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Research Article

Tendencies of the Researches Published on Blunt Abdominal Trauma: A Future Direction Study

Selim Değirmenci[1], Erhan Arıkan[1], Ahmet Tuğrul Zeytin[1], Mustafa Boz[1], Ertuğ Dinçer[1], Selin Yılmaz[2], Gültekin Akyol[3], Mehmet Dokur[1]

[1]Department of Emergency Medicine, Bilecik Şeyh Edebali University Faculty of Medicine, Bilecik, Türkiye
[2]Bilecik Training and Research Hospital, Department of Emergency Medicine, Bilecik, Türkiye
[3]Department of Emergency Medicine, Biruni University Faculty of Medicine, Istanbul, Türkiye

Abstract

Objectives: This study aims to analyze articles on blunt abdominal trauma (BAT) published between 1980 and 2026 to identify the most influential authors, journals, and emerging trends.

Methods: Data were retrieved from the Web of Science Core Collection database on May 24, 2026, using the keyword "blunt abdominal trauma". The search yielded a total of 7,884 publications published between 1980 and 2026. The retrieved publications were sorted in descending order based on their citation counts, and the top 100 most-cited publications were included in the analysis.

Results: When research areas within the full dataset were examined, Surgery (n=3,695) maintained its leading position, followed by Emergency Medicine (n=1,264) and Critical Care Medicine (n=1,167) in second and third place, respectively. The analysis of the top 100 most-cited publications revealed that these papers were published between 1981 and 2019, receiving a total of 17,074 citations. Moderate positive correlations were identified between the Altmetric Attention Score (AAS) and Dimensions badge counts, and between the AAS and average citations per year.

Conclusion: Traditional citation metrics and alternative impact indicators, including the AAS and Dimensions badge, provide distinct yet complementary perspectives on the scientific value of a publication.

Keywords: Bibliometric, Publication metrics, Blunt abdominal trauma, Web of Science

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Trauma remains one of the leading causes of death worldwide, particularly among the population under the age of 45, with millions of individuals presenting to emergency departments (EDs) annually for this reason. Blunt abdominal trauma (BAT), on the other hand, is a clinical condition frequently encountered in ED that can lead to injuries with high morbidity and mortality rates, typically resulting from mechanisms such as motor vehicle accidents, falls from heights, and blunt force impacts.[1,2] Abdominal injuries, which are responsible for a significant proportion of trauma-related deaths, have garnered intense research interest over many years due to the challenges inherent in their diagnostic and therapeutic processes. Complex clinical presentations involving solid organ injuries (liver, spleen,

Address for correspondence: Selim Değirmenci, MD, Bilecik Şeyh Edebali University, Faculty of Medicine, Department of Emergency Medicine, Bilecik, Türkiye
Phone: +90 537 471 71 53 **E-mail:** selim.degirmenci@bilecik.edu.tr

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kidney), hollow viscus perforations, vascular injuries, and concurrent pelvic fractures render BAT a continuous source of challenge for clinicians.[3] The clinical pathway, which initiates upon the patient's presentation to the ED, becomes highly complex following the initial emergency stabilization, requiring the multidisciplinary involvement of numerous specialties, including general surgery, obstetrics and gynecology, urology, cardiovascular surgery, thoracic surgery, radiology, orthopedics, and intensive care. Due to this shared interest across a wide array of clinical disciplines, diverse approaches and perspectives coexist within the literature.

Over the past four decades, the diagnosis and management of BAT have undergone radical transformations, driven in large part by advancements in diagnostic imaging. The replacement of diagnostic peritoneal lavage (DPL) by computed tomography (CT) and Focused Assessment with Sonography for Trauma (FAST) has completely reshaped diagnostic algorithms.[4] Similarly, algorithms in which surgical intervention was considered the standard approach for hemodynamically stable patients have been abandoned in favor of nonoperative management (NOM) protocols.[5,6] Each of these milestones was achieved through the influence of multicenter, prospective studies based on large patient cohorts, which subsequently propelled these papers to become some of the most highly cited publications in the field.

Bibliometric analysis is a scientific and methodological approach that quantitatively evaluates scientific publications within a specific field, uncovering research trends and the interrelationships among publications. It provides researchers with the opportunity to identify literature gaps, prominent research topics, active authors in these areas, and priority fields for future studies.[7] In recent years, a significant increase has been observed in the number of bibliometric studies conducted in the fields of emergency medicine and trauma. Nevertheless, a comprehensive bibliometric analysis dedicated specifically to BAT appears to be lacking in the current literature. This gap underscores the necessity of a study that comprehensively evaluates the historical evolution, shifting focus, and institutional/clinical dynamics of publications on this topic. In this study, we aimed to map out the scientific landscape of the field by utilizing bibliometric methods to analyze the top 100 most-cited publications on BAT within the Web of Science Core Collection (WoSCC) database. On the other hand, "Altmetric Attention Scores" (AAS) serve as metrics and qualitative data that complement traditional citation-based metrics. These scores measure the engagement of scholars, researchers, and scientists with research outputs as recorded across reference management tools and social media platforms, including Facebook, X (formerly Twitter), LinkedIn, and blogs.[8,9] In the existing literature, very few altmetric studies focus on BAT.

Our objective in this study is not only to identify the most-cited articles within the BAT literature but also to determine whether a correlation exists between publication metrics—such as AAS and the Dimensions badge—to evaluate article impact and explore alternative measurement criteria.

Methods

Data Source and Search Strategy

This study is a bibliometric analysis conducted to evaluate scientific publication trends in the field of BAT. A comprehensive literature search was performed on May 24, 2026, utilizing the WoSCC database. The search term "blunt abdominal trauma" was applied within the "Topic" field, which encompasses titles, abstracts, and author keywords. The term "blunt abdominal trauma" was chosen to keep the search focused on studies specifically addressing this condition. No restrictions were imposed regarding publication year, language, or document type. This initial search strategy yielded a total of 7,884 publications.

Study Selection

The retrieved publications were sorted in descending order based on their citation counts, and the top 100 most-cited papers were included in the final analysis. These specific publications were indexed using the "Marked List" feature of WoSCC, and all subsequent analytical procedures were executed through this selected cohort.

