

Article

Bibliometric Analysis of Research Trajectories and Emerging Foci at the Intersection of Ovarian Cancer and Depression

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Abstract: Background: There is a growing body of research on ovarian cancer and depression. This study employs bibliometric analysis to examine the current state and emerging trends in research on ovarian cancer and depression, providing a reference for future investigations in this field. **Methods:** Articles on ovarian cancer and depression published between January 1, 2014, and December 31, 2024, were retrieved from the Web of Science Core Collection. Following rigorous screening, VOSviewer and CiteSpace were employed to conduct quantitative analysis, collaboration network mapping, clustering, and citation burst analysis. **Results:** The number of publications addressing ovarian cancer and depression has increased annually. The United States leads in both publication volume and citation frequency, and demonstrates the highest level of international collaboration. The University of California, Los Angeles, ranks first among institutions in terms of both publication output and citations, as well as institutional collaboration. Anil K. Sood is the most prolific and highly cited author in this field. Gynecologic Oncology is the journal with the highest number of publications and citations, while Cancer Medicine has recently published a substantial number of articles. The most cited article is “The Hospital Anxiety and Depression Scale” by A. S. Zigmond *et al.*, published in *Acta Psychiatrica Scandinavica* in 1983. The twenty most frequently occurring keywords include ovarian cancer, quality of life, depression, women, breast cancer, anxiety, risk, prevalence, impact, psychological distress, survivor, distress, health, symptom, hospital anxiety, social support, chemotherapy, association, expression, and hereditary breast. “Risk reduction” has emerged as a cutting-edge and widely discussed topic in the intersection of ovarian cancer and depression, while the keyword “mental health” is currently experiencing a citation surge. **Conclusion:** This study employs bibliometric analysis to elucidate publication trends, collaborative networks among countries, institutions, and authors, as well as emerging research hotspots in the field of ovarian cancer and depression. By providing objective data, it offers valuable reference points for ongoing scientific inquiry in this domain.

Keywords: bibliometric analysis; ovarian cancer; depression; risk reduction; mental health

1. Introduction

Currently, ovarian cancer is the most lethal and the third most common gynecologic malignancy worldwide, accounting for approximately 5% of female cancer-related deaths [1]. To date, there is no effective early screening system for ovarian cancer. Clinical data indicate that over two-thirds of patients are diagnosed after the tumor has metastasized beyond the pelvis, signifying that the majority present at an advanced stage [2]. Although first-line treatment regimens can achieve symptomatic relief in most patients, the five-year survival rate remains below 50%, with high recurrence rates and poor prognosis [3]. In clinical practice, most patients

require radical surgery combined with multiple cycles of chemotherapy to achieve complete clinical remission [4]. This process imposes a dual burden of surgical complications and chemotherapy-related adverse effects, and long-term treatment may negatively impact sexual function and psychological well-being, ultimately diminishing quality of life [5].

Depression, characterized primarily by persistent low mood, ranges from mild anhedonia to severe hopelessness and suicidal ideation, with typical manifestations including varying degrees of diminished interest, confidence, and desire. Based on symptom frequency, duration, and severity, depression can be classified as mild, moderate, or severe [6]. Clinical studies have demonstrated that the incidence of depression in ovarian cancer patients is significantly higher than in the general female population [7]; one study reports that the risk of depression in ovarian cancer patients is twice that of women without cancer [8]. Potential mechanisms include: prolonged treatment cycles and repeated chemo-radiotherapy, which exacerbate psychological stress and foster negative emotions [9]; the ovary's role as a key endocrine organ, where surgical removal often results in loss of fertility or premature menopause, leading to hormonal imbalances and neuroendocrine dysregulation, thereby intensifying anxiety and depressive symptoms [10]; and the predominance of married, middle-aged women among ovarian cancer patients, who often bear multiple familial and societal roles, with deteriorating health further compounding psychological distress and promoting depression [11]. Depression not only disrupts treatment adherence and prolongs hospitalization but may also reduce survival rates. Consequently, improving depressive symptoms in ovarian cancer patients to enhance therapeutic outcomes has become a focal point of clinical research [12].

Despite the growing body of research on ovarian cancer and depression, existing studies are notably fragmented. The complex interplay between the protracted, high-recurrence course of ovarian cancer and the neuroendocrine mechanisms of depressive disorders—such as hypothalamic-pituitary-adrenal axis dysregulation and monoamine neurotransmitter disturbances due to abrupt estrogen decline—remains insufficiently elucidated. Current investigations into these associations are dispersed across oncology, psychiatry, and endocrinology, lacking interdisciplinary visualization of research hotspots [13-15]. Furthermore, there is marked heterogeneity in the prevalence and research focus on ovarian cancer-related depression between developed and underdeveloped regions [16,17]. Bibliometric analysis can systematically reveal the global disparities in research distribution, providing a scientific basis for integrating academic resources across regions and formulating targeted health policies [18]. Therefore, this study employs bibliometric methods to systematically map the research landscape in this field, utilizing objective literature data analysis to elucidate current status, emerging trends, and future prospects, thereby offering collaborative recommendations and research directions for scholars in this domain.

2. Materials and methods

2.1 Literature Search and Screening Strategy

A comprehensive search was conducted in the Web of Science Core Collection database, covering the period from January 1, 2014, to December 31, 2024. The literature retrieval was performed on March 5, 2025. The search strategy was informed by previous studies on ovarian cancer and depression, and incorporated the MeSH (Medical Subject Headings) database to ensure comprehensive identification

of relevant keywords. The search terms were as follows: TS = ((Ovarian Cancer) OR (Ovarian Cancers) OR (Ovarian Neoplasm) OR (Ovary Neoplasms) OR (Ovary Neoplasm) OR (Ovary Cancer) OR (Ovary Cancers) OR (Cancer of Ovary) OR (Cancer of the Ovary)) AND TS = ((Depression) OR (Depressive Symptoms) OR (Depressive Symptom) OR (Emotional Depression)). Inclusion criteria comprised studies related to both ovarian cancer and depression, with document types restricted to “article” and “review,” and language limited to English. After screening, eligible records were exported using the “Export Records to Plain Text File” function for subsequent bibliometric analysis. No duplicate records were detected during the initial import of search results. Two authors independently performed literature screening and data extraction. Discrepancies were resolved through discussion with a third author to reach consensus (see **Figure 1**).

