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ORIGINAL RESEARCH

Global Research Trends and Knowledge Structure in Autoimmune Gastritis and *Helicobacter pylori*: A Comprehensive Bibliometric Analysis (1991–2025)

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Background/Objective: Autoimmune gastritis and *Helicobacter pylori* (*H. pylori*) infection are two clinically significant gastroenterological conditions with intricate pathophysiological interactions. This study aims to systematically map the global scientific output and evolving research trends on autoimmune gastritis and *H. pylori* through a comprehensive bibliometric analysis.

Methods: Publications (1991–2025) were extracted from the Web of Science Core Collection and analyzed using VOSviewer, CiteSpace, and the R package "bibliometrix" to explore research trends and collaboration patterns.

Results: A total of 387 publications were identified. Italy led in publication output (n = 75). The *World Journal of Gastroenterology* was the most prolific journal in this field. Keyword co-occurrence analysis revealed five major thematic clusters: (1) molecular immunological mechanisms and gastric carcinogenesis, (2) immunological markers and disease pathogenesis, (3) clinical manifestations and patient profiles, (4) epidemiology and disease progression, and (5) diagnostic strategies and classification systems. Burst detection analysis highlighted recent (2018–2025) research foci on "gastric cancer", "risk", "intestinal metaplasia", and "classification".

Conclusion: This bibliometric analysis provides a comprehensive overview of the global research dynamics concerning autoimmune gastritis and *H. pylori*. The findings reveal a shift toward precision medicine, with increasing attention to early detection, risk assessment, and the development of standardized diagnostic frameworks. These findings may assist clinicians in risk stratification and guide researchers in identifying future directions in autoimmune gastritis and *H. pylori* research.

Keywords: autoimmune gastritis, *Helicobacter pylori*, bibliometric analysis, research trends, gastric carcinogenesis

Introduction

Autoimmune gastritis (AIG) is a chronic, immune-mediated inflammatory condition characterized by the progressive destruction of gastric parietal cells, leading to oxyntic mucosal atrophy, hypochlorhydria, and intrinsic factor deficiency.[1,2] Clinically, AIG is often associated with micronutrient deficiencies, particularly iron and vitamin B12, resulting in iron-deficiency anemia and pernicious anemia, respectively.[3] Although relatively uncommon, with an estimated prevalence of 1–2% in the general population, AIG carries a significant risk for complications, including gastric neuroendocrine tumors and adenocarcinoma.[4]

The pathogenesis of AIG involves autoimmune responses directed against the gastric H^+/K^+-ATPase proton pump, with genetic susceptibility and environmental factors contributing to disease onset and progression.[5] Among the environmental triggers, *Helicobacter pylori* (*H. pylori*) infection has been extensively studied for its potential role in modulating gastric autoimmunity. *H. pylori* is a Gram-negative, spiral-shaped bacterium that colonizes the gastric mucosa and is a well-established etiological agent in chronic gastritis, peptic ulcer disease, and gastric malignancies such as adenocarcinoma and mucosa-associated lymphoid tissue lymphoma.[6,7] *H. pylori* infection remains highly prevalent worldwide, affecting approximately 44–50% of the global population, whereas autoimmune gastritis is relatively less common, with an estimated prevalence of around 2–4%.[8] Emerging evidence suggests a complex and potentially bidirectional relationship between *H. pylori* infection and AIG. One proposed mechanism is molecular mimicry, wherein antigenic similarities between *H. pylori*

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components and gastric H+/K+-ATPase may trigger autoimmune responses in genetically predisposed individuals.[9,10] Histopathological differences observed between *H. pylori*-naïve and infected AIG patients—such as the presence of oxyntic-restricted inflammation, pseudopyloric metaplasia, and enterochromaffin-like cell hyperplasia—support this hypothesis.[10] Notably, corpus-restricted atrophy in the absence of *H. pylori* does not appear to significantly increase gastric cancer risk, suggesting that *H. pylori* co-infection may be a key modulator of malignant transformation in AIG patients.

The clinical impact of *H. pylori* eradication on the course of AIG remains controversial. Some case reports have documented rapid progression of autoimmune changes post-eradication,[11] whereas others have demonstrated mucosal recovery and normalization of serum gastrin levels.[12] Furthermore, prospective studies have highlighted differential clinical and laboratory profiles among AIG patients with and without prior *H. pylori* exposure.[13] These inconsistencies underscore the heterogeneity of AIG phenotypes and emphasize the need for personalized treatment strategies. Given the growing body of literature exploring the intersection between AIG and *H. pylori*, a comprehensive mapping of research developments in this area is warranted.

Bibliometric analysis provides a systematic and quantitative method for evaluating the structure, evolution, and impact of scientific research. By examining publication outputs, co-authorship networks, and keyword co-occurrence patterns, this approach can effectively identify research hotspots and inform future directions.[14] While recent bibliometric studies have explored research related to AIG,[15] none have specifically addressed the interplay between AIG and *H. pylori*. Bibliometric analysis is particularly suitable for this research topic because it enables the systematic evaluation of large-scale scientific outputs, identification of collaboration networks, and detection of emerging research trends. Given the complex and evolving relationship between autoimmune gastritis and *H. pylori*, such an approach provides a comprehensive framework to synthesize fragmented evidence and uncover knowledge structures that are not easily captured through traditional narrative reviews. Therefore, this study aims to perform a comprehensive bibliometric analysis of the literature on AIG in the context of *H. pylori* infection. The objective is to identify key contributors, influential publications, thematic clusters, and emerging trends, ultimately offering valuable insights to guide future research and clinical practice in this evolving field.

Materials and Methods

Search Strategies and Data Collection

The literature search was conducted using the Web of Science Core Collection (WoSCC). This database is renowned for its rigorous selection criteria and high-quality indexing, ensuring the inclusion of only the most impactful and peer-reviewed journals, thereby providing a reliable foundation for bibliometric analysis.[16] The search formula was as follows:[15,17] TS = ((Autoimmune gastritis OR Autoimmune atrophic gastritis) AND ("Helicobacter pylori" OR "H. pylori")). In this study, the publication language was restricted to English, and only articles were included among various document types. To ensure consistency and avoid discrepancies related to database updates, the literature search was conducted on January 31, 2025. All retrieved records were independently screened by two authors, and discrepancies were resolved through discussion. All relevant information was extracted in text format, including the number of publications and citations, article titles, author details, affiliations, countries/regions, keywords, and journal names, for subsequent bibliometric analysis.