Bibliometric Analysis

For the selected 100 publications, the built-in "Analyze Results" and "Citation Report" tools of WoSCC were utilized to extract the following parameters: the annual number of publications and citation trends, author profiles, country/region distribution, institution- and department-based contributions, publishing journals, WoS categories, research areas, and document types. Total citation count, citation count excluding self-citations, average citations per publication, and the h-index were calculated as citation metrics.

AAS and Dimensions Badge Analysis

AAS and Dimensions badge data were retrieved from the Altmetric.com website using the free "Bookmarklet" tool, "Altmetric it" (https://www.altmetric.com/products/free-tools/bookmarklet/, accessed on May 24, 2026). The AAS is automatically calculated using an algorithm based on the weighted count of all the attention a research output receives. The default weightings and the detailed calcula-

tion methodology for the AAS can be found on the Altmetric website. The AAS relies on three main factors: volume, sources, and authors. Each color in the Altmetric donut represents a different information source.[10] The Dimensions Badge (also referred to as the Dimensions Citation Score) indicates the total number of citations an academic publication has received in publishing venues, such as scholarly journals indexed in the Dimensions database. The Dimensions database is highly comparable with other international bibliographic databases due to its significant overlap with SCOPUS and WoS (Fig. 1).[11]

Statistical Analysis

The conformity of the AAS, Dimensions badge counts, and average citations per year (ACpY) values to a normal distribution was evaluated using the Shapiro-Wilk test. Since all three variables were determined to be non-normally distributed ($p<0.05$), the relationships between the variables were analyzed using Spearman's correlation analysis. Statistical analyses were performed using SPSS version 22.0 (IBM Corp., Armonk, NY, USA); a p-value of <0.05 was considered statistically significant.

Results

A total of 7,884 publications were retrieved from the WoSCC search on "blunt abdominal trauma". The top 100 most-cited publications were included in the final analysis. These publications were published between 1981 and 2019, garnering a total of 17,074 citations. The average number of citations per publication was calculated as 170.74, and the h-index of this collection was 100. When self-citations were excluded, the total number of citations decreased to 16,621, indicating a remarkably low self-citation rate of 2.7%. A total of 8,609 distinct articles cited these 100 most-cited publications.

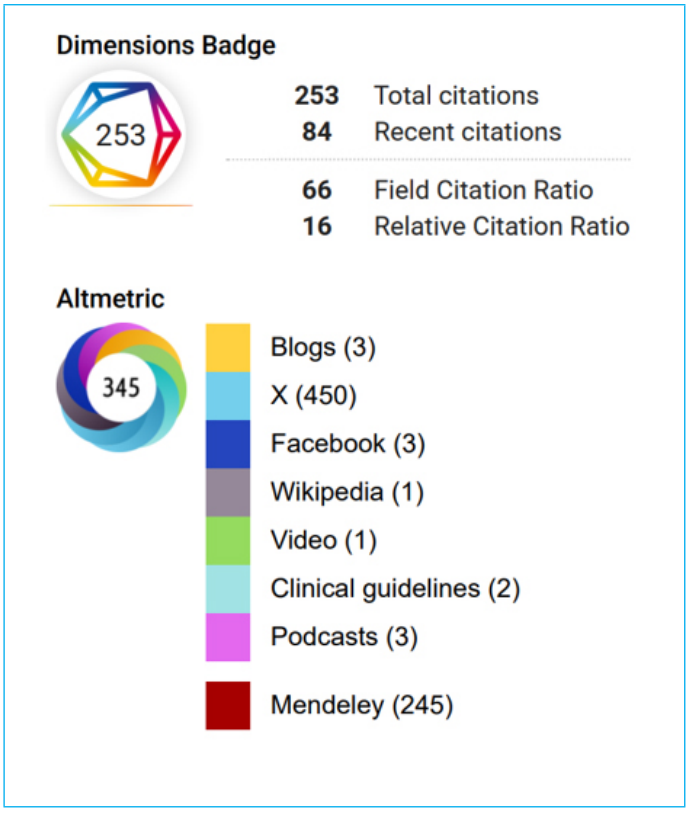

Figure 1. Publication metrics example (from 19th article).

Publication and Citation Trends by Year

The top 100 most-cited papers were published between 1981 and 2019. In terms of publication volume, the most productive period was between 1989 and 2006, during which the annual number of publications ranged from 3 to 7. The highest annual publication output was achieved in 1993 and 2000, with 7 publications recorded in each year. Following 2006, a prominent decline in the annual number of publications was observed, with no publications entering the top 100 list between 2007 and 2010. Regardless of the publication period, the citation trend demonstrated a steady increase until the late 2000s, peaked in 2014 (approximately 700 citations), and subsequently began to decline. For the 2022–2026 period, the annual citation counts were recorded as 553, 450, 482, 417, and 141, respectively; it should be noted that the value for 2026 reflects an incomplete year.

Most-Cited Publications

The top 10 most-cited publications are presented in Table 1. The full list of the 100 most-cited publications and their bibliometric indicators is provided in Supplementary Table S1. Ranking first, the study by Scalea et al.[12] (1999) titled "Focused Assessment with Sonography for Trauma (FAST): Results from an International Consensus Conference" received 477 citations. This paper was followed by the study by Kirkpatrick et al.[13] (2004) evaluating the EFAST protocol (469 citations), and the prospective trial by Croce et al.[14] (1995) addressing nonoperative management in blunt hepatic trauma (348 citations). Remarkably, 6 of the top 10 publications were published in the *Journal of Trauma and Acute Care Surgery* (formerly known as The *Journal of Trauma: Injury, Infection, and Critical Care*), reflecting the definitive and pioneering position of this journal in the field.