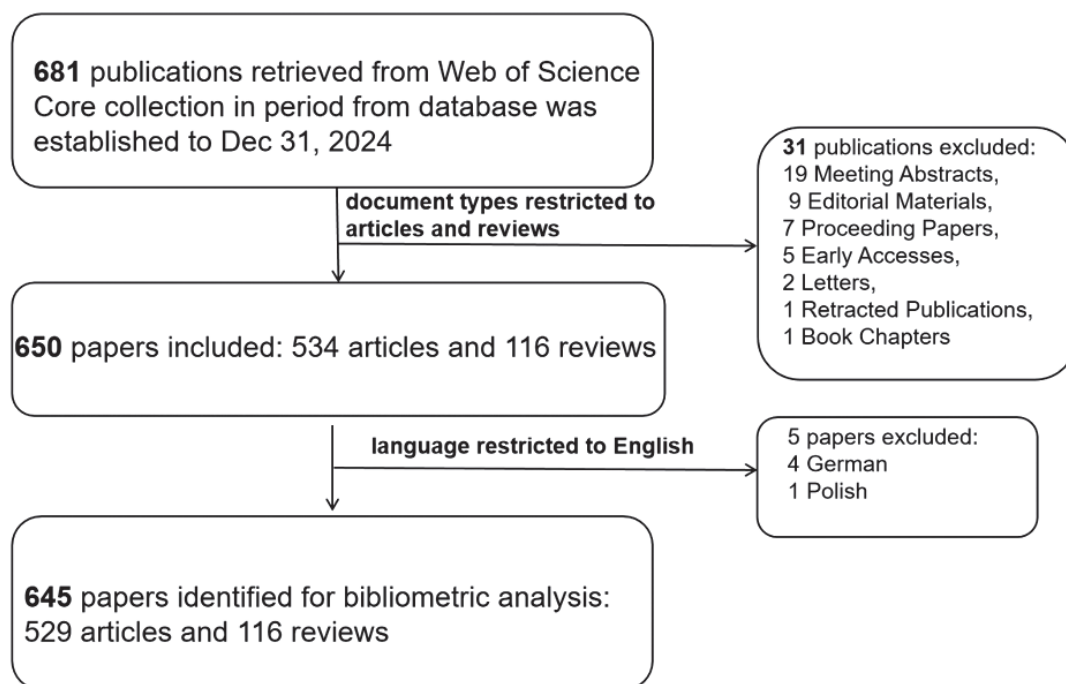


Figure 1. Diagrammatic overview of the systematic literature search strategy and screening protocol.

2.2 Bibliometric Analysis

VOSviewer and CiteSpace software were employed to conduct bibliometric and visualization analyses of the selected literature. Utilizing the co-authorship function in VOSviewer, collaborative networks among countries, institutions, and authors were constructed. The bibliographic coupling feature facilitated the analysis of journal coupling relationships, while the co-occurrence function enabled keyword co-occurrence analysis. Overlay visualization was used to illustrate temporal trends, and network visualization depicted multidimensional collaboration networks. CiteSpace was applied for cluster analysis and burst detection. For parameter settings, “Time Slicing” was set from January 2014 to December 2024, with “Years Per Slice” designated as one year to enable dynamic evolution analysis.

3. Results

3.1 Evaluation of yearly scholarly productivity

A bibliometric analysis of the research field concerning ovarian cancer and

depression revealed that, from January 1, 2014, to December 31, 2024, a total of 645 publications meeting our inclusion criteria were identified, comprising 529 original articles and 116 reviews. As illustrated in **Figure 2**, the number of publications increased from 30 in 2014 to 88 in 2024, representing an overall growth of approximately 177%. Notably, the increase was primarily driven by original articles, which exhibited a growth pattern closely mirroring the overall publication trend, while the number of reviews remained relatively stable. The most pronounced increase occurred between 2015 and 2016, with publications rising from 32 to 50, marking a 56.25% increase. Additionally, a minor peak in publication volume was observed in 2021, followed by a decline in 2022, and a subsequent rebound in 2023 and 2024. Between 2016 and 2023, the annual number of publications remained relatively stable. In summary, despite some fluctuations, the overall trend from 2014 to 2024 demonstrates a sustained increase in research output within this domain (**Figure 2**).

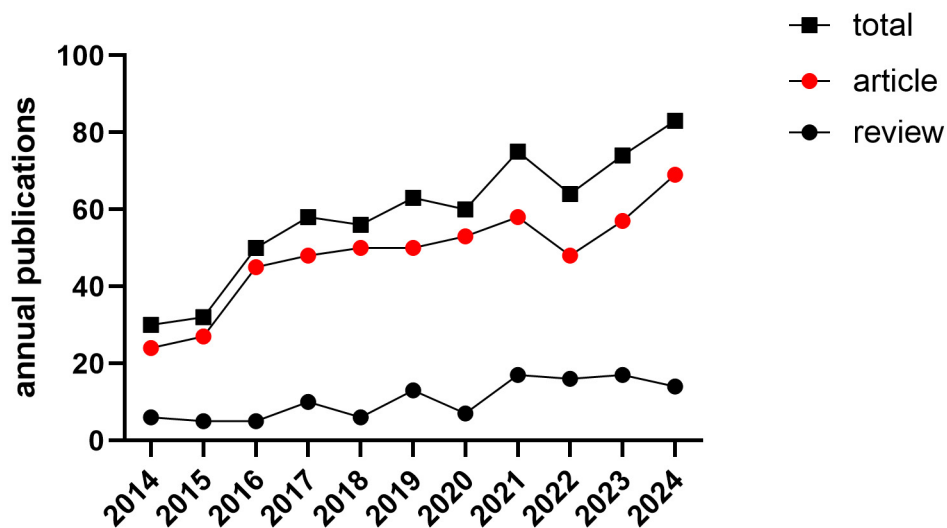


Figure 2. Annual publication volume.

3.2 Analysis of country and region

A total of 67 countries or regions have contributed to the field of ovarian cancer and depression. The publication volume and citation count for each country or region are visualized using density maps (**Figures 3A-B**), where higher brightness indicates greater values. Among the top ten countries by publication count, the United States ranks first with 242 publications, followed by China ($n = 109$) and Australia ($n = 64$). The United States also leads in citation count (**Figure 3C**). In total, 30 countries have published more than five articles. Co-authorship analysis of these countries reveals that the United States exhibits the highest level of international collaboration (total link strength, TLS = 126), followed by the United Kingdom (TLS = 106) and Australia (TLS = 104). Notably, the collaboration between the United States and Australia is the most robust (Link strength = 20) (**Figure 3D**). Additionally, the United States demonstrates substantial collaborative ties with Germany, Denmark, Italy, and other European countries.