Statistical Analysis

For bibliometric analysis and visualization, we employed three complementary tools: VOSviewer (version 1.6.20),[18] CiteSpace (version 6.3.R1),[19] and the R package "bibliometric" (version 4.3.3).[20] VOSviewer was primarily used for constructing and visualizing bibliometric networks, including countries, institutions, journal and author analysis, co-occurrence analysis of keywords.[18] CiteSpace was utilized for Keyword burst analysis.[19] The software was configured with the following parameters: time slicing from 1991 to 2025 in one-year intervals, node type defined as keywords, top N=5 per slice, and pathfinder network scaling used for pruning. The pathfinder and pruning sliced networks options were enabled to enhance visualization clarity. The R package "bibliometric" was employed for calculating various bibliometric indicators and generating statistical summaries.[20] Several bibliometric indicators were used to evaluate research impact and productivity. The h-index was used to measure both productivity and citation impact,[21] while the g-index gave more

weight to highly cited articles, providing a complementary perspective on research impact.[22] The m-index, calculated as the h-index divided by the number of years since the researcher's first publication, was used to account for career length differences among researchers.[23] Journal impact was assessed using Impact Factor (IF) and Journal Citation Reports (JCR) Quartile rankings.[24] The IF, calculated annually by Clarivate Analytics, measures the average number of citations received by articles published in a journal during the two preceding years, providing a quantitative metric of journal influence within its field. Complementing this, the JCR Quartile rankings classify journals into four percentile groups (Q1-Q4) based on their IF relative to other journals in the same subject category.

Results

Overview of the Main Information

The bibliometric analysis workflow is illustrated in Figure 1A. The initial search in the WoSCC identified 640 publications. After applying exclusion criteria, including the removal of reviews (n = 128), editorial materials (n = 10), letters (n = 19), meeting abstracts (n = 44), non-English publications (n = 21), and others (n = 31), a total of 387 studies were included in the final analysis. The overall research metrics revealed a comprehensive landscape of scholarly activity in this field.

Over the study period (1991–2024), publications came from 172 different sources and involved 2229 authors. Although this search included literature up to January 2025, we focused our trend analysis on the complete years from 1991 to 2024, as data for 2025 represents only a partial year and inclusion might skew the temporal analysis, particularly for annual growth rate calculations and publication trend assessments. The temporal distribution of publications from 1991 to 2024 shows an overall upward trend (Figure 1B), with notable fluctuations.

Analysis of Countries

Among the 43 countries contributing to this field, Italy emerged as the leading contributor with 75 articles (19.4% of total publications) and 2632 citations, maintaining the highest rank in both publication output and citation impact. The United States followed as the second most productive country with 56 articles (14.5%) and 1951 citations, while Japan ranked third with 43 publications (11.1%) and 702 citations (Figure 2A).

Among the top 20 countries contributing to this field, France showed the highest proportion of international collaboration (MCP Ratio = 0.667), followed by Canada (0.500) and Greece (0.400). In contrast, some countries demonstrated stronger tendencies toward domestic research, such as Japan with an MCP Ratio of 0.047, indicating limited international collaboration despite high publication output (Table S1).

International collaboration networks (Figure 2B) were visualized using a minimum threshold of 3 collaborative papers between countries. The analysis revealed the strongest connections between Italy (38 total link strength), the United States (33 total link strength), and Germany (29 total link strength), with these countries forming the core of global research collaboration in this field.

Analysis of Institutions

The bibliometric analysis identified 1387 institutions contributing to AIG and *H. pylori* research. Sapienza University Rome emerged as the most productive institution with 46 publications. The University of Padua followed with 29 publications, and IRCCS Aviano (CRO) ranked third with 27 publications (Figure 3A).

Among the 73 institutions participating in international collaborations with at least three publications, Università di Pavia demonstrated the highest number of institutional collaborations (n = 19), followed by Università di Padova (n = 19) and Nantes Université (n = 16) (Figure 3B).

Analysis of Journals

The bibliometric analysis identified 172 journals publishing research on AIG and *H. pylori*. The *World Journal of Gastroenterology* demonstrated the highest productivity and strong impact, with an h-index of 11, publishing 14 articles that accumulated 284 citations (TC). This journal maintained a solid IF of 4.3 and ranked in Q1 of gastroenterology journals. The *American Journal of Surgical Pathology* and *Scandinavian Journal of Gastroenterology* both achieved

