over 9000 Constances participants enrolled in 2015, the researchers calculated prevalences of chronic benzodiazepine use that were representative of France’s general population. These prevalences were particularly high in that chronic benzodiazepine use concerned 2.8% of men and 3.8% of women in France in 2015. These prevalences rose to 9.3% of men and 12.2% of women in the over-50s age group. Chronic benzodiazepine use is therefore particularly common in the general French population and the subjects most vulnerable to their side effects are paradoxically those who are the most affected. In another study, the researchers looked at the links between stress at work, measured using an internationally validated scale, and the risk of chronic benzodiazepine use. Based on a sample of over 30,000 workers enrolled in Constances between 2012 and 2014, with no recent history of chronic benzodiazepine use, the researchers calculated the risk of chronic use over a two-year follow-up period. They found that stress at work was linked to an increased risk of chronic benzodiazepine use – a risk that increased with the intensity of the stress at work. For the most stressed subjects, the risk of chronic benzodiazepine use was at least two-fold.

Study reference: [https://doi.org/10.1186/s12889-019-6933-8](https://doi.org/10.1186/s12889-019-6933-8)

- **NASH: affects almost 1 in 5 people in France**

Metabolic steatosis (“fatty liver”) and more particularly nonalcoholic steatohepatitis (NASH), is an emerging hepatic disease linked to the global epidemics of obesity and diabetes, and likely to lead to liver cirrhosis and cancer. Based on the Constances cohort and with the help of indirect markers, the researchers determined that the prevalence of metabolic steatosis was 18.2% in France’s adult population, including 2.6% with advanced liver disease, that it was twice as common in men than in women, and that it increases with age. There is an inverse relationship with the socio-economic level and a North-to-South gradient. Obesity and diabetes are major risk factors. Study of the impact of metabolic steatosis and NASH on morbidity-mortality in France’s general population is ongoing.
• Are e-cigarettes effective in reducing smoking long-term?

This study involved 5400 smokers and 2025 ex-smokers from the Constances cohort (2012-2016; cessation of smoking from 2010, the year e-cigarettes went on sale in France). In total, 15% of the smokers and around 9% of the ex-smokers reported using e-cigarettes at the time they were interviewed. Over an average 2-year follow-up period, the smokers using e-cigarettes reduced their tobacco consumption more than the non-users (from 4.4 cigarettes/day to 2.7 cigarettes/day). Furthermore, 40% of the e-cigarette users were able to stop smoking during the follow-up period, versus 25% of the smokers who were not using an e-cigarette. However, the ex-smokers who were using e-cigarettes had a higher probability of resuming smoking than those who were not using e-cigarettes (31 vs. 16%). In conclusion, e-cigarettes enable smokers to cut down on their smoking or to stop smoking altogether, but these effects do not always appear lasting. It is therefore necessary to closely monitor e-cigarette users and advise total tobacco withdrawal to reduce the risk of relapse.

Publication in progress

To find out more about this event: consult the [program](#).

Journalists wishing to attend this event must have prior authorization from the Inserm Press Office [presse@inserm.fr](mailto:presse@inserm.fr)

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