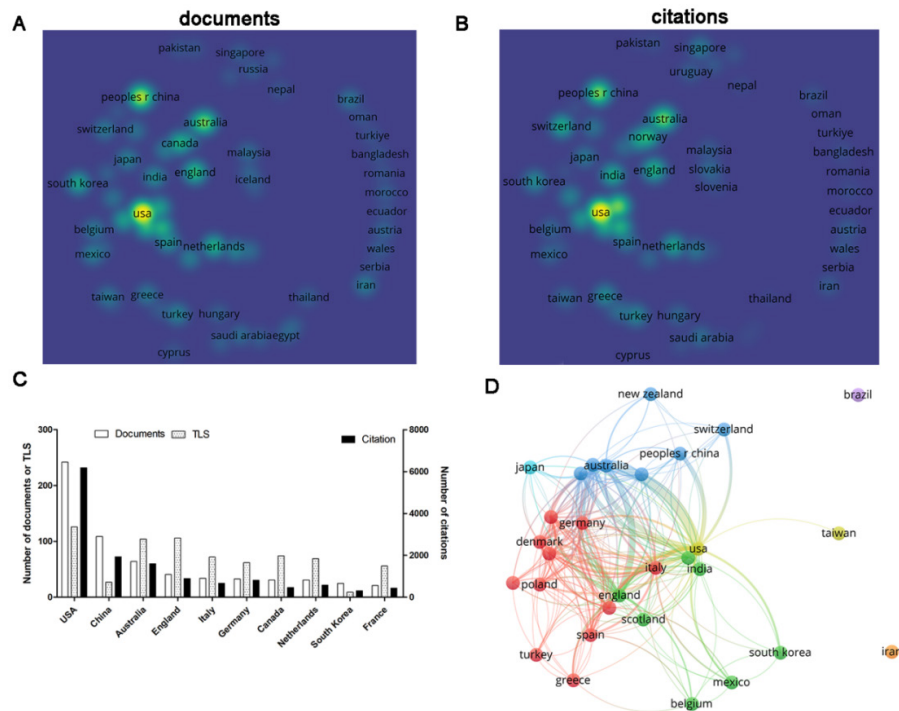


Figure 3. Analysis of country and region. (A) Density visualization maps of countries and regions publication volume. (B) Density visualization maps of countries and regions citation volume. (C) Annual publication volume of the top 10 countries or regions by research output. (D) Network of international collaboration.

3.3 Analysis of organization

A total of 1,230 institutions have published articles on ovarian cancer and depression, with 22 institutions contributing more than 10 publications each. The University of California, Los Angeles produced the highest number of articles ($n=22$), followed by the University of Iowa ($n=21$) and Washington University ($n=18$). Notably, the University of California, Los Angeles also demonstrated the highest citation count and degree of collaboration (**Figure 4A**). Furthermore, a visualization of the institutional collaboration network among these 22 prolific institutions revealed that clusters formed by the University of California, Los Angeles, University of Iowa, Washington University, and the University of Texas MD Anderson Cancer Center exhibited the highest level of collaboration (TLS=25). In contrast, China Medical University showed no collaborative relationships with the other 21 high-output institutions (**Figure 4B**).

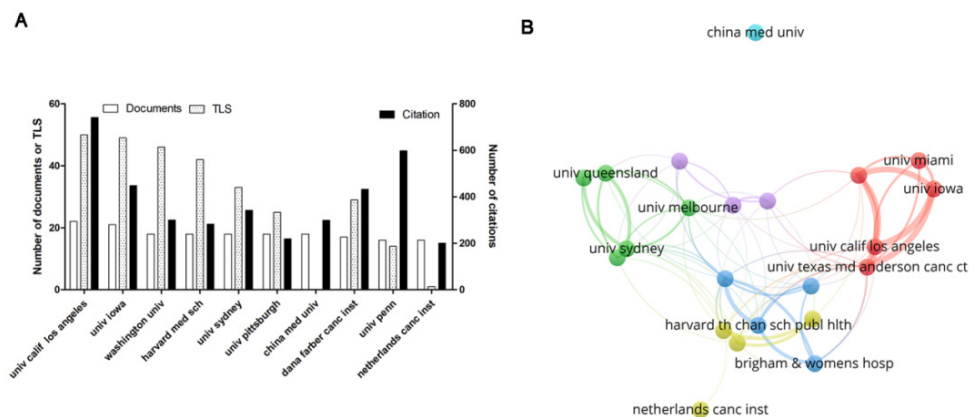


Figure 4. Institutional analysis. (A) Top 10 countries by publication output, including corresponding citation indices and TLS. (B) Collaborative network visualization for institutions with a publication count exceeding 10 articles.

3.4 Analysis of authors

A total of 3,790 authors have contributed articles on ovarian cancer and depression. Among them, 33 authors have published more than five articles, and their productivity and citation counts are visualized using density visualization maps (**Figures 5A-B**). Notably, Anil K. Sood from the University of Texas MD Anderson Cancer Center has the highest number of publications (n=23) and citations (n=523) (**Figure 5C**). Figure 5C illustrates the collaborative relationships among these prolific authors, with Anil K. Sood, Michael J. Goodheart, Steve W. Cole, and Susan K. Lutgendorf forming the most prominent collaborative cluster. Additionally, our findings indicate that Marilyn J. Hammer, Bruce A. Cooper, and Christine Miaskowski are emerging as highly productive authors in recent years, forming a closely-knit collaborative cluster (**Figure 5D**).