Author Analysis

An analysis of the most prolific authors within the top 100 most-cited publications revealed that Mirvis SE ranked first with 8 publications. This was followed by Fabian TC (n=7) and Shanmuganathan K (n=6). Other prolific authors included Rodriguez A and Croce MA (each with n=5), as well as Moore EE, McKenney MG, Holmes JF, Demetriades D, and

Table 1. The top 10 most-cited publications in the field of blunt abdominal trauma

Rank	Author(s) & Year	Article Title	Journal/ Volume:Page	Total Citations	(ACpY)	AAS	Dimensions badge
1	Scalea et al.[12] 1999	Focused assessment with sonography for trauma (FAST): Results from an International Consensus Conference	J Trauma 46(3):466-472	477	17.04	21	645
2	Kirkpatrick et al.[13] 2004	Hand-held thoracic sonography for detecting post-traumatic pneumothoraces: The Extended Focused Assessment with Sonography for Trauma (EFAST)	J Trauma 57(2):288-295	469	20.39	17	659
3	Croce et al.[14] 1995	Nonoperative management of blunt hepatic trauma is the treatment of choice for hemodynamically stable patients: Results of a prospective trial	Ann Surg 221(6):744-755	348	10.88	3	452
4	Stassen NA, et al.[16] 2012	Selective nonoperative management of blunt splenic injury: An Eastern Association for the Surgery of Trauma practice management guideline	J Trauma Acute Care Surg 73:S294-S300	337	22.47	15	460
5	Melniker LA, et al.[17] 2006	Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: The first Sonography Outcomes Assessment Program trial	Ann Emerg Med 48(3):227-235	296	14.1	62	373
6	Rozycki GS, et al.[18] 1993	Prospective evaluation of surgeons' use of ultrasound in the evaluation of trauma patients	J Trauma 34(4):516-527	294	8.65	6	379
7	Rozycki GS, et al.[19] 1995	A prospective study of surgeon-performed ultrasound as the primary adjuvant modality for injured patient assessment	J Trauma 39(3):492-500	291	9.09	24	393
8	Rozycki GS, et al.[20] 1998	Surgeon-performed ultrasound for the assessment of truncal injuries: Lessons learned from 1540 patients	Ann Surg 228(4):557-565	287	9.9	36	413
9	Salim A, et al.[21] 2006	Whole body imaging in blunt multisystem trauma patients without obvious signs of injury: Results of a prospective study	Arch Surg 141(5):468-473	285	13.57	10	348
10	Cullinane DC, et al.[22] 2011	Eastern Association for the Surgery of Trauma Practice Management Guidelines for Hemorrhage in Pelvic Fracture: Update and Systematic Review	J Trauma 71(6):1850-1868	270	16.88	36	408

ACpY, Average Citations per Year; AAS, Altmetric Attention Score; J Trauma / J Trauma Acute Care Surg, Journal of Trauma and Acute Care Surgery; Ann Surg: Annals of Surgery; Ann Emerg Med: Annals of Emergency Medicine; Arch Surg: Archives of Surgery.

Boulanger BR (each with n=4). When evaluating the entire dataset of 7,884 publications, the most prolific researchers were identified as Moore EE (n=61), Demetriades D (n=60), and Inaba K (n=47).

Country and Institutional Analysis

Within the top 100 most-cited publications, 17 different countries were represented. The USA occupied the leading position by a wide margin with 79 publications, accounting for 79% of the total papers. The USA was followed by Switzerland (n=7), Canada (n=5), and Germany and the Netherlands (each with n=3). Although the rankings shifted when evaluating the full dataset of 7,884 publications, the USA maintained its prominent leadership (n=3,195), followed by Germany (n=424), India (n=317), the UK (n=301), and Italy (n=284). Notably, Türkiye ranked sixth in the global standings with 275 publications. At the institutional level, the University of California System was identified as the most productive contributor with 351 publications, followed by the University of Texas System (n=164) and the University of Maryland (n=147).

Journal Analysis

The top 100 most-cited publications were published across 16 different journals. The *Journal of Trauma and Acute Care Surgery* ranked first with 48 publications, underscoring its central role in this field. This was followed by *Radiology* (n=9), the *American Journal of Roentgenology* (n=7), *Annals of Surgery* (n=6), and *Archives of Surgery* (n=6). This flagship journal also maintained its leading position in the full dataset (n=640), followed by the *American Surgeon* (n=248), the *Journal of Pediatric Surgery* (n=195), and *Injury* (n=185).

Table 2. Distribution of Web of Science categories over time periods in blunt abdominal trauma literature (1980–2026)

Category	1980–1991 n=564	1992–2003 n=1,828	2004–2014 n=2,442	2015–2026 n=3,064	Trend
Surgery	62.9%	59.5%	41.5%	40.6%	↓ Decreasing
Emergency Medicine	6.6%	10.6%	20.6%	17.3%	↑ Increasing
Critical Care Medicine	22.2%	22.7%	15.5%	8.2%	↓ Decreasing
Radiology/Nuc Med	16.0%	16.7%	14.2%	9.0%	↓ Decreasing
Medicine General Internal	9.0%	4.9%	8.1%	18.1%	↑ Increasing
Pediatrics	6.9%	9.8%	8.0%	7.6%	→ Stable

Document Type and Language Distribution

Among the top 100 most-cited publications, original research articles constituted the vast majority (articles: 96%, reviews: 3%, editorial material: 1%). All publications were written in English. In the full dataset, original research articles remained the predominant document type with 6,514 publications (82.6%), followed by review articles (n=756, 9.6%) and proceedings papers (n=736, 9.3%).

WoS Categories and Research Areas

When the top 100 most-cited publications were analyzed regarding WoS categories, Surgery (74%), Critical Care Medicine (53%), and Radiology, Nuclear Medicine & Medical Imaging (19%) emerged as the prominent categories. The Emergency Medicine category ranked fourth with only 7%. Conversely, in the full dataset, Surgery (n=3,695) maintained its top position, while Emergency Medicine (n=1,264) and Critical Care Medicine (n=1,167) ranked second and third, respectively.

When the timeline was divided into four periods to analyze the interdisciplinary distribution over time, Surgery accounted for 62.9% of the publications in the initial period (1980–1991, n=564), while Emergency Medicine ranked sixth with only 6.6%. In the second period (1992–2003, n=1,828), surgical dominance persisted (59.5%), but the share of Emergency Medicine rose to 10.6%. During the third period (2004–2014, n=2,442), the proportion of Surgery declined to 41.5%, whereas Emergency Medicine advanced to second place with 20.6%. In the final period (2015–2026, n=3,064), while Surgery maintained its leadership with 40.6%, Medicine General Internal rose to the second position with 18.1%, and Emergency Medicine occupied the third spot with 17.3% (Table 2, Fig. 2).

