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Quality assessment in gastroenterological research: publication rates of meta-analyses

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Meta-analysis is a formal quantitative study design used to systematically assess and pool the results of smaller research studies [1]. Meta-analyses allow researchers to derive more concrete conclusions in the absence of larger clinical studies. Smaller clinical studies may contain limited or conflicting results, which can complicate clinical decision-making based on their conclusions. As a result, meta-analysis plays a central role in evidence-based medicine by integrating multiple studies and overcoming external validity limitations [2,3].

A review of the meta-analyses presented at large gastroenterology meetings suggests that their number is increasing. We hypothesize that, while the number of meta-analyses is high, only a minority are published as full text. We aimed to compare the publication rates of meta-analysis abstracts presented at Digestive Disease Week (DDW) from 2014-2017.

We identified abstracts of meta-analyses presented at DDW from 2014-2017 published in supplements of the American Gastroenterological Association's (AGA) journal *Gastroenterology* and the American Society for Gastrointestinal Endoscopy's (ASGE) journal *Gastrointestinal Endoscopy*. Abstracts were further assessed by cross-referencing the PubMed database and Google Scholar to determine full-text manuscript publication status. Information on country of study, number of authors, male or female lead or senior authorship, university or community program, number of studies, and sample size was extracted. Descriptive analysis of abstract and full-length paper publication characteristics was performed using SPSS v25 IBM (USA).

During the study period, 523 meta-analyses were presented at DDW (330 AGA abstracts and 193 ASGE abstracts). Of those, 96 AGA and 44 ASGE abstracts were published as full-length manuscripts. The US contributed 374 (73.9%) meta-analyses, compared to 53 (10.5%) from Europe, 55 (10.9%) from Asia, and 24 (4.7%) from Canada. Ninety-five percent of abstracts were from university programs, compared to 5% from community programs (P<0.001). Male lead and senior authors accounted for 74% and 84% of authors, respectively. During the study period, only 26.6% of abstracts were eventually published as full-length manuscripts (523 abstracts vs. 139 manuscripts, P<0.001). Approximately 41% of abstracts in 2014, 6% of abstracts in 2015, 24% of abstracts in 2016 and 37% of abstracts in 2017 were published as full-length papers (Fig. 1). Abstracts and full-text manuscripts had a similar median number of studies included for analysis (11 vs. 12, P>0.05, respectively).

Our report demonstrated that while the number of meta-analyses presented at DDW is growing, less than 30% of abstracts are translated into full-length manuscripts. Furthermore, the numbers of studies that met the inclusion criteria and were analyzed in either abstract or manuscript format were similar. This raises the question: "of what quality are these meta-analyses?"

Lui *et al* (2017) assessed the quality of 127 gastroenterology-based full-length manuscripts and reported that the methodological reporting quality of meta-analyses has improved with compliances to the PRISMA statement and AMSTAR checklist [4]. However, very little information is known about the quality of systematic reviews and meta-analyses submitted to conferences.

With the advent of new and user-friendly software, pooled analyses are relatively easier to perform. What is more, these analyses can be performed by operators with little to no statistical training. Anecdotally, some meta-analyses are simply a repeat of studies that have been previously performed with the addition of 1-2 recent original research studies, while other studies are underpowered, which brings into question the need for performing a meta-analysis.

While abstracts do play a role in distilling information for the reader, full-length manuscripts are essential in helping readers evaluate the integrity and quality of research. Hence, without an assessment of research methodology, conclusions drawn