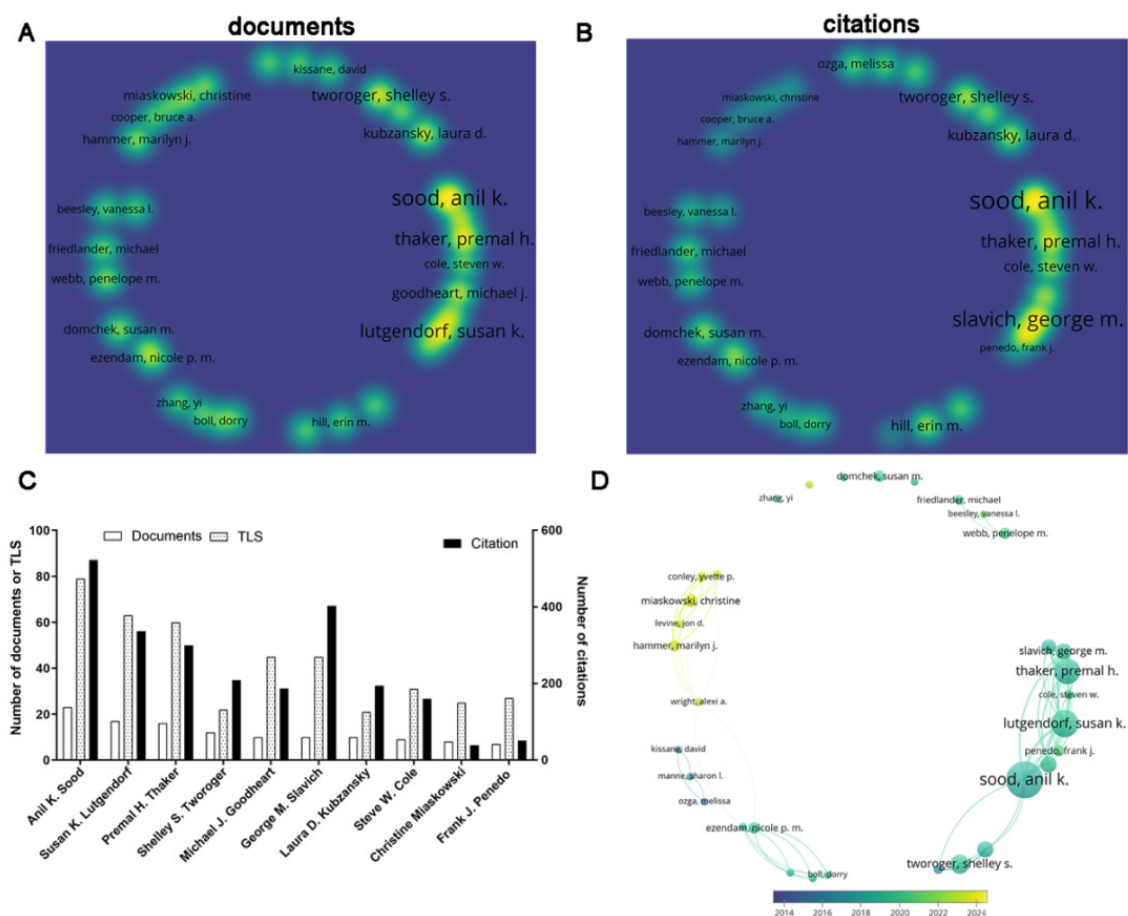


Figure 5. Analysis of authors. (A) Density mapping of author publication productivity. (B) Density mapping of author citation impact. (C) The ten most prolific authors, presented with corresponding citation frequencies and TLS. (D) Timeline view of collaborative network among authors with a publication output surpassing 10 articles.

3.5 Analysis of journals

A total of 317 journals have published articles on ovarian cancer and depression, with Gynecologic Oncology contributing the highest number of publications (n=40), followed by Supportive Care in Cancer (n=30) and Psycho-Oncology (n=23). Gynecologic Oncology also recorded the highest citation count (n=630). Among these, 24 journals published more than five articles in this field. An overlay visualization map of bibliographic coupling analysis for these 24 journals revealed the strongest coupling between Gynecologic Oncology and Supportive Care in Cancer

(link strength=380). Cancer Medicine has also emerged as a journal with a substantial recent publication volume in this area (**Figure 6**).

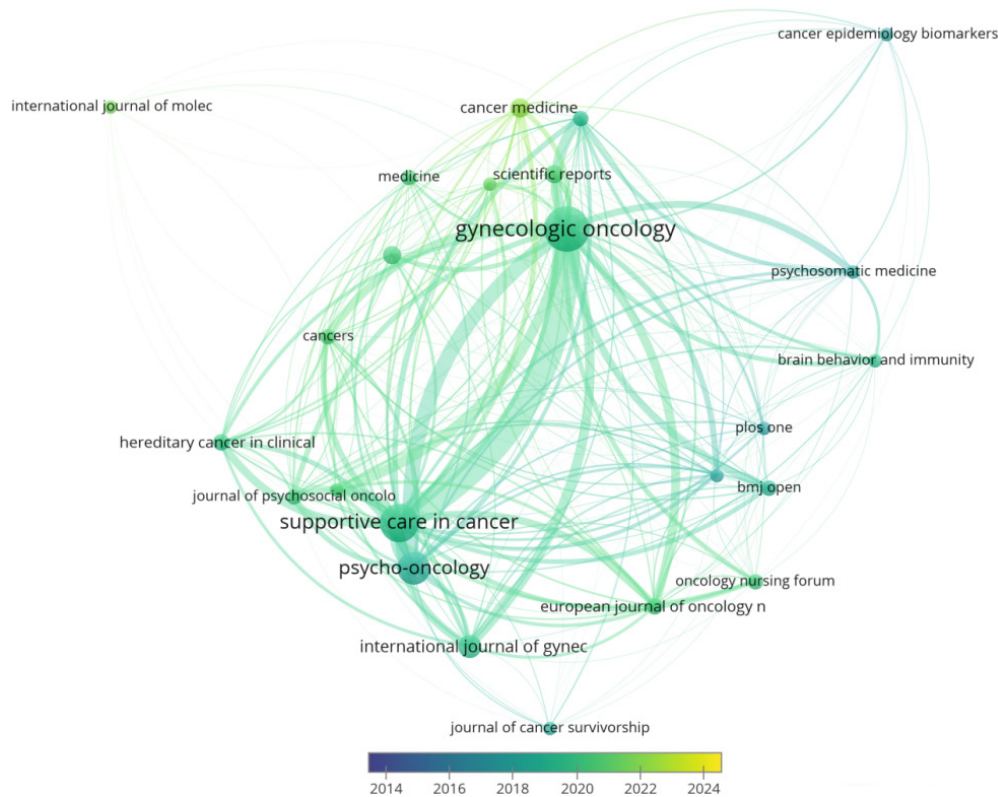


Figure 6. Timeline view of bibliographic coupling analysis of journals with more than 5 articles.