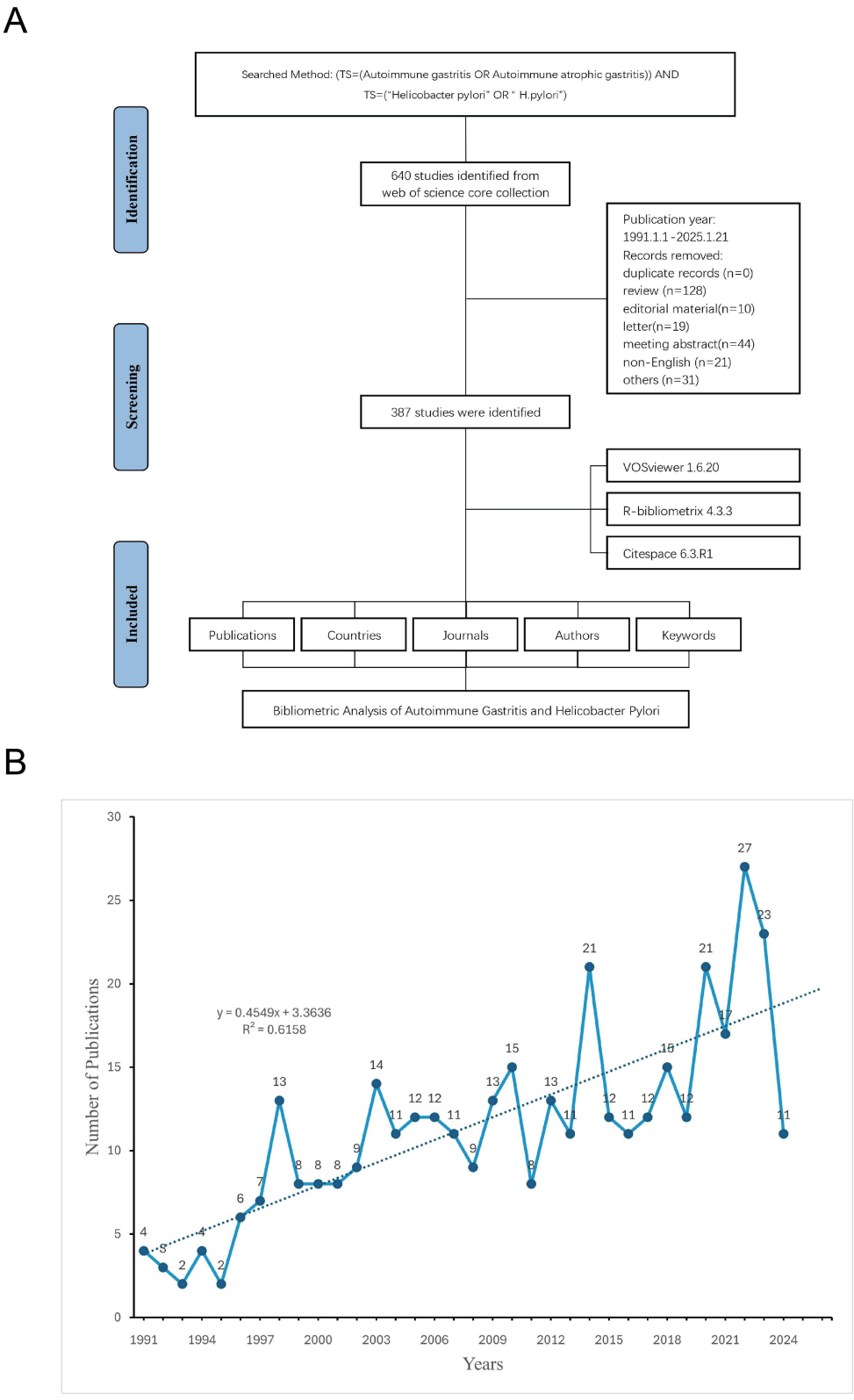

Figure 1 (**A**) Literature selection and screening flowchart. (**B**) Trends in annual publication output.

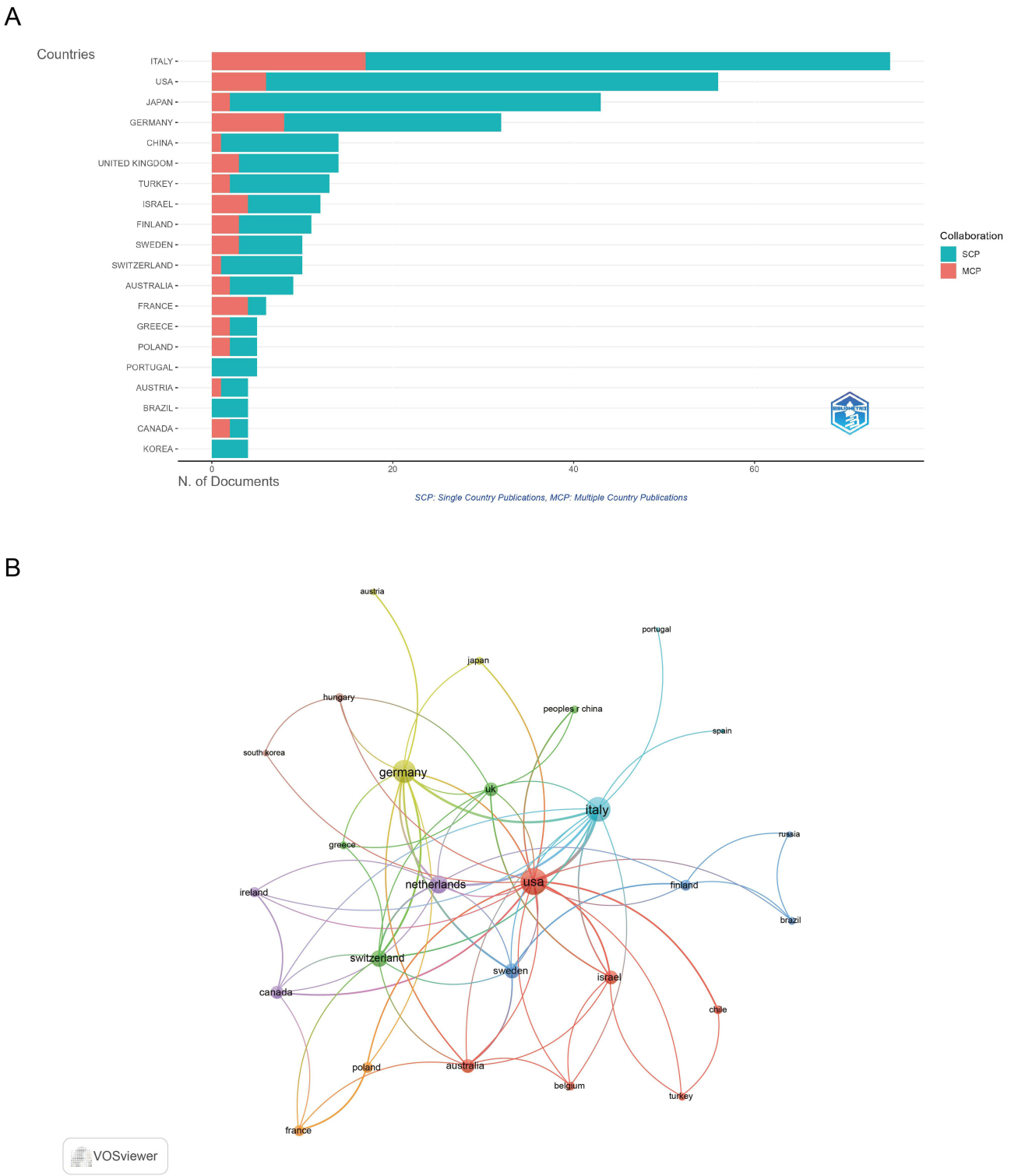

Figure 2 Analysis of country contributions and collaborations. (**A**) Distribution of corresponding author publications by country. (**B**) Collaboration network map among countries.

