Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Stay on Top: COVID-19 As an Opportunity to Improve the GI Scientific Career – The Impact on Papers and Literature

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ABSTRACT

The main barrier for a young researcher in the field of endoscopy is that too much is known about virtually every aspect not only of the natural history, but also of the efficacy and safety of different Gastrointestinal (GI) techniques. The main fuel for research remains uncertainty, and this has been the primary characteristic of COVID-19. The unprecedented visibility of the main papers on the natural history and medical management of COVID-19 on all the main worldwide medical Journals has had an effect of drainage on the reports of COVID-19 in GI endoscopy, suddenly opening up the interest of main GI journals to this topic. Furthermore, given the nature and the urgency of the topic, these high-ranking journals have accepted study designs outside rigorous randomized controlled trials and/or systematic reviews and meta-analysis, what used to be the "conditio sine qua non" for being considered for publication. Suddenly, rigorous guidelines have been replaced by expert-derived suggestions on the basis that the best possible guidance is better than no guidance. This situation has been a great occasion for young researchers to gain visibility even without having access to the complex means and long timespans needed to finalize a randomized trial.

Keywords: COVID-19; Endoscopy; Research.

The main driver of scientific activity and its final output––that is, peer-reviewed publication––is represented by our ignorance. The less is known about any topic, the simpler to advance hypothesis that will be tested and validated. This is quite clear when looking at research in the field of colonoscopy. After the landmark studies on the natural history of colorectal cancer[1,2] it has been nearly impossible to propose hypothesis alternative to the adenoma-carcinoma sequence or the de novo pathway through the serrated lesions. What we need to revitalize research is a wave of uncertainty. For instance, the publication of the landmark study by MF Kaminski et al.[3] opened up a completely new chapter on the relationship between the quality of colonoscopy and the degree of Colorectal Cancer prevention, inspiring new ideas on how to improve quality of colonoscopy, such as technical or technological improvement.[4]

The main barrier for a young researcher in the field of endoscopy is that too much is known about virtually every aspect not only of the natural history, but also of the efficacy and safety of different Gastrointestinal (GI) techniques. For instance, if you look at Barrett esophagus, both epidemiological, clinical and endoscopic truths have been deeply validated,[5] and to address them is difficult, especially when lacking enough funding or manpower.

The main fuel for research remains uncertainty, and this has been the primary characteristic of COVID-19. Its impact on GI research has been suddenly dramatic due to the fact that from any side you were looking at COVID-19 in the field of GI-endoscopy, we ignored the most of it. What is the prevalence of COVID-19 in the patient population and among health Care Providers (HCPs)? What is the risk of infection for HCPs from COVID-19? What are the main organizational factors to protect HCPs against COVID-19? The clinical relevance of such uncertainty has been exponentially increased by the ignorance on the clinical effect from COVID-19 and consequent decisions? How many HCPs will die from COVID-19? Due to prolonged lockdown, how many patients will die due to cancellation of screening, interventional and surveillance procedures? At a similar extent, new uncertainty is related with the restarting: how to reinsert all the abolished procedures in the existing waiting list, considering the limitation of capacity we are still experiencing?

There is no doubt! The impact of COVID-19 on GI-endoscopy is likely to be huge and nothing is known about it: what topic could be more fertile and suitable for those few passionate minds hungry of new ideas for research? It could be argued, however, that if COVID-19 played a major role in the routine of GI-endoscopy, the opposite

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Table 1. Comparison of study designs between similar time periods in the two major general Gastro journals. (in bold, articles on **COVID-19**).

	FEB 2019 – SEP 2019	FEB 2020 – SEP 2020	FEB 2019 – SEP 2019	FEB 2020 – SEP 2020
Full papers containing "endoscopy"	Gastroenterology		Gut	
TOTAL	68	72 (24)	53	109 (27)
RCTs	19	15 (1)	20	24 (1)
Large Population-based	9	11 (0)	8	16 (0)
Sys Rev&M.Analysis	5	7 (0)	6	6 (0)
Exp.Rev/Guidelines/Recommendations /Editorials	20	16 (8)	12	36 (16)
Basic Science/Proof/Innovations	14	8 (0)	7	17 (0)
Survey	0	9 (9)	0	3 (3)
Retrospective studies	0	6 (6)	0	5 (5)
Cohort studies	0	0	0	2 (2)

was false. Isn't it true that the uncertainty on the natural history of COVID-19 in general, its possible medical treatment, the diagnostic strategies are of dominating importance as compared with the detrimental effect of the pandemic on the GI endoscopy field? Unexpectedly, the effect was the opposite! The unprecedented visibility of the main papers on the natural history and medical management of COVID-19 on all the main worldwide medical Journals – from New England Journal of Medicine to Lancet or the Journal of the American Medical Association[6,7]—had an effect of drainage on the reports of COVID-19 in GI endoscopy, suddenly opening up the interest of main GI journals – such as Gastroenterology, Gut, Gastrointestinal Endoscopy, and Endoscopy – to this topic. In other words, the dominant relevance of COVID-19 in general brightened rather than obscured the impact of COVID-19 on GI-endoscopy (Table 1, 2).