3.6 Analysis of references

A reference co-citation analysis was conducted on references cited more than 20 times, yielding a total of 24 eligible publications (**Figure 7A**). The top 10 most highly co-cited references are listed in **Table 1**. The most frequently cited article is “The hospital anxiety and depression scale” by A. S. Zigmond et al.[19], published in Acta Psychiatrica Scandinavica in 1983, with 111 citations and a TLS of 160 (**Figure 7A, Table 1**). Citation burst analysis of references was performed using CiteSpace, identifying the 10 references with the strongest citation bursts. The article “Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries” by Sung H et al.[20], published in CA: A Cancer Journal for Clinicians in 2021, exhibited the highest burst strength (strength = 7.07) and remains in an active burst phase (**Figure 7B**).

Table 1. The 10 most frequently referenced publications.

Title	Journal	First author	Year	Citation frequency	TLS
The hospital anxiety and depression scale	Acta Psychiatr Scand.	A.S. Zigmond	1983	111	160
They made you perfect: A test of the Social Reaction Model of Perfectionism	Aggress Behav	Claire Wilson	2015	47	79
Depression and anxiety in ovarian cancer: a systematic review and meta-analysis of prevalence rates	BMJ Open	Sam Watts	2015	42	85

Continuation Table:

Title	Journal	First author	Year	Citation frequency	TLS
Social support, anxiety and depression after chemotherapy for ovarian cancer: a prospective study	Br J Health Psychol	Jane Hipkins	2004	39	107
The Functional Assessment of Cancer Therapy scale: development and validation of the general measure	J Clin Oncol	D. F. Cella	1993	37	75
Impact of Event Scale: a measure of subjective stress	Psychosom Med	M.Horowitz	1979	33	75
The European Organization for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology	J Natl Cancer Inst	N. K. Aaronson	1993	31	46
Prevalence and predictors of anxiety and depression in women with invasive ovarian cancer and their caregivers	Med J Aust	Melanie A. Price	2010	28	82
Depression, anxiety, and quality of life in patients with epithelial ovarian cancer	Gynecol Oncol	D. Bodurka-Bervers	2000	27	76
Emotional distress following genetic testing for hereditary breast and ovarian cancer: a meta-analytic review	Health Psychol	Jada G. Hamilton	2009	26	47

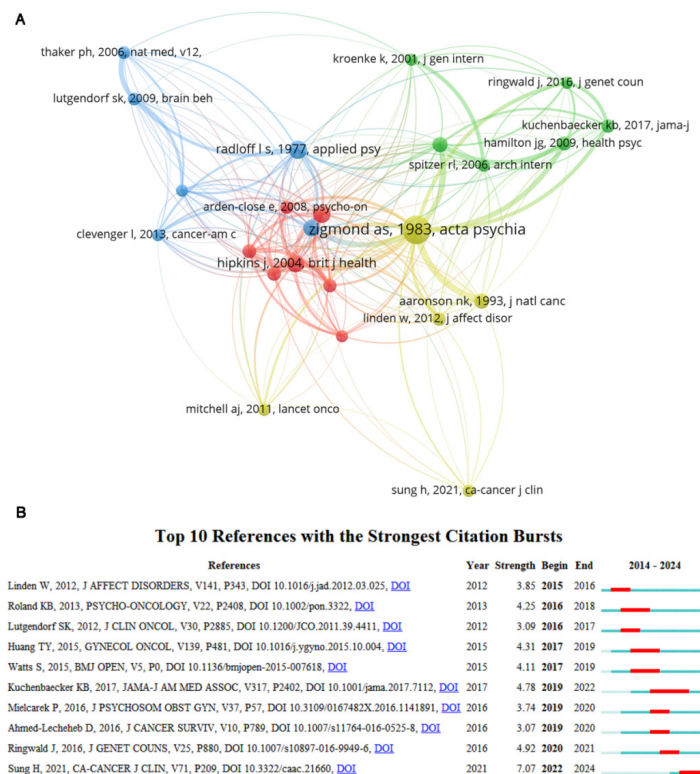


Figure 7. Reference Analysis. (A) Co-citation mapping of references cited more than 20 times. (B) Detection of citation bursts among references.

3.7 Keywords clustering

Using CiteSpace for keyword analysis, a total of 726 keywords were identified, with 77 keywords appearing more than 10 times (**Figure 8A**). Additionally, cluster analysis of all keywords was conducted via CiteSpace. Clustering based on keywords (WoS: since 1990) revealed 11 clusters, including genetic counseling, quality of life, angiogenesis, ovarian cancer, symptom management, neuroinflammation, acceptance and commitment therapy, information provision, cancer risk, menarche, and risk reduction (**Figure 8B**). Clustering based on title words revealed 13 clusters: genetic counseling, tumor microenvironment, social support, palliative care, mental health, menopause, cancer patients, ovarian cancer, cancer-related fatigue, cardiovascular risk, neuroinflammation, depressive disorders, and cohort studies (**Figure 8C**). Finally, clustering by subject categories yielded 13 categories: GENETICS & HEREDITY, CELL BIOLOGY, BIOMEDICAL SOCIAL SCIENCES, ONCOLOGY, PSYCHIATRY, ENDOCRINOLOGY & METABOLISM, INTEGRATIVE & COMPLEMENTARY MEDICINE, PEDIATRICS, NURSING, SURGERY, RESEARCH & EXPERIMENTAL MEDICINE, PHARMACOLOGY & PHARMACY, and MEDICINE, GENERAL & INTERNAL (**Figure 8D**). The “mean year” of each cluster reflects the average year of keyword occurrence within that cluster; a more recent mean year indicates a more cutting-edge research focus. The silhouette coefficient, with values closer to 1, signifies greater thematic coherence and content similarity within the cluster, indicating concentrated research interest. Notably, the cluster “risk reduction” had the most recent mean year (2021) and the highest silhouette value (0.971), highlighting it as a frontier and focal topic in the intersection of ovarian cancer and depression research (**Figure 8B, Table 2**).