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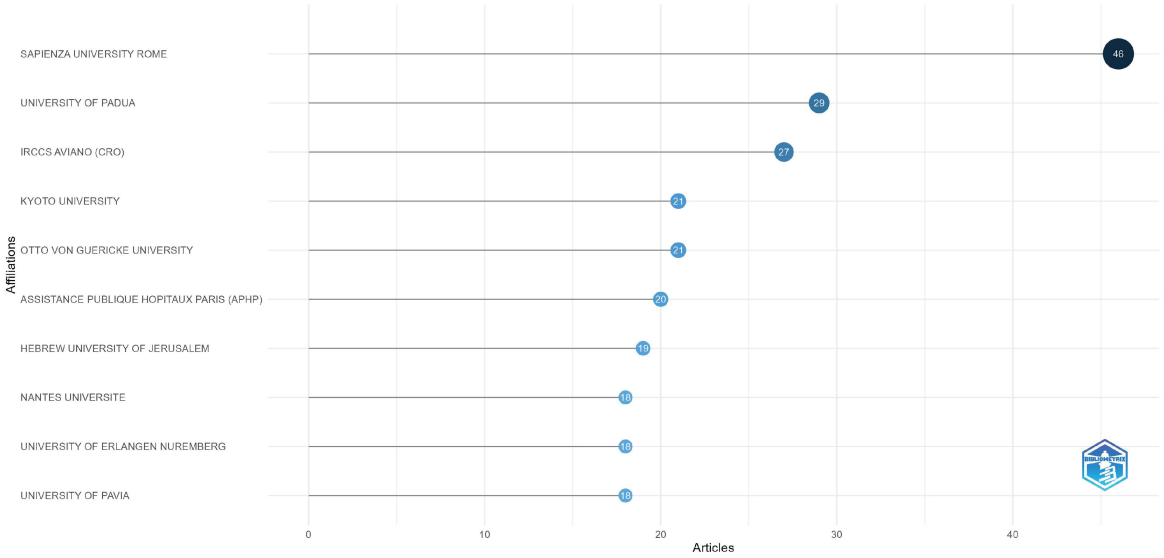

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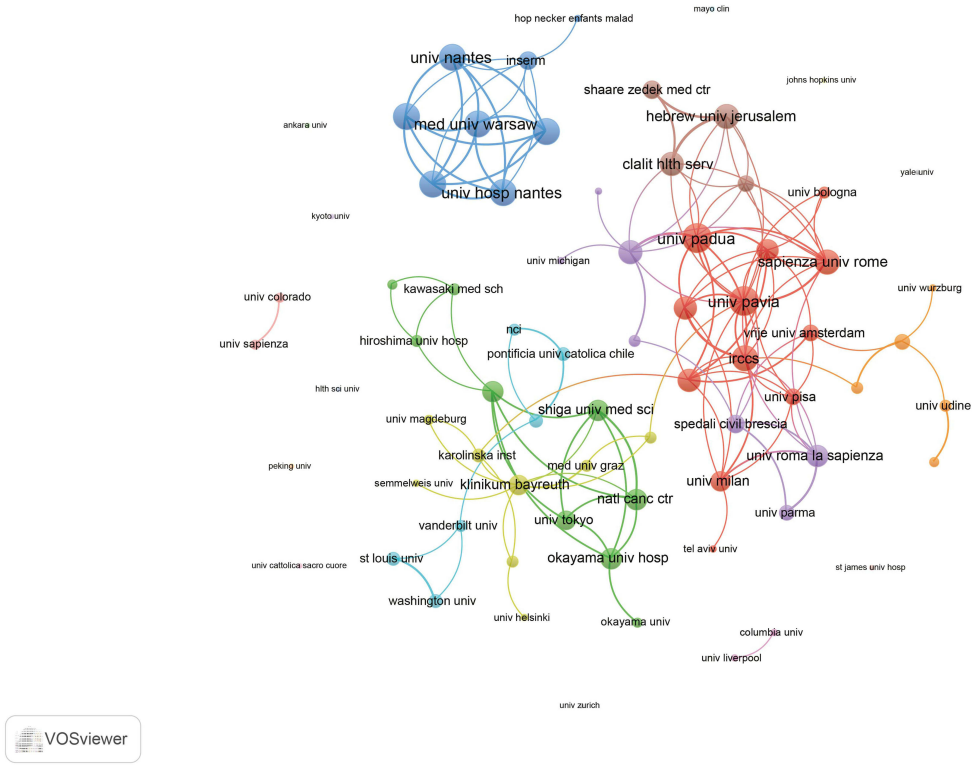

Figure 3 Institution Ranking and Collaboration Network. (**A**) Ranking of the top ten institutions by article count. (**B**) Network visualization of institutional collaborations.

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h-indices of 10, with 10 and 13 publications, respectively. The *American Journal of Surgical Pathology* (IF = 4.5, Q1) garnered 331 citations, while the *Scandinavian Journal of Gastroenterology* (IF = 1.6, Q3) accumulated 498 citations. *Gastroenterology*, despite having fewer publications in this field (h-index=7, TP = 9), achieved the highest impact with 900 citations and maintains the highest IF (25.7, Q1) among all contributing journals in this analysis. The *American Journal of Gastroenterology* (h-index=6, TP = 8, TC = 361, IF = 8.0, Q1) showed particularly high citation impact despite a moderate publication count (Table S2).

A total of 47 journals met the threshold of at least three occurrences in both co-occurrence (Figure 4A) and coupling network (Figure 4B) analyses. In the co-occurrence network, the top three journals by total link strength were *World Journal of Gastroenterology* (95 total link strength), *Gastroenterology* (63 total link strength), and *Helicobacter* (54 total link strength). In the coupling network, *World Journal of Gastroenterology* again ranked highest (2345 total link strength), followed by *Digestive and Liver Disease* (1861 total link strength) and *Helicobacter* (1411 total link strength).

Analysis of Authors

The bibliometric analysis identified 2229 authors contributing to the field of AIG and *H. pylori* research. Annibale Bruno and Lahner Edith emerged as leading researchers with the highest h-indices (h-index = 10) among all authors, indicating substantial research impact. Both maintained impressive g-indices of 15 and demonstrated consistent influence over time (m-index = 0.48 since 2005). These researchers contributed 15 publications each (TP = 15) and accumulated 507 and 675 total citations (TC), respectively, establishing them as the most prolific and influential authors in the field. Stolte M also achieved a significant impact with an h-index of 10 and g-index of 10, contributing 10 publications (TP = 10) that garnered 477 citations (TC) (Table S3).