Correlation Analysis

When evaluating the relationships among the AAS, Dimensions badge counts, and ACpY, a moderate positive correlation was identified between the AAS and Dimensions badge counts (r=0.511, p<0.001). Similarly, a moderate positive correlation was observed between the AAS and ACpY (r=0.512, p<0.001) (Table 3, Fig.3).

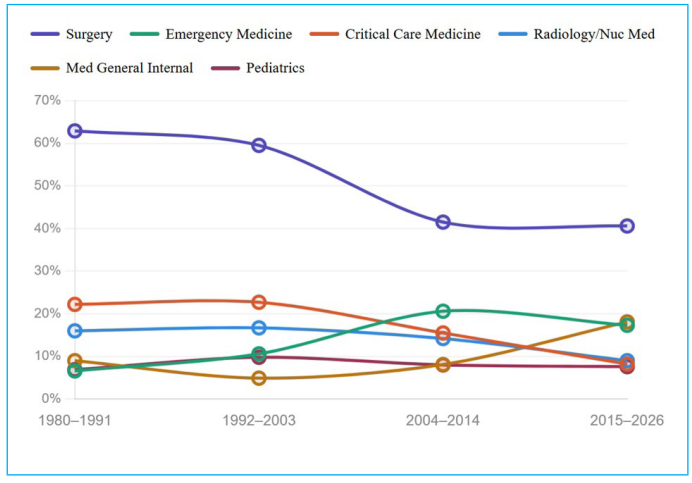

Figure 2. Percentage distribution of Web of Science categories by time period in blunt abdominal trauma literature (1980–2026). Data points represent percentages based on the total publication count of each period. Total percentages exceed 100% because a single publication may be indexed under more than one category.

Discussion

In this study, the top 100 most-cited publications on BAT within the WoSCC database were analyzed using bibliometric methods. The findings comprehensively map out the historical evolution, prominent research themes, geographical and institutional contribution patterns, and pub-

Table 3. Correlation analysis between Altmetric Attention Score, Dimensions badge counts, and average citations per year

		Dimensions Badge	Average Citations per Year
Altmetric Attention Score	r	0.511*	0.512*
	p	<0.001	<0.001

*Correlation is significant at the 0.01 level

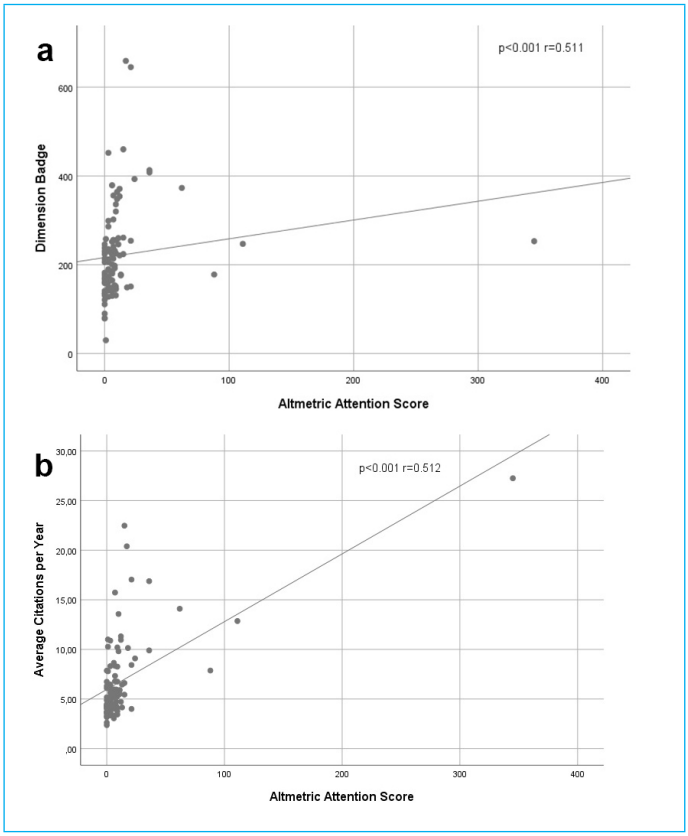

Figure 3. Relationship between the Altmetric Attention Score and bibliometric indicators. **(a)** Correlation between the Altmetric Attention Score and Dimensions badge count (r=0.511, p<0.001). **(b)** Correlation between the Altmetric Attention Score and average citations per year (r=0.512, p<0.001). The regression line and 95% confidence interval are displayed for both analyses.

lication trends in this field. Measuring the value and impact of scientific research has become increasingly crucial for identifying high-value and emerging trending topics. As scientists, the general public, scientific journals, and academic research institutions have expanded their engagement with online social media, publication metrics that reflect an article's online impact—such as the AAS and the Dimensions badge—have become progressively more valuable.[8,11]

The finding that the top 100 most-cited publications were published between 1981 and 2019, with the highest concentration peaking during the 1989–2006 period, indicates that these years represent a particularly fertile era in BAT research. This concentration can be attributed to the widespread introduction of CT into clinical practice, the integration of FAST ultrasonography into trauma algorithms, and the emergence of nonoperative management as a primary clinical paradigm during this period.[4–6] The subsequent decline in citation counts after peaking in 2014 aligns with cumulative citation patterns; seminal studies inevitably become established standards over time and continue to receive citations from newer literature, though they accumulate new citations at a proportionally lower rate each year. Furthermore, the decrease in the number of publications entering the top 100 list after 2007 is directly related to the high citation threshold of this list, meaning that more recent publications naturally require more time to achieve the required citation volume.

The periodic WoS category analysis vividly illustrates the interdisciplinary transformation within BAT research. The literature, which was heavily focused on general surgery in the 1980s, diversified in the 2000s through the systematic involvement of emergency medicine and critical care disciplines. The expansion of the Emergency Medicine category from 6.6% in the 1980–1991 period to 20.6% in the 2004–2014 period demonstrates that emergency medicine has established itself as an independent and robust research actor in this field. This evolution closely aligns with the integration of FAST ultrasonography into emergency department practice and the institutionalization of a multidisciplinary approach to trauma management.[15] The relative stability of Critical Care Medicine at approximately 22% during the first two periods, followed by a decline to 8% in the final period, suggests a relative decrease in intensive care-focused trauma studies, or alternatively, that these studies have begun to be indexed under different categories.

