ABSTRACT #32
CLINICAL RESEARCH
GASTROENTEROLOGY

PUBLICATION TRENDS IN GASTROENTEROLOGY AND HEPATOLOGY OVER THE PAST 40 YEARS: AN ARTIFICIAL INTELLIGENCE ANALYSIS
Gassan Kassim¹, Yiftach Barash², Eyal Klang², Ryan Ungaro¹, Jean-Frederic Colombel¹
¹Mount Sinai Morningside-West Hospital Center, Icahn School of Medicine at Mount Sinai, New York, NY, United States; ²Sheba Medical Center, Tel Aviv University, Tel Aviv, Israel

Accepted to the Digestive Diseases Week Meeting; Chicago, Illinois, United States that was scheduled to be held from May 2-5, 2020.

BACKGROUND/INTRODUCTION: Gastroenterology and hepatology as a field has undergone rapid advances in past years. Over time, the topics of interest can shift given clinical and scientific priorities. By using artificial intelligence (AI), we aimed to understand publication trends in the field of gastroenterology and hepatology over the past 40 years.

METHODS: We analyzed MEDLINE/PubMed data from 1977 through 2017. All the publications in gastroenterology and hepatology literature were collected. We also collected the number of times each paper was cited. We included all articles with abstracts longer than 50 words. We used Latent Dirichlet allocation (LDA), a state-of-the-art AI algorithm for topic modeling to analyze all abstracts and generate topics. These topics were manually assigned to 45 gastroenterology and hepatology conditions and 6 gastroenterology organ systems: Esophagus, Stomach, Small Bowel, Large Bowel, Liver & Biliary tract, and Pancreas. The algorithm then matched each abstract to the defined conditions and organs. The absolute number of citations and publications were arranged per decade, organ system, and condition. Relative ratios of citations to publications (expressed as impact factor IF) for each decade, organ system, and condition were calculated and compared.

RESULTS: We included 200,472 articles published in gastroenterology and hepatology journals over the past four decades. There was a sharp increase in the number of citations to publications in each decade. The latter two decades (1998-2017) had a much higher citations to publications ratios compared to the first two decades (1978-1997). The first decade had a C/P ratio of 4.3, the second decade had a C/P ratio of 5.4, the third had a C/P ratio of 9.7, and the fourth decade had a C/P ratio of 7.7. (Figure 1) When comparing publications based on organs, the C/P ratio for each organ system was higher in the last 2 decades compared to the first 2 decades. (Figure 2) The top 5 conditions with the highest citations to publications ratio in the last 2 decades were different from the top 5 conditions in the first 2 decades. In the first 2 decades, lower gastrointestinal bleeding was the topic with the highest C/P ratio 19.3, followed by Irritable bowel syndrome (IBS) (C/P ratio 16.5), microbiome (C/P ratio 9.8), constipation (C/P ratio 9.4), and inflammatory bowel disease (C/P ratio 8.6). (Figure 3A) In the last 2 decades, microbiome was the topic with the highest citations to publications ratio (C/P ratio 25.9), followed by nonalcoholic steatohepatitis (NASH) (C/P ratio 17.4), Eosinophilic esophagitis EoE (C/P ratio 17.4), IBS (C/P ratio 15.6), and IBD (C/P ratio 14.4). (Figure 3B) IBS, IBD and Microbiome were the three condition to remain consistently within the top 5 conditions across the 4 decades.

CONCLUSION: The field of gastroenterology and hepatology is rapidly evolving. The number of publications rose dramatically over the past 40 years, with shifting topics of interest over time. When looking at the top 5 conditions, our analysis highlights the increasing interest in microbiome and diseases that are rising in incidence (NASH, EoE, IBD, IBS). Microbiome and NASH have become among the most cited topics in the field.
Figure 1: Number of citations relative to publications (C/P ratio) per each decade for the fields of gastroenterology and hepatology

![Graph showing C/P ratios for each decade for gastroenterology and hepatology fields.]

Figure 2: Citations to publications ratios – C/P ratio – based on defined organ systems stratified by decades

![Bar chart showing C/P ratios for different organs and decades.]

- Esophagus
- Stomach
- Liver & Biliray tract
- Pancreas
- Small Bowel
- Large Bowel
Figure 3A: Top 5 conditions with the highest number of citations relative to publications – C/P ratio during the first two decades (1978-1997)

Figure 3B: Top 5 conditions with the highest number of citations relative to publications – C/P ratio during the second two decades (1998-2017)