Author collaboration network analysis (Figure 5) revealed complex patterns of research cooperation. Among the 111 authors involved in international collaborations with a minimum of 3 articles, Okazaki K emerged as the most connected researcher with 60 collaborative links, matched by Hiai H and Chiba T with the same number of connections (60). The author collaboration network analysis revealed several well-defined clusters of researchers working on AIG and *H. pylori* research. The largest and most interconnected cluster is centered around Japanese researchers, with Okazaki K, Hiai H, and Chiba T forming a tightly linked core group with 60 collaborative connections each. A second prominent cluster is formed by Italian researchers, led by Annibale Bruno and Lahner Edith from Sapienza University Rome. A third distinct cluster consists of German and Swiss researchers, including Stolte M, Faller G, and Kirchner T, who have concentrated on histopathological aspects and classification systems for autoimmune gastritis.

Analysis of Most Cited Articles

The most cited article (366 citations, published in *Infection and Immunity*, 1996) provided groundbreaking insights into the molecular mechanisms linking *H. pylori* infection with autoimmune responses.[25] This study was particularly significant in establishing the concept of molecular mimicry between *H. pylori* lipopolysaccharide and host Lewis blood group antigens, providing a fundamental mechanism for understanding how bacterial infection might trigger autoimmune responses in susceptible individuals. The second most cited paper (245 citations, *Journal of Clinical Investigation*, 2012) made substantial contributions to understanding the immunological aspects of *H. pylori* infection and its broader systemic effects.[26] This research elucidated the role of dendritic cell-derived IL-18 in regulatory T-cell differentiation and demonstrated how *H. pylori*-specific immune tolerance might influence other immune responses, including protection against asthma. These findings opened new perspectives on the complex interactions between infection, autoimmunity, and systemic immune regulation. The third most cited article (240 citations, *American Journal of Surgical Pathology*, 2007) provided crucial insights into the clinicopathologic aspects of gastrointestinal manifestations in patients with common variable immunodeficiency.[27] This comprehensive study established important connections between immunodeficiency, AIG, and associated pathological changes, contributing significantly to understanding the spectrum of immune-mediated gastric disorders (Table S4).

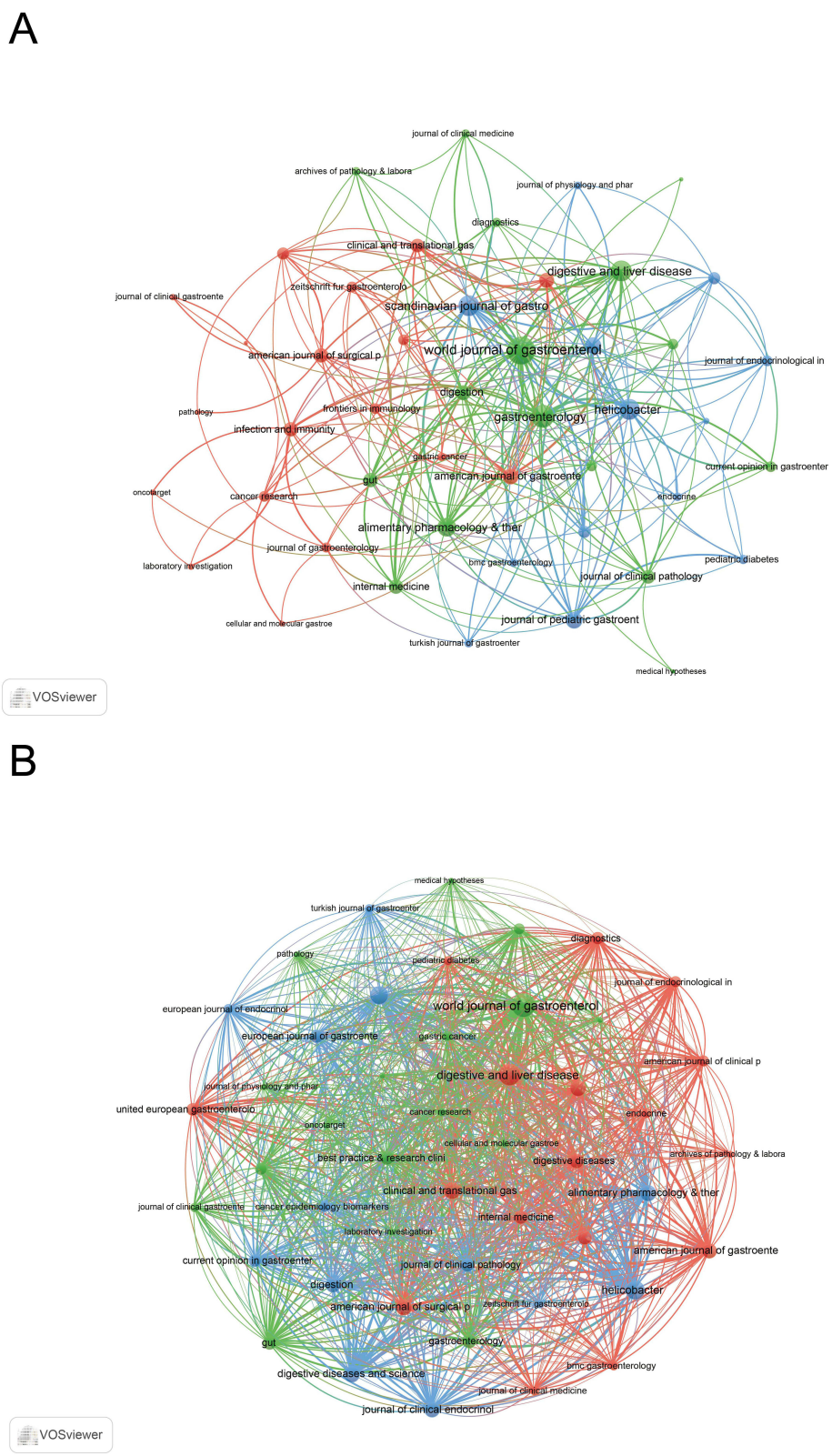

Figure 4 Journal Co-occurrence and Coupling Networks. (**A**) Co-occurrence Network of Journals. (**B**) Coupling Network of Journals.