The majority of the top-ranking studies in citation counts focus on FAST and EFAST ultrasonography, nonoperative management protocols, and CT imaging, indicating that these topics constitute the core research axes of the field. It is by no means a coincidence that the international consensus conference study led by Scalea et al.[12] ranks first with 477 citations; this study played a critical role in establishing global standards for the integration of FAST into trauma care. Similarly, the theme of nonoperative management is a frequently encountered topic among the top ranks, where papers forming the scientific foundation for shifting from surgical intervention to conservative management in liver and spleen injuries have generated an extensive citation pool.

Regarding geographical distribution, the USA accounts for 79% of the top 100 most-cited publications, reflecting the decisive influence of the American trauma surgery tradition on BAT research. A significant portion of the studies presented at the conferences of the American Association for the Surgery of Trauma (AAST) and the Eastern Association for the Surgery of Trauma (EAST) were subsequently published in the *Journal of Trauma*, securing top positions and demonstrating that these societies are positioned at the heart of scientific production in this field. Nevertheless, when the full

dataset is examined, the geographical landscape diversifies significantly; the entry of countries such as India, Türkiye, and Italy into the global top 10 indicates that research activities have expanded to non-Western centers in recent years. Türkiye's ranking at sixth place (n=275) underscores the steadily increasing contribution of Turkish emergency medicine and surgical communities to this literature.

The institutional prominence of the University of California System and the University of Maryland aligns with the high productivity of the trauma centers affiliated with these universities. At the individual author level, the prominence of Mirvis SE with imaging-focused studies, alongside Fabian TC and Croce MA with their research on nonoperative management and hepatic-splenic trauma, demonstrates the presence of powerful representatives for both research axes. In the full dataset, the leading positions of Moore EE and Demetriades D reflect that the contributions of these researchers to the BAT literature span a remarkably wide timeframe.

The *Journal of Trauma and Acute Care Surgery* ranking first by a wide margin in both the top 100 and full dataset analyses establishes this journal as the definitive reference publication venue in the field of BAT. The prominent presence of radiology journals (*Radiology*, *American Journal of Roentgenology*, *Radiographics*) on the list emphasizes how central imaging modalities are within the research agenda of this field. These findings support the view that trauma surgery and radiology are highly complementary disciplines.

The analysis revealed moderate positive correlations between the AAS and Dimensions badge counts ($r=0.511$, $p<0.001$), and between the AAS and ACpY ($r = 0.512$, $p < 0.001$), demonstrating that alternative impact indicators align well with traditional citation-based metrics. This finding aligns with the view in bibliometric literature that altmetric measures serve a complementary role to traditional citation metrics. However, the correlation remaining at a moderate level indicates that these two sets of metrics also capture independent dimensions, thereby supporting the concurrent use of both indicator groups. AAS is also influenced by publication year, as older articles were published before social media and other online platforms became widely used. Therefore, the correlations involving AAS should be interpreted with this potential time-related bias in mind.

This study has certain limitations that should be acknowledged. First, the sole reliance on the WoSCC database means that publications indexed in other databases such as Scopus or PubMed, but not included in WoSCC, were excluded from the analysis. Additionally, it should be noted that the analysis performed on the top 100 most-cited publications may not fully reflect the entire spectrum of publication patterns in this field. Because the top 100 articles were selected according to total citation counts, older publications had more time to accumulate citations and were therefore more likely to be included. Although ACpY was used in the subsequent analyses, it was not used as a selection criterion. However, the use of a single search term may have excluded relevant studies indexed under synonymous or closely related terms.

Conclusion

This bibliometric analysis has comprehensively demonstrated the historical evolution, geographical distribution, and thematic focus areas of scientific production in the field of BAT. The most-cited publications were concentrated between 1989 and 2006, shaped in parallel with the integration of FAST ultrasonography into trauma algorithms and the establishment of the nonoperative management paradigm. While the USA maintains its definitive position in terms of both publication volume and citation capacity, the full dataset highlights that non-Western countries, including Türkiye, are making increasingly significant contributions. The *Journal of Trauma and Acute Care Surgery* continues to serve as the foundational publication venue for the field, while imaging modalities and nonoperative management themes constitute the two primary research axes of the literature. The moderate positive correlations observed between the AAS, Dimensions badge, and traditional citation metrics support the use of publication metrics indicators as a complementary tool in evaluating the scientific impact of articles. These findings may guide future researchers in identifying gaps in the literature and establishing priority research agendas.

Disclosure

Ethics Committee Approval: All authors declare that the research was conducted in accordance with the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects." This study did not need to be approved by an ethics committee because it performed bibliometric and altmetric analysis of the currently published classical studies.

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Supplementary Table S1. The 100 most-cited publications in the field of blunt abdominal trauma and their bibliometric indicators