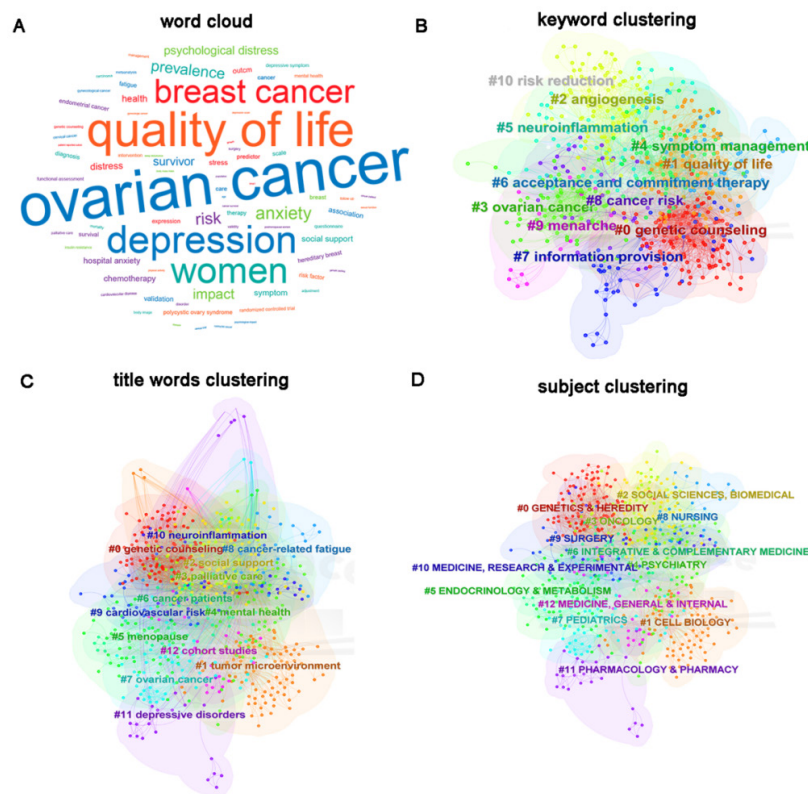


Figure 8. Keyword Clustering. (A) Word cloud of keywords with more than 10 occurrences. (B) Keyword clustering based on keywords (WoS: since 1990). (C) Keyword clustering based on title terms. (D) Keyword clustering based on subject categories

Table 2. Keyword clustering based on keywords (WoS: since 1990)

Cluster ID	Label	Size	Silhouette	mean(Year)
0	genetic counseling	117	0.809	2017
1	quality of life	115	0.656	2018
2	angiogenesis	110	0.757	2018
3	ovarian cancer	82	0.861	2018
4	symptom management	69	0.693	2017
5	neuroinflammation	50	0.857	2019
6	acceptance and commitment therapy	50	0.847	2020
7	information provision	48	0.881	2016
8	cancer risk	36	0.813	2018
9	menarche	17	0.949	2018
10	risk reduction	7	0.971	2021

3.8 Analysis of high-frequency keywords

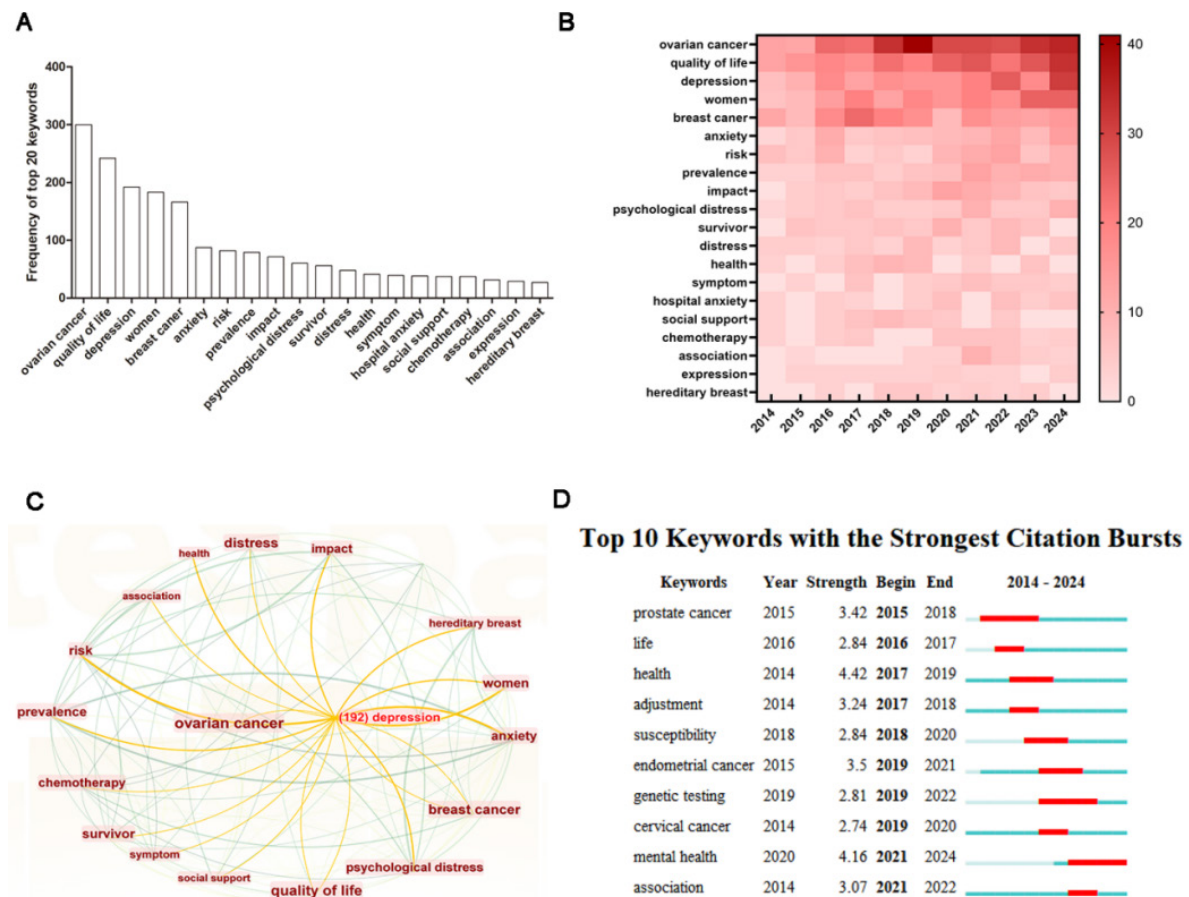


Figure 9. Analysis of high-frequency keywords. (A) The 20 most frequently occurring keywords. (B) Heatmap of annual frequency changes for the top 20 keywords. (C) Co-occurrence analysis of the top 20 keywords. (D) Citation burst analysis of keywords.