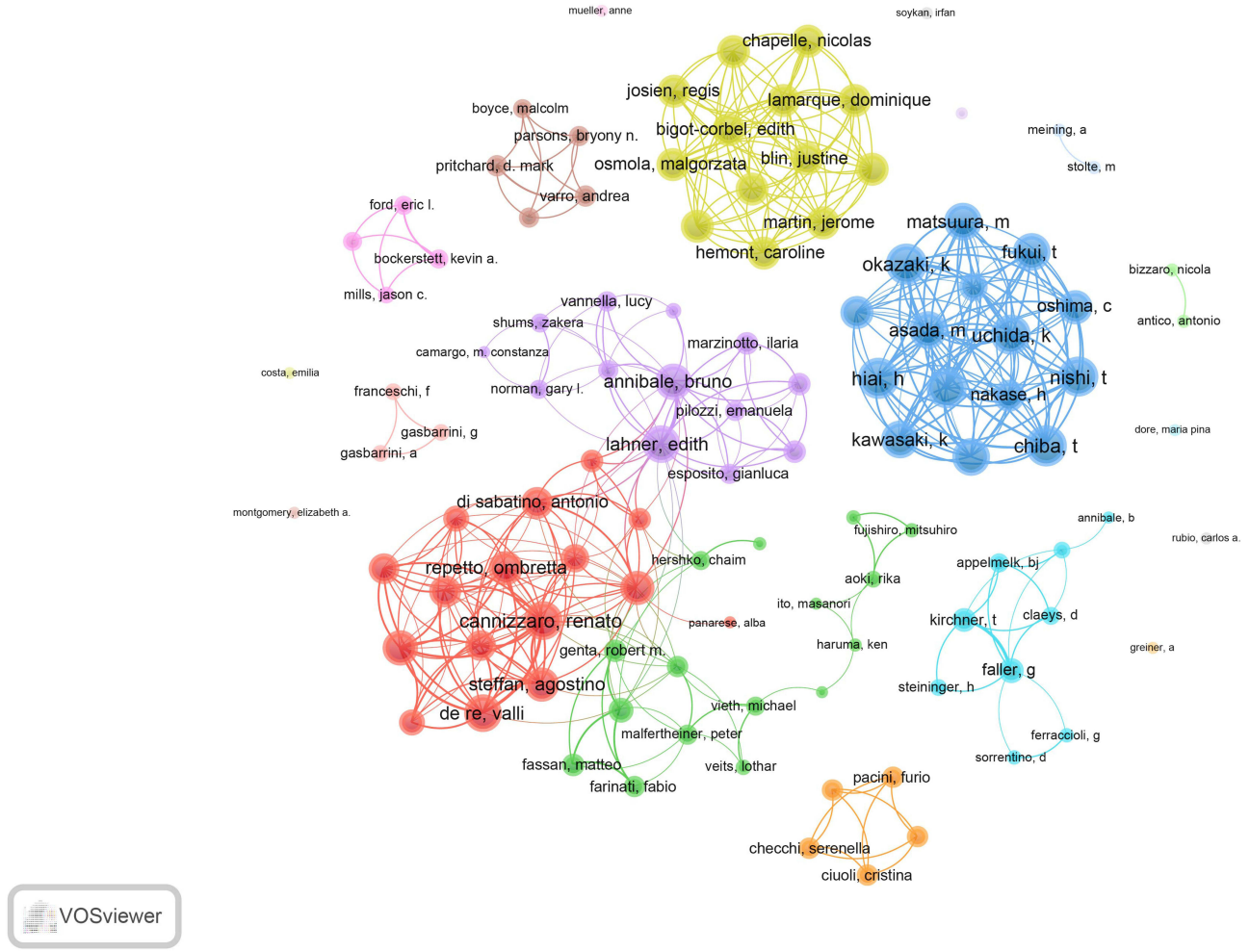

Figure 5 Visualization of Author Collaboration Network. Nodes represent keywords, with node size indicating frequency of occurrence. Links represent co-occurrence relationships, and colors indicate different thematic clusters.

Analysis of Keywords

Keyword analysis revealed distinct research themes and evolving trends in AIG and *H. pylori* research. Among the 650 author keywords identified, our analysis focused on terms appearing at least 5 times, resulting in 107 keywords grouped into five main clusters: Molecular immunological mechanisms and cancer (38 items): Including terms like "immune-response," "adenocarcinoma," "apoptosis," "autoimmune gastritis," "cancer," "carcinogenesis," "regulatory T-cells," "colonization," "inflammation," "expression," "gastric-cancer," and "helicobacter-pylori"; Immunological markers and pathogenesis (23 items): Featuring "antibodies," "antigastric autoantibodies," "H+/K+-ATPase," "autoantigen," "beta-subunit," "blood-group antigens," "sydney system," "H+/K+-adenosine triphosphatase," "pathogenesis," and "pernicious-anemia"; Clinical manifestations and patient characteristics (18 items): Including "children," "celiac-disease," "iron-deficiency," "adolescents," "atrophic gastritis," "parietal-cell antibodies," "progression," and "serum ferritin"; Epidemiology and disease progression (16 items): Containing "acid-secretion," "age," "association," "cobalamin deficiency," "deficiency," "diseases," "dyspepsia," "follow-up," "helicobacter-pylori infection," "intestinal metaplasia," and "prevalence"; Diagnostic approaches and classification (12 items): Including "carcinoma," "classification," "diagnosis," "dysplasia," "features," "hypergastrinemia," "lesions," "management," and "pathology" (Figure 6A and Table S5).

The keyword co-occurrence network analysis identified "pernicious-anemia" as the most frequent keyword (82 occurrences, total link strength 441), followed by "prevalence" (52 occurrences, link strength 271), and "classification" (52 occurrences, link