Rank	Author(s) & Year	Article Title	Journal	Total Citations	ACpY	AAS	Dimensions Badge
1	Scalea et al.[12] 1999	Focused assessment with sonography for trauma (FAST): Results from an International Consensus Conference	Journal of Trauma-Injury Infection and Critical Care	477	17.04	21	645
2	Kirkpatrick et al.[13] 2004	Hand-held thoracic sonography for detecting post-traumatic pneumothoraces: The Extended Focused Assessment with Sonography for Trauma (EFAST)	Journal of Trauma-Injury Infection and Critical Care	469	20.39	17	659
3	Croce et al.[14] 1995	Nonoperative management of blunt hepatic trauma is the treatment of choice for hemodynamically stable patients: Results of a prospective trial	Annals of Surgery	348	10.88	3	452
4	Stassen et al.[16] 2012	Selective nonoperative management of blunt splenic injury: An Eastern Association for the Surgery of Trauma practice management guideline	Journal of Trauma and Acute Care Surgery	337	22.47	15	460
5	Melniker et al.[17] 2006	Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: The first Sonography Outcomes Assessment Program trial	Annals of Emergency Medicine	296	14.1	62	373
6	Rozycki et al.[18] 1993	Prospective evaluation of surgeons' use of ultrasound in the evaluation of trauma patients	Journal of Trauma-Injury Infection and Critical Care	294	8.65	6	379
7	Rozycki et al.[19] 1995	A prospective study of surgeon-performed ultrasound as the primary adjuvant modality for injured patient assessment	Journal of Trauma-Injury Infection and Critical Care	291	9.09	24	393
8	Rozycki et al.[20] 1998	Surgeon-performed ultrasound for the assessment of truncal injuries: Lessons learned from 1540 patients	Annals of Surgery	287	9.9	36	413
9	Salim et al.[21] 2006	Whole body imaging in blunt multisystem trauma patients without obvious signs of injury: Results of a prospective study	Archives of Surgery	285	13.57	10	348
10	Cullinane et al.[22] 2011	Eastern Association for the Surgery of Trauma Practice Management Guidelines for Hemorrhage in Pelvic Fracture: Update and Systematic Review	Journal of Trauma-Injury Infection and Critical Care	270	16.88	36	408
11	Fakhry et al.[23] 2000	Relatively short diagnostic delays (<8 hours) produce morbidity and mortality in blunt small bowel injury: An analysis of time to operative intervention in 198 patients from a multicenter experience	Journal of Trauma-Injury Infection and Critical Care	265	9.81	10	364
12	Eastridge et al.[24] 2002	The importance of fracture pattern in guiding therapeutic decision-making in patients with hemorrhagic shock and pelvic ring disruptions	Journal of Trauma-Injury Infection and Critical Care	255	10.20	9	336
13	Santucci et al.[25] 2004	Evaluation and management of renal injuries: consensus statement of the renal trauma subcommittee	BJU International	252	10.96	12	371
14	Haan et al.[26] 2005	Nonoperative management of blunt splenic injury: A 5-year experience	Journal of Trauma-Injury Infection and Critical Care	249	11.32	12	354
15	Davis et al.[27] 1998	Improved success in nonoperative management of blunt splenic injuries: Embolization of splenic artery pseudoaneurysms	Journal of Trauma-Injury Infection and Critical Care	241	8.31	3	299
16	Stassen et al.[28] 2012	Nonoperative management of blunt hepatic injury: An Eastern Association for the Surgery of Trauma practice management guideline	Journal of Trauma and Acute Care Surgery	236	15.73	7	356
17	Malhotra et al.[29] 2000	Blunt hepatic injury: A paradigm shift from operative to nonoperative management in the 1990s	Annals of Surgery	223	8.26	9	320
18	Rothlin et al.[30] 1993	Ultrasound in blunt abdominal and thoracic trauma	Journal of Trauma-Injury Infection and Critical Care	220	6.47	3	286
19	Joseph et al.[31] 2019	Nationwide Analysis of Resuscitative Endovascular Balloon Occlusion of the Aorta in Civilian Trauma	JAMA Surgery	218	27.25	345	253

Supplementary Table S1. Continue

Rank	Author(s) & Year	Article Title	Journal	Total Citations	ACpY	AAS	Dimensions Badge
20	Tso et al.[32] 1992	Sonography in blunt abdominal-trauma - a preliminary progress report	Journal of Trauma-Injury Infection and Critical Care	206	5.89	6	252
21	Peitzman et al.[33] 1986	Prospective-study of computed-tomography in initial management of blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	201	4.90	3	230
22	Watts et al.[34] 2003	Incidence of hollow viscus injury in blunt trauma: An analysis from 275,557 trauma admissions from the EAST multi-institutional trial	Journal of Trauma-Injury Infection and Critical Care	200	8.33	7	302
23	Hoffmann et al.[35] 1992	Blunt abdominal-trauma in cases of multiple trauma evaluated by ultrasonography - a prospective analysis of 291 patients	Journal of Trauma-Injury Infection and Critical Care	198	5.66	3	235
24	Shackford et al.[36] 1999	Focused abdominal sonogram for trauma: The learning curve of nonradiologist clinicians in detecting hemoperitoneum	Journal of Trauma-Injury Infection and Critical Care	185	6.61	15	261
25	McKenney et al.[37] 1996	1,000 consecutive ultrasounds for blunt abdominal trauma	Journal of Trauma-Injury Infection and Critical Care	185	5.97	6	227
26	Liu et al.[38] 1993	Prospective comparison of diagnostic peritoneal-lavage, computed tomographic scanning, and ultrasonography for the diagnosis of blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	185	5.44	15	224
27	Bradley et al.[39] 1998	Diagnosis and initial management of blunt pancreatic trauma - Guidelines from a multiinstitutional review	Annals of Surgery	183	6.31	0	287
28	Holmes et al.[40] 2013	Identifying Children at Very Low Risk of Clinically Important Blunt Abdominal Injuries	Annals of Emergency Medicine	180	12.86	111	247
29	Walcher et al.[41] 2006	Prehospital ultrasound imaging improves management of abdominal trauma	British Journal of Surgery	177	8.43	21	254
30	Chiu et al.[42] 1997	Abdominal injuries without hemoperitoneum: A potential limitation of focused abdominal sonography for trauma [FAST]	Journal of Trauma-Injury Infection and Critical Care	177	5.90	11	246
31	Velmahos et al.[43] 2003	Nonoperative treatment of blunt injury to solid abdominal organs - A prospective study	Archives of Surgery	176	7.33	7	256
32	Branney et al.[44] 1995	Quantitative sensitivity of ultrasound in detecting free intraperitoneal fluid	Journal of Trauma-Injury Infection and Critical Care	176	5.50	11	260
33	Kimura et al.[45] 1991	Emergency center ultrasonography in the evaluation of hemoperitoneum - a prospective-study	Journal of Trauma-Injury Infection and Critical Care	170	4.72	12	221
34	Foley et al.[46] 1989	Dynamic hepatic CT	Radiology	166	4.37	0	89
35	Brofman et al.[47] 2006	Evaluation of bowel and mesenteric blunt trauma with multidetector CT	Radiographics	165	7.86	0	240
36	Fakhry et al.[48] 2003	Current diagnostic approaches lack sensitivity in the diagnosis of perforated blunt small bowel injury: Analysis from 275,557 trauma admissions from the EAST multi-institutional HVI trial	Journal of Trauma-Injury Infection and Critical Care	163	6.79	7	241
37	Carrillo et al.[49] 1999	Interventional techniques are useful adjuncts in nonoperative management of hepatic injuries	Journal of Trauma-Injury Infection and Critical Care	163	5.82	6	223
38	Miller et al.[50] 2003	Not so fast	Journal of Trauma-Injury Infection and Critical Care	162	6.75	9	252
39	Meredith et al.[51] 1994	Nonoperative management of blunt hepatic-trauma - the exception or the rule	Journal of Trauma-Injury Infection and Critical Care	161	4.88	0	205