Subsequently, the 20 most frequently occurring keywords were identified from a corpus of 726 unique terms, including ovarian cancer, quality of life, depression, women, breast cancer, anxiety, risk, prevalence, impact, psychological distress, survivor, distress, health, symptom, hospital anxiety, social support, chemotherapy, association, expression, and hereditary breast (**Figure 9A**). The annual distribution of these high-frequency keywords was visualized via heatmap analysis (**Figure 9B**). Notably, terms associated with mental health—such as depression, anxiety, risk, psychological distress, and distress—displayed a pronounced temporal trend: their frequency declined substantially in 2023 relative to 2022, followed by a marked resurgence in 2024 (**Figure 9B**). Co-occurrence network analysis conducted with CiteSpace demonstrated that “depression” most frequently co-occurred with the keywords “anxiety” and “risk.” (**Figure 9C**). Additionally, robust co-occurrence relationships were observed between “risk” and “impact”, as well as between “anxiety” and “prevalence” (**Figure 9C**). Citation burst analysis of all keywords using CiteSpace revealed that “health” and “mental health” experienced the most significant citation bursts, with strengths of 4.42 and 4.16, respectively. Importantly, “mental health” continues to exhibit a citation burst in 2024 (2021–2024) (**Figure 9D**).

4. Discussion

4.1 Principal findings

This study employs bibliometric analysis to elucidate the dynamic developmental trends in the research field of depression and ovarian cancer from 2014 to 2024. Beyond mapping the publication landscape, our findings carry direct implications for clinical psycho-oncology practice: depression not only disrupts treatment adherence and prolongs hospitalization stays, but also exerts independent negative effects on survival outcomes and long-term survivorship adjustment, while severely impairing patients’ psychosocial well-being and quality of life. The data indicate that the annual publication volume increased by approximately 177% over this period, with growth primarily driven by original research articles, underscoring the sustained expansion of research activity in this domain. Notably, the annual publication output exhibited distinct phase characteristics: in 2016, there was a 56.25% increase compared to 2015, likely attributable to the disclosure of multiple clinical datasets on ovarian cancer and depression in 2015. For example, researchers from the University of Bergen, through a cross-sectional study utilizing questionnaires and medical record analysis, reported that 53% of gynecological cancer patients experienced cancer-related fatigue, which was significantly associated with anxiety, depression, and quality of life, with younger patients being more susceptible[21]. Scholars from Deakin University assessed post-traumatic stress disorder (PTSD) symptoms in 108 ovarian cancer patients and found that 9.25% exhibited significant PTSD symptoms; the severity of these symptoms correlated with decreased quality of life, depression, anxiety, and maladaptive coping strategies such as substance abuse, highlighting the clinical need to address psychosocial factors and integrate psychological interventions to mitigate trauma responses [22]. Additionally, researchers from National Taiwan University, using the Taiwan National Health Insurance Research Database, identified an elevated risk of ovarian cancer associated with antidepressant use in individuals under 50 years of age[23]. Although there was a temporary decline in publication volume in 2022, the number rebounded to 88 articles in 2023–2024, reflecting both the volatility and resilience of the field. From 2016 to 2023, publication output remained generally stable, suggesting a period of consolidation, during which scholars systematically

reviewed underlying mechanisms and therapeutic strategies. Collectively, these insights underscore the imperative of implementing routine depression screening using standardized tools, expanding evidence-based psychosocial interventions and supportive care services, and establishing integrated multidisciplinary management teams to optimize holistic outcomes for ovarian cancer patients.

Analysis of data on countries, institutions, and authors demonstrates the comprehensive dominance of the United States in the field of depression and ovarian cancer research, a position that is evident at the national, institutional, and author levels. At the national level, the United States leads globally in both publication volume and citation frequency, with an extensive international collaboration network encompassing countries such as Australia, Germany, and Denmark. This network has established the U.S. as a transregional knowledge production hub, further consolidating its academic influence. At the institutional level, U.S. institutions occupy the top three positions worldwide—University of California, Los Angeles; University of Iowa; and University of Washington—and drive cutting-edge research through close collaboration. In contrast, China ranks second in publication volume with 109 articles; however, while Chinese institutions are among the most productive, they have not established collaborations with major international research groups, and their international collaboration intensity is significantly lower than that of the U.S. This indicates a high degree of research independence but highlights a shortfall in global synergy. Future efforts should focus on strengthening resource integration through international joint funding and interdisciplinary alliances, such as oncology-psychiatry cross-disciplinary platforms, with particular emphasis on integrating highly productive but unilaterally operating institutions into the global collaborative network.

In terms of journal contributions, *Gynecologic Oncology* leads both in publication volume and citation frequency, underscoring its status as an authoritative journal with a concentrated focus on this research domain within gynecologic oncology. *Supportive Care in Cancer* and *Psycho-Oncology* rank second and third, respectively, highlighting the sustained significance of psychosocial support and mental health issues among cancer patients in this field. Bibliographic coupling analysis further reveals the strongest coupling strength between *Gynecologic Oncology* and *Supportive Care in Cancer*, indicating a profound thematic and methodological alignment that collectively forms the core knowledge dissemination network in this area. Notably, *Cancer Medicine*, as an emerging journal, has demonstrated a marked increase in recent publication output, likely attributable to its open access policy and receptiveness to interdisciplinary research, signaling a diversification of research paradigms within the field.

The analysis of journals and referenced papers plays a guiding role in article writing and submission. This study identifies the top 10 most-cited publications in the field, indicating their high authority and widespread recognition among researchers. Authors drafting articles in this domain are advised to thoroughly review these publications, as they provide robust evidence for citation. Furthermore, our analysis reveals that "Nature and Science of Sleep" has published a significant number of articles in this field over the past two years.

By integrating co-citation analysis and citation burst detection, this study systematically elucidates the evolution of the knowledge base and the migration of research hotspots in the field of depression and ovarian cancer. Core literature analysis indicates that "The Hospital Anxiety and Depression Scale" by A.S. Zigmond et al.