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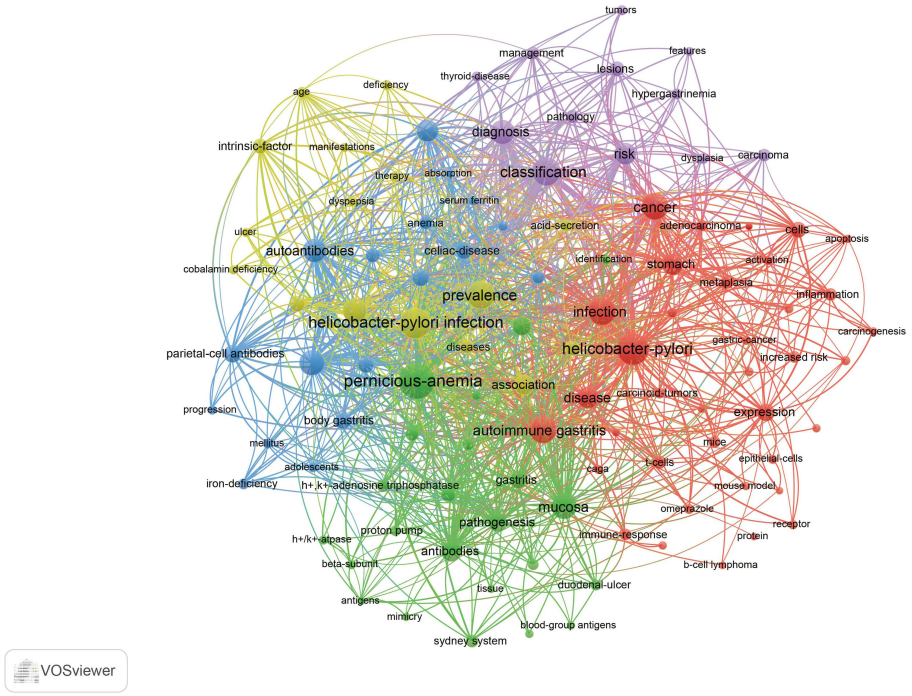

B

Top 20 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	1991 - 2025
infection	1991	3.67	**1991**	2000	
mucosa	1994	8.41	**1994**	2002	
antibody	1995	5.09	**1995**	2000	
disease	1997	4.53	**1997**	1999	
pathogenesis	1998	3.24	**1998**	2000	
expression	1998	3.11	**1998**	2004	
eradication	1998	3	**1998**	2013	
follow up	2001	4	**2001**	2003	
celiac disease	1992	4.97	**2005**	2014	
children	2007	2.82	**2007**	2014	
autoantibody	1994	3.09	**2011**	2014	
prevalence	2009	5.3	**2012**	2018	
parietal cell antibody	2004	3.97	**2014**	2020	
atrophic body gastritis	2000	3.71	**2014**	2015	
lesions	2016	3.15	**2016**	2021	
diagnosis	2005	6.28	**2017**	2023	
gastric cancer	2001	7.2	**2018**	2025	
risk	2009	4.01	**2018**	2025	
intestinal metaplasia	2001	2.96	**2019**	2025	
classification	2001	4.12	**2020**	2025	

Figure 6 Analysis of research themes and trends. (**A**) Network visualization of keyword co-occurrence analysis. Nodes represent keywords, with node size indicating frequency of occurrence. Links represent co-occurrence relationships, and colors indicate different thematic clusters. (**B**) Top 20 keywords with the most significant citation bursts. Red bars indicate the period of burst activity, while the blue line represents the overall timeline. The length of the red bar reflects the duration of the burst.

strength 268). These high-frequency keywords reflect the core focus of research in this field and the strong association between AIG and pernicious anemia.

The citation bursts analysis of keywords revealed significant evolutionary patterns (Figure 6B). Early research (1991–2000) focused predominantly on "infection," "mucosa," and "antibody," with link strengths of 3.67, 8.41, and 5.09, respectively. The middle period (2001–2014) saw increased attention to "celiac disease" (citation burst 4.97) and "children" (citation burst 2.82), indicating growing interest in comorbid conditions and special populations. Recent research trends (2018–2025) show increased emphasis on "gastric cancer" (citation burst 7.2), "risk" (citation burst 4.01), "intestinal metaplasia" (citation burst 2.96), and "classification" (citation burst 4.12).

Discussion

This bibliometric analysis provides a comprehensive overview of global research trends on AIG and *H. pylori* research from 1991 to 2025. The results demonstrate a steady increase in publication output and reveal five major research themes, including molecular mechanisms, immunological markers, clinical characteristics, epidemiology, and diagnostic strategies. Overall, the field has evolved from early mechanistic exploration toward clinically oriented research, particularly focusing on risk assessment, early detection, and standardized classification systems.

The journal analysis revealed that gastroenterology-focused journals, particularly the *World Journal of Gastroenterology* and *Gastroenterology*, have been pivotal in disseminating research in this field.[28] This pattern reflects the specialization of the field and its close alignment with gastrointestinal and microbial pathogenesis research.[29] Geographical and institutional analysis highlighted the dominance of Italian and American institutions, particularly Sapienza University Rome and major US research centers. This leadership may be associated with regional disease burden, strong research infrastructure, and sustained investment in gastroenterology and autoimmune disease research.[30,31] The strong contribution from Japanese institutions further underscores their long-standing role in *H. pylori* and gastric cancer research.[32] Author analysis showed that key researchers, such as Annibale Bruno and Lahner Edith, have contributed substantially to the understanding of the relationship between AIG and *H. pylori*, particularly in diagnostic and clinical frameworks.[33] The collaborative networks also suggest a trend toward increased international and multi-center research.

Research Hotspots and Frontier Trends

Cluster 1 (Molecular Immunological Mechanisms and Cancer) represents the largest research focus, emphasizing immunological mechanisms and carcinogenesis. The prominence of terms like "immune-response" and "adenocarcinoma" reflects increasing attention to the role of chronic inflammation and immune dysregulation in gastric tumorigenesis. Mechanistically, *H. pylori*–related molecular mimicry and immune activation remain central explanatory frameworks.[9,34] The strong co-occurrence of "carcinogenesis" and "inflammation" keywords suggests an emerging focus on identifying early molecular markers of malignant transformation in AIG patients. A notable breakthrough study by Iwamuro et al has identified novel signaling pathways linking chronic inflammation to epithelial–mesenchymal transition in gastric mucosa, providing potential therapeutic targets for intervention before carcinogenesis.[35] This mechanistic understanding is critical for developing targeted therapies that might prevent disease progression rather than simply managing symptoms.