Supplementary Table S1. Continue

Rank	Author(s) & Year	Article Title	Journal	Total Citations	ACpY	AAS	Dimensions Badge
40	Shanmuganathan et al.[52] 1993	Value of contrast-enhanced CT in detecting active hemorrhage in patients with blunt abdominal or pelvic trauma	American Journal of Roentgenology	161	4.74	8	192
41	Cox et al.[53] 1984	Blunt abdominal-trauma - a 5-year analysis of 870 patients requiring celiotomy	Annals of Surgery	160	3.72	0	176
42	Livingston et al.[54] 1998	Admission or observation is not necessary after a negative abdominal computed tomographic scan in patients with suspected blunt abdominal trauma: Results of a prospective, multi-institutional trial	Journal of Trauma-Injury Infection and Critical Care	159	5.48	9	226
43	Lin et al.[55] 2004	Management of blunt major pancreatic injury	Journal of Trauma-Injury Infection and Critical Care	155	6.74	0	218
44	Soto et al.[56] 2012	Multidetector CT of Blunt Abdominal Trauma	Radiology	154	10.27	1	258
45	Rizzo et al.[57] 1989	Bowel and mesenteric injury following blunt abdominal-trauma - evaluation with ct	Radiology	153	4.03	0	168
46	Velmahos et al.[58] 2003	High success with nonoperative management of blunt hepatic trauma - The liver is a sturdy organ	Archives of Surgery	151	6.29	3	212
47	Hall et al.[59] 1996	The outcome for children with blunt trauma is best at a pediatric trauma center	Journal of Pediatric Surgery	151	4.87	3	206
48	Poole et al.[60] 1991	Pelvic fracture from major blunt trauma - outcome is determined by associated injuries	Annals of Surgery	151	4.19	6	180
49	Miller et al.[61] 2002	Acute respiratory distress syndrome in blunt trauma: Identification of independent risk factors	American Surgeon	150	6.00	3	190
50	Dolich et al.[62] 2001	2,576 ultrasounds for blunt abdominal trauma	Journal of Trauma-Injury Infection and Critical Care	150	5.77	7	214
51	Hoff et al.[63] 2002	Practice management guidelines for the evaluation of blunt abdominal trauma: The EAST practice management guidelines work group	Journal of Trauma-Injury Infection and Critical Care	149	5.96	8	232
52	Federle et al.[64] 1982	Computed-tomography in blunt abdominal-trauma	Archives of Surgery	148	3.29	0	133
53	Holmes et al.[65] 2002	Identification of children with intra-abdominal injuries after blunt trauma	Annals of Emergency Medicine	145	5.80	8	198
54	Killeen et al.[66] 1999	Helical CT of diaphragmatic rupture caused by blunt trauma	American Journal of Roentgenology	145	5.18	0	214
55	Pachter et al.[67] 1995	The current status of nonoperative management of adult blunt hepatic injuries	American Journal of Surgery	143	4.47	0	157
56	Kasotakis et al.[68] 2013	Aggressive early crystalloid resuscitation adversely affects outcomes in adult blunt trauma patients: An analysis of the Glue Grant database	Journal of Trauma and Acute Care Surgery	142	10.14	18	149
57	Buntain et al.[69] 1988	Predictability of splenic salvage by computed-tomography	Journal of Trauma-Injury Infection and Critical Care	142	3.64	0	110
58	Gupta et al.[70] 2004	Blunt trauma of the pancreas and biliary tract: a multimodality imaging approach to diagnosis	Radiographics	140	6.09	0	224
59	Malhotra et al.[71] 2000	Blunt bowel and mesenteric injuries: The role of screening computed tomography	Journal of Trauma-Injury Infection and Critical Care	140	5.19	6	201
60	Willmann et al.[72] 2002	Multidetector CT: Detection of active hemorrhage in patients with blunt abdominal trauma	American Journal of Roentgenology	139	5.56	6	185
61	Mckenney et al.[73] 1994	Can ultrasound replace diagnostic peritoneal-lavage in the assessment of blunt trauma	Journal of Trauma-Injury Infection and Critical Care	137	4.15	13	178
62	Fabian et al.[74] 1986	A prospective-study of 91 patients undergoing both computed-tomography and peritoneal-lavage following blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	137	3.34	3	128