An unprecedented complex relationship between timing and methodology has been an additional factor of attraction of worldwide researchers for COVID-19. Most of us have been slowly become used to the understanding that only high-quality trials, namely Randomized Controlled Trials (RCTs) or rigorously ascertained prospective studies, could achieve decent publications. This has soon become a formidable barrier for young researchers willing to enter in the scientific arena. First, the methodology of such RCTs is extremely complex, requiring statistical advice for sample size calculation, randomization, and final assessment of the results. Secondly, there are several administrative and bureaucratic issues related with the ethical committee, requiring adequate funding that may be prohibitive for most of the institutions not usually dedicated to such study design. Third, patients' attitudes towards randomization can be an additional barrier, slowing the enrollment by unexpected prolonged delays. Fourth, the usual duration of a RCT can be measured in terms of years, so that the results may become available much later than expected, especially by students or fellows who will remain only for a limited period of time in the study institution.

On the other hand, COVID-19 had a dramatic effect on the level of methodology required. The sudden and desperate need of data to orientate the clinical approach offset the possible bias embedded in retrospective and poorly controlled series of data. Case reports, case series, and even narrative studies unexpectedly became the new standard, even for high-ranking Journals (Table 1, 2). This emphasizes one more time as it is the initial level of ignorance rather than the adequacy of the response the main driver of research. The lack of control or adequate reference standard in most of the studies will in the long-term condemn these publications to be downgraded to gray literature, but they will still assure a short-term visibility to the researchers. However, such drop in the level of methodology may be detrimental. If young researchers

Table 2. Design of papers published in the two major GI-Endoscopy journals containing the word "COVID-19" between Apr and Jun 2020.

Full papers containing "COVID-19" Apr 2020-Jun 2020	Endoscopy	Gastrointestinal Endoscopy
TOTAL	32	32
RCTs	0	0
Systematic Review and Meta analysis	0	0
Delphi Consensus	0	1
Simulation models	0	2
Expert Advice/Narrative Reviews	9	10
Guidelines/Position Papers	2	4
Survey	6	3
Organizational/Technical Advice	7	3
Case Reports/Small Case Series	4	4
Editorials	4	3
Retrospective study	0	2

feel that in the next future they can continue to publish on high-ranking Journals just with case reports, the overall level of research will be deteriorated. On the other hand, if this is only to fire up their interest in research, this may still be positive.

The final effect of research on GI endoscopy is to affect clinical practice. How to deal with a patient entering our GI Units? Should we stratify the COVID-19 risk, and if yes how? Is a test-and-scope strategy an effective choice? What Personal Protective Equipment (PPE) should we use? Is it the same for upper- and lower-GI endoscopies, difficult and simple cases or not? Irrespectively of the quality of research, guidance was expected by the GI community, and scientific societies were expected to deliver. Usually, most of guidelines are nowadays based on an extremely rigorous, as well as time consuming, methodology, prioritizing high-quality trials, coalescing the agreement across the experts with Delphi's process, and disseminating it with persuasive arguments. The lack of time coupled with the urgency of doing something—in the assumption that is always better than doing nothing—disrupted the quality of the way clinical recommendations were created. Statements based on balance of efficacy and safety as coming out from high-quality trials were suddenly replaced by expert-derived suggestions based on no more than case reports when available. It could be argued that even in these conditions, the best possible guidance is better than no guidance, and even one correct statement could compensate for the ineludible errors due to those that are wrong. However, this is far from being demonstrated! Having said that, the flourishing on Position Statements on management of COVID-19 in GI endoscopy has been impressive with more than 10 documents released from International Societies. To overcome challenges during this pandemic, these position statements should be the starting point to find weaknesses in current evidence and plot future research. Waiving ethical approval and collecting all available data (perhaps occupying in this way the increased time slots necessary for sanitizing and reprocessing) are further ways to optimize research opportunities.

In conclusion, COVID-19 has been a unique wave of opportunity for GI research due to a multifactorial deformation of the level of acceptance of studies from Journals, deterioration of methodology standards, and desperate need for clinical guidance due to concomitant risks from HCPs and patients. However, it is unlikely that in the long-term such effect will persist, especially when returning to topics where the overall knowledge is much more mature. Seize the moment, but it will not last forever!

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Conflict of interest
The authors disclose no conflicts.