Cluster 2 (Immunological Markers and Pathogenesis) highlights the central role of autoantibody profiling and immune-related biomarkers in AIG research. Advances in detection technologies have enabled more precise diagnostic approaches and the identification of novel autoantibody signatures associated with disease progression and treatment response.[36] The frequent occurrence of H+/K+-ATPase-related terms reflects continued focus on key autoimmune targets, with potential implications for targeted therapeutic strategies.[37] In addition, the prominence of "pernicious anemia" underscores its close clinical association with AIG. The co-occurrence of immune-related keywords also suggests that molecular mimicry between *H. pylori* antigens and host structures remains a key explanatory mechanism in disease pathogenesis.[38]

Cluster 3 (Clinical Manifestations and Patient Characteristics) reflects increasing attention to disease heterogeneity and population-specific features. The presence of keywords such as "children" and "adolescents" indicates growing recognition of early-onset AIG and its distinct clinical patterns.[39] The co-occurrence of "celiac-disease" highlights the role of polyautoimmunity, suggesting shared immunological susceptibility across conditions.[40] In addition, the prominence of "iron deficiency" emphasizes its importance as an early clinical manifestation, often preceding vitamin B12 deficiency and providing a potential

window for early diagnosis12.[13] These findings collectively suggest a shift toward earlier detection and improved clinical characterization of AIG across different patient populations.

Cluster 4 (Epidemiology and Disease Progression) reflects evolving understanding of the natural history of AIG. Keywords such as "follow-up" and "acid secretion" indicate increasing emphasis on longitudinal disease monitoring, while the prominence of "intestinal metaplasia" highlights its role as a key precancerous condition. These findings align with growing research interest in identifying patients at high risk of progression to gastric cancer.[41] In addition, the emergence of analytical approaches, including artificial intelligence, suggests a trend toward more precise prediction models for disease progression and risk stratification.[42] The co-occurrence of terms such as "therapy" and "cobalamin deficiency" further indicates increasing attention to both disease management and systemic consequences of AIG.

Cluster 5 (Diagnostic Approaches and Classification) represents a key emerging frontier in AIG research. The prominence of keywords such as "classification," "hypergastrinemia," and "diagnosis" reflects ongoing efforts to standardize disease evaluation and improve clinical decision-making. Established frameworks, such as the Kyoto classification, have contributed to more consistent endoscopic assessment and improved risk stratification.[43,44] At the same time, the integration of molecular pathology and advanced imaging technologies, including artificial intelligence-assisted endoscopy, is enhancing diagnostic precision and enabling earlier detection of disease-related changes.[45,46] These developments highlight a broader transition toward standardized and technology-driven diagnostic strategies in AIG management.

The burst detection analysis revealed distinct chronological shifts in research focus from 1991 to 2025, highlighting the evolution of AIG and *H. pylori* research from mechanistic exploration to clinically oriented applications.

During the early period (1991–2000), research primarily focused on fundamental disease mechanisms, with keywords such as "infection," "mucosa," and "antibody" showing strong citation bursts. This stage laid the foundation for understanding the interaction between *H. pylori* infection, immune responses, and gastric mucosal damage.[47,48]

In the middle period (2001–2014), research expanded toward more complex clinical contexts, as reflected by burst terms such as "celiac disease" and "children," indicating growing recognition of autoimmune comorbidities and population-specific characteristics.[49]

Notably, the recent period (2015–2025) demonstrates a clear evolution toward precision medicine, risk stratification, and advanced diagnostic approaches. This represents the maturation of the field, where accumulated knowledge is being translated into sophisticated clinical tools and individualized patient management strategies. Strong bursts in "diagnosis" (strength = 6.28, 2017–2023) and "gastric cancer" (strength = 7.20, 2018–2025) reflect increasing sophistication in diagnostic approaches and recognition of long-term complications. The exceptionally high burst strength for "gastric cancer" indicates the field's marked shift toward cancer prevention and early detection strategies, representing perhaps the most clinically significant development in recent years. Zhang et al conducted a groundbreaking systematic review and meta-analysis on the endoscopic Kyoto classification, quantifying its utility in gastric cancer risk assessment and providing evidence-based parameters that clinicians can apply in their evaluation of patients with potential precancerous conditions.[44] The emergence of "intestinal metaplasia" (2019–2025) and "classification" (2020–2025) as burst terms suggests intensifying focus on premalignant changes and the standardization of diagnostic criteria. Toyoshima and Nishizawa published influential work on the Kyoto classification of gastritis, providing a comprehensive framework for standardized endoscopic evaluation that has been widely adopted in clinical practice.[43]

Practical Implications

The findings of this study provide several practical insights. For clinicians, the increasing focus on gastric cancer risk, intestinal metaplasia, and classification systems highlights the importance of early detection and long-term surveillance in patients with autoimmune gastritis, particularly those with *H. pylori* exposure. For researchers, the identified research hotspots and emerging trends suggest that future studies should prioritize risk stratification models, integration of molecular biomarkers, and standardized diagnostic frameworks. Additionally, the growing application of artificial intelligence and advanced endoscopic techniques may further improve diagnostic accuracy and disease monitoring.

Strengths and Limitations

This bibliometric analysis offers several notable strengths in its approach and execution. The comprehensive coverage spanning three decades provides a robust temporal perspective of research evolution in the field of AIG and *H. pylori* studies. The integration of multiple bibliometric tools, including VOSviewer, CiteSpace, and the R package "bibliometric", enables a multi-faceted examination of research patterns and trends, enhancing the reliability of our findings. However, several limitations should be considered when interpreting our findings. The exclusive use of the WoSCC database, while providing high-quality indexed publications, may have excluded relevant research published in other databases such as Scopus or PubMed. Our restriction to English-language publications may have omitted significant contributions from non-English speaking regions, particularly considering the global nature of AIG and *H. pylori* research.

Conclusion

This bibliometric analysis highlights the evolving focus of AIG and *H. pylori* research over the past three decades, with increasing attention to clinical relevance. Current hotspots include carcinogenic mechanisms, immunological markers, population-specific features, disease progression, and diagnostic innovations. Collaborative efforts, especially from Italy, the US, and Japan, continue to advance the field. Future research should focus on integrating molecular biomarkers and advanced diagnostic technologies to improve early detection and risk stratification, ultimately supporting more personalized clinical management strategies.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

Yangqing Wu: Conceptualization; Methodology; Data curation; Formal analysis; Investigation; Validation; Visualization; Writing – original draft; Writing – review and editing;

Jianbo Zhou: Methodology; Data curation; Formal analysis; Project administration; Writing – original draft; Writing – review and editing;

Ying Fang: Data curation; Formal analysis; Visualization; Writing – original draft; Writing – review and editing;

Jianzhong Sang: Investigation; Resources; Software; Writing – original draft; Writing – review and editing;

Fangfang Zhang: Conceptualization; Supervision; Funding acquisition; Writing – original draft; Writing – review and editing.

All authors gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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