(1983) ranks first with 111 citations and TLS of 160 [19], underscoring its enduring influence as the gold standard for psychological assessment across disease contexts. In particular, the validation and cross-cultural adaptation of the HADS scale developed by Zigmond et al. remain foundational in the screening of depression among ovarian cancer patients. Highly cited literature clusters, such as D.F. Cella's Functional Assessment of Cancer Therapy (FACT) scale [24] and M. Horowitz's Impact of Event Scale [25], further demonstrate that classical psychometric instruments and quality of life research frameworks, including the EORTC QLQ-C30 [26], constitute methodological pillars in this domain. Citation burst analysis reveals a dynamic shift in recent research foci. Notably, "Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries" by Sung H et al. (2021) exhibits a burst strength of 7.07 and sustained prominence from 2022 to 2024, highlighting its pivotal role in the past three years [20]. This reflects the impetus provided by updated global epidemiological data on ovarian cancer for comorbidity research in depression, with particular emphasis on regional incidence disparities and the impact of socioeconomic factors on patients' mental health.

Through CiteSpace-based keyword clustering and high-frequency term analysis, the knowledge structure, research hotspot evolution, and interdisciplinary characteristics of the ovarian cancer and depression research domain were systematically elucidated. Keyword clustering identified 11 thematic clusters among 726 keywords (e.g., "risk reduction," "neuroinflammation," "quality of life"). Notably, results from different clustering algorithms demonstrated significant complementarity. For instance, "genetic counseling" and "ovarian cancer" emerged as core themes in both keyword and title term clusters, underscoring the centrality of genetic counseling within the intersection of ovarian cancer and depression research [27-30]. Furthermore, the keywords spanned 13 disciplinary categories, including genetics, oncology, psychiatry, and nursing, highlighting the field's pronounced interdisciplinarity. "Risk reduction" was identified as the most frontier-oriented and thematically concentrated direction; high-frequency term analysis also revealed a marked increase in the occurrence of "risk" in 2024, indicating a recent research focus on preventive interventions and targeted prevention strategies for ovarian cancer. The rise of "risk reduction" aligns with global cancer epidemiology data (e.g., GLOBOCAN 2020) and genetic counseling studies, reflecting growing attention to integrated prevention-intervention paradigms. Key research directions within "risk reduction" include depression risk stratification, optimization of preventive strategies for chemotherapy-related psychological toxicity, and the regulatory effects of lifestyle interventions on ovarian cancer incidence [15, 31, 32]. Notably, clusters such as "neuroinflammation," "symptom management," and "acceptance and commitment therapy" highlight the critical intersections between biological mechanisms, clinical symptom control, and novel psychotherapeutic interventions in psycho-oncology, providing a roadmap for holistic depression management in this patient population. These emergent trends are directly propelled by contemporary shifts in psycho-oncology, where the emphasis has evolved from purely reactive symptom management toward proactive survivorship care planning, precision genetic counseling for high-risk populations, and the establishment of preventive mental health frameworks within oncology setting

Dynamic analysis of high-frequency terms further revealed temporal fluctuations in research hotspots. Among the top 20 high-frequency terms, psychiatric-related keywords such as "depression," "anxiety," "risk," and "psychological distress"

experienced a brief decline in frequency in 2023, followed by a significant resurgence in 2024. This trend may reflect a post-COVID-19 pandemic recalibration of research priorities and the impetus of emerging intervention technologies [33]. Co-occurrence network analysis identified “depression-anxiety-risk” as the core co-occurrence cluster, with strong associations between “risk-impact” and “anxiety-prevalence,” suggesting heightened scholarly attention to the multifactorial risk determinants of depression—such as genetic predisposition and lack of social support—and their cascading effects on treatment outcomes [34, 35]. Additionally, “health” and “mental health” exhibited the highest citation burst intensities, with “mental health” maintaining a sustained burst through 2024, underscoring the elevated prioritization of mental health issues within oncological research. These findings carry direct implications for clinical psycho-oncology: the persistent prominence of mental health highlights the necessity of integrating routine psychosocial assessment into standard ovarian cancer care, as depression not only undermines treatment adherence and quality of life but also adversely affects long-term survivorship outcomes. Translating these bibliometric trends into practice may involve embedding validated screening tools within oncology workflows and developing targeted, multidisciplinary interventions that simultaneously address oncologic treatment and psychological well-being.

4.2 Limitations

Although this study systematically elucidates the research landscape of ovarian cancer and depression, several limitations remain. First, the bibliometric data are primarily derived from the Web of Science (WoS) database, selected for its comprehensive coverage of high-quality, peer-reviewed oncology and psychiatric literature as well as its standardized metadata essential for bibliometric analysis, although this reliance may result in the omission of relevant studies indexed in other databases or published in other languages, such as PubMed or the Chinese National Knowledge Infrastructure (CNKI). This reliance may introduce bias in the assessment of emerging research trends. Moreover, while bibliometric analysis excels at mapping knowledge structures and collaborative networks, it is inherently descriptive and cannot elucidate the underlying biological or psychological mechanisms linking these conditions. Second, bibliometric methods can only reveal the correlation between ovarian cancer and depression, without providing causal inference. To determine whether depression leads to ovarian cancer or vice versa, further investigation using alternative research designs, such as Mendelian randomization, is warranted to clarify the extent to which these associations may be causal.

5. Conclusion

In summary, the relationship between ovarian cancer and depression has garnered increasing scholarly attention. Utilizing bibliometric methods, this study systematically analyzes the current research landscape and collaborative networks among countries, institutions, and authors within this domain. Furthermore, it examines journals, cited references, and keywords to identify prevailing research hotspots. The findings elucidate the current state and emerging trends in this field, thereby providing clear directions for future research among scholars engaged in ovarian cancer and depression studies. Moving forward, priority should be given to validating targeted psychological interventions within multidisciplinary care models, implementing routine distress screening protocols across diverse clinical settings, and leveraging digital mental health approaches to enhance accessibility. Additionally,

the development of structured survivorship programs and well-designed longitudinal studies is crucial to elucidate the long-term trajectory of depression in this vulnerable population and to refine holistic care paradigms.

Author contributions: Conceptualization, DX; methodology, HL; software, HL; validation, DX; formal analysis, HL; investigation, YD; resources, HL; data curation, YD; writing—original draft preparation, HL; writing—review and editing, DX; visualization, HL; supervision, DX; project administration, DX; funding acquisition, DX. All authors have read and agreed to the published version of the manuscript.

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