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The disappearance of women researchers in times of pandemic

A team from the UNIGE and the HUG has shown that during the COVID-19 pandemic, women researchers submitted significantly less research for publication than their male counterparts did. One possible explanation would be an overload of work combined with additional tasks at home.

When an article is published in a scientific journal, three authorship positions indicate who the study's principal researchers are: first author, last author and corresponding author. These positions are used for decision-making, particularly in the evaluation of scientific careers and the awarding of possible promotions. Previous studies have shown that women less frequently occupy these authorship positions than men do, especially as last authors, a position reserved to senior scientists. A team from the University of Geneva (UNIGE) and the University Hospitals of Geneva (HUG), in Switzerland, in collaboration with BMJ Publishing Group, have now demonstrated that this inequality increased considerably during the first wave of the pandemic, with a decrease of almost 20% in the number of women first and corresponding authors. Why? With lockdowns, women researchers had to adapt their academic duties and shoulder more domestic tasks and homeschooling. These results can be read in the journal *BMJ*.

Scientific research is often conducted jointly by scientists from different institutions. Therefore, in order to indicate who the main contributors are, specific authorship positions are assigned: the first author is typically the person who has contributed most to the research, sometimes a junior scientist at the beginning of their career; the last author is typically the senior person who oversaw the whole research; and the corresponding author is the person who can answer to all queries. "These authorship positions are used for decision-making, because they reflect the degree to which researchers contributed to the production of science. The attainment of these key positions, alongside with the total number of articles published, are essential for moving up the academic ladder", explains Angèle Gayet-Ageron, a professor in the Department of Community Health and Medicine at the UNIGE Faculty of Medicine, Senior Consultant in the HUG's Division of Clinical Epidemiology, and first author of the study.

In the two years before the pandemic, women accounted for 46% of first authors, 31.4% of last authors, and 38.9% of corresponding authors. "We wanted to know whether the pandemic was associated with lower representation of women in key authorship positions, which would potentially have a negative impact on their careers", continues the Geneva researcher.

Quantifying the representation of women scientists during the pandemic

In order to quantify women's scientific production during the COVID-19 pandemic, the Geneva team analysed the key authorship positions in 11 journals published by BMJ Publishing Group, i.e. 63,259 manuscripts submitted between 01 January 2018 and 31 May 2021. "Our idea was to use years 2018-2019 as reference, then to focus on



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Angèle Gayet-Ageron, a professor in the Department of Community Health and Medicine at the UNIGE Faculty of Medicine, Senior Consultant in the HUG's Division of Clinical Epidemiology.

High resolution pictures



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manuscripts dealing with COVID-19 during the pandemic on the one hand, and manuscripts dealing with other subjects during the same period on the other hand”, explains Khaoula Ben Messaoud, a researcher in the Department of Community Health and Medicine of the UNIGE Faculty of Medicine, and co-first author of the study. Indeed, it takes an average of three years from the start of a study to its publication. In order to find out whether women produced less research during the pandemic, the researchers had to focus on the research carried out during this same period. “And manuscripts related to the coronavirus reported of studies necessarily carried out in 2020-2021. Moreover, the publication process accelerated considerably during the pandemic, as the scientific community needed to benefit from reliable data as quickly as possible”, the researcher adds.

A drastic drop in scientific production by women

“Our results speak for themselves: during the first part of the pandemic, at the beginning of 2020, we found in the manuscripts dealing with COVID-19, a decrease of almost 20% in the proportion of women first authors, 12% in the proportion of women last authors and 20% in the proportion of women corresponding authors, compared with pre-pandemic data”, notes Angèle Gayet-Ageron. This large decrease corresponds to the implementation of the first lockdown measures and school closures. “It seems likely that women had more difficulty pursuing their research activities – in view of their professional and family overloads – than their male counterparts”, she says. This loss of visibility diminished afterwards, until it returned to a level similar to the pre-pandemic period with the return to more normal life.

The UNIGE and HUG team also found that the more authors in a research project, the fewer women occupy key authorship positions. “Conversely, when the last author is a woman, the first author is twice as likely to be a woman”, says Khaoula Ben Messaoud. There are also clear differences between countries: in Oceania (mainly Australia), women held 54% and 44% of the first and last authorship positions, compared with 51% and 34% in Europe, and only 34% and 22% in China.

The pandemic hinders the career of women researchers

“The COVID-19 pandemic has enabled us to highlight the fact that women have been less involved in scientific research linked to COVID-19 and that they have occupied less prestigious authorship positions compared to their male colleagues. The slowdown in their publications should be taken into consideration, especially when analysing academic applications for which the number of published articles is still a determining factor. It would ensure that this does not have a negative impact on the development of their academic careers”, summarises Angèle Gayet-Ageron.

This work is part of an ancillary study to the SNSF-funded ATHENA project.