

Mitigating the detrimental effects of COVID-19 pandemic on scientific production

A review of SCOPUS indexed journal publications showed that the number of scientific articles attributed to Filipino authors in 2010 numbered 1,381, and had been climbing at a rate of 17.8% annually until 2019, when the total number of publications for the Philippines numbered 5,808. However, this growth rate slowed to 5.5% by 2020 and 2021.¹ While not entirely alarming, we should still take note that this can indicate a slowing down of the growth of scientific productivity, possibly brought about by the COVID-19 pandemic. There are rumbles in the scientific world that we should not ignore.

A meta-analysis of 22,525 publications in 10 high-impact scientific journals, between January 01, 2019 and January 01, 2021 by Raynaud et al. noted that journals in fact increased their overall publication production by maintaining their volume of nonCOVID-19 publications while integrating COVID-19 related researchers, and decreasing their nonCOVID-19 publications while integrating COVID-19 publications; that COVID-19 publication had a median of 9.0 authors as compared to 4.0 authors in nonCOVID-19 publications. In terms of original articles, as opposed to research letters and case reports, COVID-19 publications were significantly lower at 47.9% compared to nonCOVID-19 publications which were at 71.3%.² This quick rise of the number of COVID-19 related articles from zero in 2018 to approximately 200,000 by December 2020, can be attributed to the speedy review that such manuscripts enjoyed in contrast to nonCOVID-19 related manuscripts (90 days vs 30 days).³ This observation is echoed by Riccaboni and Verginer wherein their difference-in-differences analysis of 3,638,584 papers published in life sciences journals from January 2019 to December 2020 showed a 650% increase in COVID-19 related publications compared to a 10 to 12% decrease in nonCOVID-19 related publications.⁴

According to Gao et al., in two randomly sampled surveys conducted between April 2020 and January 2021 among 6,982 US and European principal investigators, and triangulated with analysis of the Dimensions database, 9% of the respondents reporting have no new research projects in 2019, but this increased to 27% for 2020. Their Least Absolute Shrinkage and Selection Operator (LASSO) regression showed that the factors most predictive of this “no new research” situation are research area being not COVID-19 related, being female, and having children who are 5 years old or younger. They further note that because it takes an average of three years minimum from research conceptualization to publication, this pernicious effect of the COVID-19 pandemic on scientific productivity may not be immediately felt yet.⁵ This is echoed in Germany wherein 67% of the 120 researchers surveyed reported not being able to out their projects due to COVID-19 exacerbation of their child or elderly care commitments.⁶ Liu et al. in their difference in differences analysis of the 122,310 documents in the COVID-19 Open Research Dataset between January 2018 and September 2020, showed that female authorships dropped by 5%, that publication by teams with a female as a first author dropped by 21% (with no change in publications with females as last author), that publications by mix-gender teams declined by 6.8% while all male teams included by 5% and all female teams increased by 1.8%.⁷ This is quite alarming given that there is empirical evidence showing that the research quality measured by journal prestige level of mixed-sex publications, is higher than that of same-sex publications for both male and female scientists.⁸

The rise of preprints, where unreviewed manuscripts are deposited in online-accessible databases for public scrutiny, is seen as a double-edged sword. As part of the open science movement, preprints allow communication of new findings in a timelier manner⁹, and can lead to avoidance of duplications of researches.¹⁰ However, Besançon et al. reported that between January 1 to June 30, 2020, using the altmetric API, a total of 1,462 preprints were shared in twitter, facebook, blogs, news, and others as valid scientific evidence, raising concerns of spreading potentially misleading and unverified data. Accordingly, the number of COVID-19 preprint mentions in the media ranged from 2 to 36 times.¹¹

Scientists and their researchers, like most people, were not immune to the COVID-19 pandemic. Luckily, many of our COVID-19 induced problems may not manifest until three to five years later. Thus, there is still time for us to act: educate the media and social media content producers on the limits of preprints as scientific evidence; help women scientists and scientists with children 5 years or younger or elderly that they care for overcome the challenges they face, reward more mix-gender research teams and more original research work, and more importantly, for more effective interventions, to analyze local data to more accurately assess the extent of the issue, and the key bottlenecks.

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