

An immunization program against the COVID-19 infodemic

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In the beginning of the current pandemic, we noted that several biomedical journals, regardless of tier and prestige, launched fast track sections open to articles related to the COVID-19 phenomenon. It is the purpose of science after all to find solutions to current emergencies and one could state at first that the effort was in itself altruistic, selfless and aimed to fulfill the scientific centuries-old promise of finding solutions to humanity's challenges^{cf 1-2}.

At a closer look though, we have come to realize that a second epidemic took off along with the coronavirus dissemination: a publication epidemic, an infodemic. The team behind the Retraction Watch website were amongst the first to sound the alarm that the COVID-19 publication was moving at breakneck speed and that it could do more harm than good³ and to this moment the Retraction Watch database has tracked around two dozens of retractions of pandemic-related papers^{cf 4}. It will be a few years though before being able to analyze the retraction rate of COVID-related papers⁵ by means of comparing it with a control group. Yet, the time from article submission to online publication of COVID-related articles accelerated remarkably in comparison

to previous publication timeframes according to independent studies published in pre-print servers and in prestigious journals as well⁶⁻¹⁰.

For example, two independent studies found that the median time to final acceptance was eight times faster for COVID-related articles as opposed to papers on other issues⁸⁻⁹. One of them found that the median time from article receipt to article being made available online was five times faster for COVID-related articles as opposed to papers on other issues and more than 10% of COVID-related studies were found to had been accepted within two days after submission in a pool of PubMed-indexed journals which have had their metadata analyzed⁹.

The reporting of the same patients in different studies¹¹ and the surge of duplicated (and poorly designed) clinical trials and systematic reviews¹² resulted in an apocryphal paraphrase of the famous Douglas Altman line^{cf 13} making its rounds on Twitter stating that we need less COVID-19 research, better COVID-19 research, and COVID-19 research done for the right reasons¹⁴.

We concur.

It appeared to be another highly contagious phenomenon of exponential growth: as one group of scientists published a fast tracked COVID-related article, other scientists developed a crave for rapidly publishing their own study and take part in the COVID-19 conversation, which made us wonder what the reproduction number of this infodemic would be.

During such a publication pandemic, there is not enough time for the germination of good ideas, a priori hypothesis conception, careful data analysis planning, which are the hallmarks of good quality research protocols. Thus, this current publication structure of incentives, being so avid for novelty and priority to foster professional careers but not necessarily scientific knowledge¹⁵, offer a high risk of confounding scientific news, that is, those studies that lower uncertainty regarding issues, with pseudo-news, that is, wasteful studies that only fuel noise¹². In addition, a large quantity of publications about an issue may promote cognitive fatigue, robbing people of the time necessary to think about or digest the reading¹⁵. This maturation of ideas is especially pressing under the notion that low quality of evidence tends to mislead the readers. And it would appear that the COVID-related research is indeed of lower methodological quality in comparison with the standard of quality in which the medical journal ecosystem had been operating before the pandemics, which was in itself far from ideal⁸.

As the biomedical community was developing its critical thinking skills during these past decades, the pandemic got us by surprise at a time we were not there yet. We were not sufficiently immunized against a dysfunctional ecosystem of sharing scientific information that values prestige, brand and citation over quality^{cf 15-18}. The plethora of fast tracked publication easily becomes viral through social media and instant messaging apps. There is no social distance for this matter nor masks to mitigate the infodemic.

The team behind Evidence, the Journal of Evidence-based Healthcare, thought carefully about how to react to it. Firstly, we decided not to implement a call for articles regarding COVID-19. It would be a great opportunity to improve Evidence's citation activity

but we do not want to be part of the problem, but part of the solution. Citation is not a sign of inherent quality, it is at best a sign of attention and trend^{cf 15-18}. We decided it would be a terrible course of action to deviate from our main mission: to promote scientific integrity and robustness of evidence. So, we had no call, nor any fast track announcement. We opted for a more natural route of joining in the conversation, we were open to COVID-related papers but not calling for them. This course of action proved to be the best and most rational response to the crisis.

Although it was not our intention, the current issue ended up becoming a COVID-19 issue. It is very hard to avoid the topic these days after all. The Choosing Wisely International published the process and results of a "not to do" list regarding COVID-19 responses; the evidence-based medicine program of Escola Paulista de Medicina published a systematic review showing the lack of high quality evidence justifying hydroxychloroquine as COVID-19 treatment; and our research group on medical cognition published on the physician's preference towards this drug as COVID-19 treatment. As for concept articles, medical thinkers published their pieces on the issue of hydroxychloroquine, along with a thought experiment and two pieces on the bridging the gap section, that serves to translate the scientific philosophical and scientific reasoning to the public in general.

It is interesting to note that, although the prevalence of physicians in favor of hydroxychloroquine is high¹⁹, there was no concept article submitted to our journal offering high quality evidence to justify said drug as treatment for COVID-19. We keep expecting to receive high quality articles from those who argue for this as of yet non-evidence based therapy, clarifying the scientific rationale behind this preference. There is an educational value in weighing pros and cons.

At the final stages of issue preparation, we were under the impression that Evidence ended up being a provocative sample of the cognitive state of metascience and evidence-based medicine research communities during the initial months of this viral pandemic. Still, we must be aware of the risks of the infodemic leading into an irrationality pandemic because information overload does make true knowledge less accessible^{cf 15}.

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