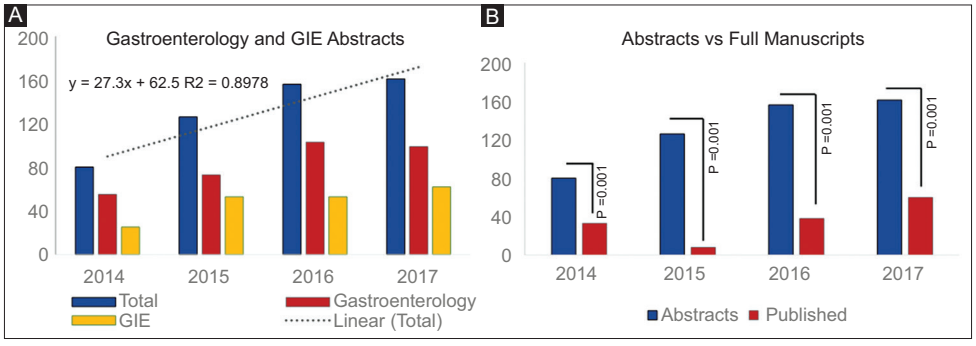

Figure 1 (A) *Gastroenterology* and *Gastrointestinal Endoscopy* (GIE) abstracts presented from 2014-2017. (B) Comparison of abstracts and full-length manuscript publications

from meta-analyses abstracts are limited, at best. Additionally, authors and reviewers should evaluate the significance and limitations of systematic reviews and meta-analyses. Despite presenting the best available evidence, a meta-analysis based on low-quality studies might be misleading and must be interpreted with caution [5]. To this end, assessing the quality of studies is also limited within an abstract format; thus, a full-length manuscript is needed.

Conference abstracts are not a substitute for full-length manuscripts. A consensus statement from the PRISMA for Abstracts Group noted that abstracts should be robust enough in presenting a clear and truthful account of the intended research [6]. More attention should be paid by authors and society abstract reviewers to the quality of systematic reviews and meta-analyses, given their central role in providing robust evidence-based medicine in the field of gastroenterology.

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Nuances in diagnosis and management of acute esophageal necrosis

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Dr. Dias *et al* present a comprehensive review on black esophagus (BE) [1], a rare but important entity in gastroenterology. The clinical significance of BE, with its striking endoscopic appearance of necrotic mucosa preferably affecting the distal esophagus with a sharp transition at the gastrointestinal junction, has notably risen over the last decade, with advances in gastrointestinal endoscopy and its increased recognition in the medical literature [2]. It is therefore important to acknowledge Dr. Dias' work while commenting on some of the important aspects of acute esophageal necrosis (AEN) mentioned therein.

First, the role of vasoconstrictive agents for achieving mean arterial blood pressure control in sepsis may come at the expense of splanchnic blood flow, possibly resulting in a decrease in distal esophageal tissue perfusion. It is the secondary effect of such agents—namely, maintaining vital organ circulation in sepsis, an underlying critical condition—that may lead to decreased mortality in AEN. An interesting correlate would be to evaluate the potential delay in the time to esophageal mucosal healing and the risk of stricture formation in patients who have received vasoconstrictive agents. This could certainly be addressed in future studies.

Second, there have been a number of case reports linking the use of various drugs to the development of BE. While it is well known that the vasoconstrictive effects of cocaine produce a decrease in tissue perfusion, the causative relationship between some prescription medications and AEN described in the literature so far was often purely observational. The lack of scientific proof makes such a hypothesis likely to be coincidental. For example, bisphosphonates are known to cause a chemical injury-type tissue ulceration in the mid esophagus, typically due to the known anatomic impression from the aortic arch—an entity called "pill esophagitis"—but would not cause diffuse circumferential black-appearing tissue necrosis spanning the entire esophagus. Such reports of AEN are likely to be related to underlying or transient hemodynamic compromise in a vasculopathic patient and massive reflux of gastric contents in the setting of associated duodenal ulcer disease [3].

Third, management of AEN is aimed at correcting underlying medical conditions, hemodynamic support, nil-per-os restriction, and administration of high-dose proton pump inhibitor therapy. Surgical intervention is reserved for cases of esophageal perforation with mediastinitis and abscess formation [4]. Similar to left-sided ischemic colitis, AEN seems to correct on its own. Red blood cell transfusion may be indicated to correct gastrointestinal blood loss, but endoscopic therapy with submucosal injection of a racemic mixture of epinephrine seems dubious and potentially detrimental. Local tissue epinephrine therapy is a good tool in