Supplementary Table S1. Continue

Rank	Author(s) & Year	Article Title	Journal	Total Citations	ACpY	AAS	Dimensions Badge
62	Fabian et al.[74] 1986	A prospective-study of 91 patients undergoing both computed-tomography and peritoneal-lavage following blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	137	3.34	3	128
63	Kozar et al.[75] 2005	Complications of nonoperative management of high-grade blunt hepatic injuries	Journal of Trauma-Injury Infection and Critical Care	133	6.05	3	188
64	Boulanger et al.[76] 1996	Emergent abdominal sonography as a screening test in a new diagnostic algorithm for blunt trauma	Journal of Trauma-Injury Infection and Critical Care	133	4.29	8	154
65	Marin et al.[77] 2015	Point-of-Care Ultrasonography by Pediatric Emergency Medicine Physicians	Pediatrics	132	11.00	1	30
66	Healey et al.[78] 1996	A prospective evaluation of abdominal ultrasound in blunt trauma: Is it useful?	Journal of Trauma-Injury Infection and Critical Care	131	4.23	4	168
67	Bode et al.[79] 1999	Sonography in a clinical algorithm for early evaluation of 1671 patients with blunt abdominal trauma	American Journal of Roentgenology	130	4.64	3	148
68	Holmes et al.[80] 2007	Performance of abdominal ultrasonography in pediatric blunt trauma patients: a meta-analysis	Journal of Pediatric Surgery	129	6.45	13	176
69	Mirvis et al.[81] 1989	Blunt hepatic-trauma in adults - CT-based classification and correlation with prognosis and treatment	Radiology	129	3.39	3	164
70	Chandler et al.[82] 1997	Seatbelt sign following blunt trauma is associated with increased incidence of abdominal injury	American Surgeon	128	4.27	0	180
71	Killeen et al.[83] 2001	Helical computed tomography of bowel and mesenteric injuries	Journal of Trauma-Injury Infection and Critical Care	127	4.88	3	173
72	Meyer et al.[84] 1989	Evaluation of computed-tomography and diagnostic peritoneal-lavage in blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	127	3.34	6	130
73	Yoon et al.[85] 2005	CT in blunt liver trauma	Radiographics	126	5.73	7	230
74	Goletti et al.[86] 1994	The role of ultrasonography in blunt abdominal-trauma - results in 250 consecutive cases	Journal of Trauma-Injury Infection and Critical Care	126	3.82	3	143
75	Parreira et al.[87] 2000	The role of associated injuries on outcome of blunt trauma patients sustaining pelvic fractures	Injury	124	4.59	3	151
76	Bode et al.[88] 1993	Abdominal ultrasound as a reliable indicator for conclusive laparotomy in blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	124	3.65	0	134
77	Schurink et al.[89] 1997	The value of physical examination in the diagnosis of patients with blunt abdominal trauma: A retrospective study	Injury	123	4.10	9	151
78	Poletti et al.[90] 2004	Blunt abdominal trauma patients: Can organ injury be excluded without performing computed tomography?	Journal of Trauma-Injury Infection and Critical Care	121	5.26	9	145
79	Branney et al.[91] 1997	Ultrasound based key clinical pathway reduces the use of hospital resources for the evaluation of blunt abdominal trauma	Journal of Trauma-Injury Infection and Critical Care	121	4.03	6	142
80	Sherck et al.[92] 1994	The accuracy of computed-tomography in the diagnosis of blunt small-bowel perforation	American Journal of Surgery	121	3.67	3	145
81	Mirvis et al.[93] 1989	Blunt splenic trauma in adults - CT-based classification and correlation with prognosis and treatment	Radiology	121	3.18	0	129
82	Thomas et al.[94] 1997	Ultrasound evaluation of blunt abdominal trauma: Program implementation, initial experience, and learning curve	Journal of Trauma-Injury Infection and Critical Care	120	4.00	21	151
83	Boulanger et al.[95] 1993	A comparison of right and left blunt traumatic diaphragmatic rupture	Journal of Trauma-Injury Infection and Critical Care	120	3.53	0	165

Supplementary Table S1. Continue

Rank	Author(s) & Year	Article Title	Journal	Total Citations	ACpY	AAS	Dimensions Badge
84	Nishijima et al.[96] 2012	Does This Adult Patient Have a Blunt Intra-abdominal Injury?	JAMA	118	7.87	88	178
85	Poletti et al.[97] 2003	Blunt abdominal trauma: Should US be used to detect both free fluid and organ injuries?	Radiology	118	4.92	3	144
86	Stuhlfaut et al.[98] 2004	Blunt abdominal trauma: Performance of CT without oral contrast material	Radiology	117	5.09	3	174
87	Wherrett et al.[99] 1996	Hypotension after blunt abdominal trauma: The role of emergent abdominal sonography in surgical triage	Journal of Trauma-Injury Infection and Critical Care	117	3.77	9	146
88	Jehle et al.[100] 1993	Emergency department ultrasound in the evaluation of blunt abdominal-trauma	American Journal of Emergency Medicine	117	3.44	9	131
89	Gruessner et al.[101] 1989	Sonography versus peritoneal-lavage in blunt abdominal-trauma	Journal of Trauma-Injury Infection and Critical Care	116	3.05	6	140
90	Velmahos et al.[102] 2000	Nonoperative management of splenic injuries -: Have we gone too far?	Archives of Surgery	115	4.26	0	118
91	Coley et al.[103] 2000	Focused abdominal sonography for trauma (FAST) in children with blunt abdominal trauma	Journal of Trauma-Injury Infection and Critical Care	115	4.26	0	159
92	Kozar et al.[104] 2006	Risk factors for hepatic morbidity following nonoperative management - Multicenter study	Archives of Surgery	114	5.43	6	165
93	Dinkel et al.[105] 2002	Blunt renal trauma: Minimally invasive management with microcatheter embolization - Experience in nine patients	Radiology	113	4.52	7	150
94	Hagiwara et al.[106] 1996	Nonsurgical management of patients with blunt splenic injury: Efficacy of transcatheter arterial embolization	American Journal of Roentgenology	113	3.65	3	146
95	Shanmuganathan et al.[107] 1999	Hemoperitoneum as the sole indicator of abdominal visceral injuries: A potential limitation of screening abdominal US for trauma	Radiology	112	4.00	3	161
96	Valentino et al.[108] 2006	Blunt abdominal trauma: Emergency contrast-enhanced sonography for detection of solid organ injuries.	American Journal of Roentgenology	111	5.29	3	142
97	Myers et al.[109] 2000	Blunt splenic injuries: Dedicated trauma surgeons can achieve a high rate of nonoperative success in patients of all ages	Journal of Trauma-Injury Infection and Critical Care	111	4.11	0	139
98	Goldstein et al.[110] 1985	The diagnostic superiority of computerized-tomography	Journal of Trauma-Injury Infection and Critical Care	110	2.62	0	79
99	Raza et al.[111] 2013	Non operative management of abdominal trauma - a 10 years review	World Journal of Emergency Surgery	109	7.79	1	127
100	Berger et al.[112] 1981	CT of blunt abdominal-trauma in childhood	American Journal of Roentgenology	109	2.37	0	75

ACpY, Average Citations per Year; AAS, Altmetric Attention Score.