Disruption Index Analysis of Recent Bariatric Surgery Literature: Identifying Innovative Trends and High-Impact Publications

Kevin Zhan, BSC[1]; Juan S. Barajas-Gamboa, MD[1]; Melissa V. Wills, MD; [2] Mansimran Virk, BSC[1]; Mankirat Bhogal, BSC[1]; Andrew Strong MD[2]; Ricard Corcelles, MD[1]; Matthew Kroh, MD[2]; Jerry Dang, MD, PhD[2]

[1] Digestive Disease Institute, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates, [2] Digestive Disease Institute, Cleveland Clinic, Ohio, United States

Background

- The rapidly expanding landscape of scientific literature presents challenges in identifying groundbreaking research
- While citation count is a popular metric, there is a need for more nuanced measures of impact
- This study aims to apply the Disruption Index (DI) to recent bariatric surgery literature to identify innovative trends and high-impact publications

Materials and Methods

- We conducted a comprehensive analysis of bariatric surgery literature from 2010 to 2020 using the MEDLINE and EMBASE databases
- The Disruption Index was calculated for each article using a custom-built tool leveraging the Semantic Scholar Application Programming Interface (API)
- We analyzed DI trends over time, compared characteristics of disruptive and consolidating papers, and identified top papers based on DI and citation counts. Correlation between DI and traditional bibliometric measures was also assessed

Results

- Of 46,724 initially identified papers, 20,428 met inclusion criteria
- The mean DI score was -0.00073 (SD 0.0063), with a weak correlation to citation count (r = 0.21)
- Of the top 10 most disruptive articles, 6 overlapped with the top 10 most cited papers
- The most disruptive article was "Metabolic/bariatric surgery worldwide 2011" (DI: 0.2975)
- SOARD had the most publications (9.8% of all articles), while JAMA had the highest average DI (0.00299)

Figure 1. Distribution and temporal changes of disruption index values in bariatric surgery papers from 2010-2020

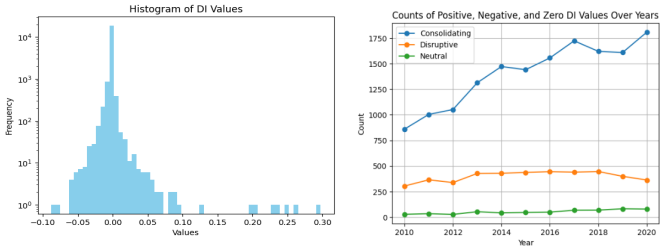
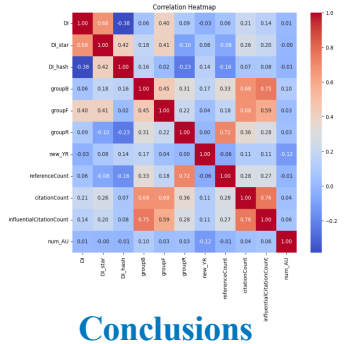


Figure 2. Cross correlation of disruption and other metrics from bariatric surgery papers 2010-2020



Conclusions

- This first application of the Disruption Index to bariatric surgery literature reveals that while the field is producing more consolidating work, highly disruptive papers continue to emerge, with the weak correlation between DI and citation count suggesting DI captures unique aspects of scientific impact
- These findings can guide researchers and editors in identifying innovative work and understanding the evolving landscape of bariatric surgery research