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CiteSpace Visual Network Analysis of Research on Nurse-Led Nutritional Interventions for Gastrointestinal Cancer

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Abstract

Objective: This study explores the disciplinary layout, collaborative characteristics and developmental evolution of nurse-led nutritional interventions for gastrointestinal cancer, to provide reference for clinical standardized nutritional nursing and follow-up research. **Dataset:** Literature retrieval was performed on June 24, 2026 in Web of Science Core Collection, covering all records from database inception to the retrieval date with subject terms targeting gastrointestinal cancer, nurse-led intervention and nutritional support. Original articles and reviews were eligible for inclusion. Two researchers independently screened the retrieved literature, and inconsistent screening results were adjudicated by a third reviewer. Finally, 130 valid publications were incorporated into subsequent analysis. **Methods:** CiteSpace 6.3.R1 software was applied to implement visual network analysis. Author collaboration, institutional cooperation and keyword networks were explored via co-occurrence analysis, LLR clustering and citation burst detection. **Results:** Publications in this field were scarce before 2014 and achieved sustained rapid growth thereafter. Regional research clusters have been formed in Europe, North America and the Asia-Pacific region, whereas cross-continental research cooperation remains insufficient. Harvard-affiliated institutions, the University of Sydney, Sun Yat-sen University and Nanjing Medical University are the main high-output research institutions. The development of this field can be divided into three evolutionary stages, and the current cutting-edge research topics focus on gastric cancer, quality of life and immune function. **Conclusion:** Perioperative continuous nutritional management and post-discharge digital follow-up constitute the core practical orientation of this field. Sarcopenia and

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patient-reported outcomes act as core indicators to evaluate nursing intervention efficacy. Future research can carry out international multi-center trials, verify the applicability of GLIM criteria in Asian populations, standardize the ethical application of artificial intelligence, and construct patient-reported outcome-based evaluation systems for nurse-led nutritional care pathways.

Keywords

Gastrointestinal Cancer, Nurse-Led Intervention, Nutritional Support, CiteSpace, Visual Network Analysis

1. Introduction

Gastrointestinal (GI) cancer constitutes one of the most burdensome cancer categories globally. According to GLOBOCAN 2022 statistics, there were approximately 1.93 million new colorectal cancer cases and 0.96 million new gastric cancer cases worldwide; combined, these two malignancies account for over 15% of the global cancer incidence burden [1]. East Asia bears an especially severe disease burden, where gastric and colorectal cancers consistently rank among the top malignancies in both incidence and mortality rates [2].

Malnutrition occurs in 30% - 80% of patients diagnosed with GI cancer [3]. Multiple pathogenic factors contribute to nutritional deterioration, including tumor metabolic consumption, gastrointestinal mechanical obstruction, nutrient absorption dysfunction, anti-tumor treatment-related toxic side effects, and prolonged perioperative fasting. The adverse impacts of malnutrition extend far beyond simple weight loss: it significantly increases risks of anastomotic leakage, postoperative pulmonary infection, prolonged hospital stay, poor chemotherapy tolerance, and shortened overall survival. Both the European Society for Clinical Nutrition and Metabolism (ESPEN) and American Society for Parenteral and Enteral Nutrition (ASPEN) have recognized nutritional support as an indispensable core component of oncological treatment rather than an auxiliary supplementary measure [3] [4].

Nurses occupy an irreplaceable central position in the whole-process nutritional management of GI cancer patients. They implement nutritional risk screening upon admission, execute standardized perioperative care protocols, deliver bedside health education, administer enteral and parenteral nutrition, and provide long-term community follow-up after hospital discharge [5]. Cumulative evidence from randomized controlled trials confirms that nurse-led dietary counseling, standardized symptom intervention, and mobile health (mHealth) nutritional management can effectively improve patients' nutritional status, quality of life, and disease-related symptom burden after GI cancer surgery [6]-[8]. Despite the rapidly expanding body of relevant literature, no systematic visual network analysis has been conducted to clarify the evolutionary trajectory of this field, resulting in insufficient evidence to identify consistent research streams and un-

addressed research gaps.

CiteSpace, a visual network analysis tool developed by Chen Chaomei, enables comprehensive domain analysis by mapping co-authorship networks, keyword co-occurrence relationships, and temporal burst trends of research topics within a literature corpus [9] [10]. The present study adopts CiteSpace to analyze literature retrieved from the Web of Science Core Collection to address three core research questions: 1) How has the research field of nurse-led nutritional interventions for GI cancer evolved over time? 2) What is the current structural distribution of research themes in this domain? 3) Which research directions will become explorable priorities in future research?

2. Materials and Methods

2.1. Data Source and Search Strategy

The search strategy intentionally focused on gastric, colorectal, and intestinal cancers, where nurse-led nutritional interventions are most documented. Hepatobiliary and pancreatic malignancies were excluded due to distinct clinical and nutritional management pathways. Consequently, findings reflect the luminal GI cancer landscape and should be interpreted within this scope.

The exact topic search query used in the Web of Science Core Collection was:

TS = ((gastrointestinal cancer OR digestive tract cancer OR gastric cancer OR colorectal cancer OR intestinal cancer) AND (nurse-led OR nursing-led OR nurse intervention OR nursing intervention) AND (nutrition support OR nutritional intervention OR nutritional care OR dietary intervention OR nutritional management)).

The search was conducted on June 24, 2026, covering the entire database from inception to the search date. This search yielded an initial total of 138 records. Document types were restricted to original Articles and Reviews, with no language limitations imposed.

2.2. Inclusion and Exclusion Criteria

Eligibility criteria were tailored separately for primary studies and reviews:

For Original Articles: 1) Study population consisted of adult patients with histopathologically confirmed GI malignant tumors; 2) Nurses played an independent leading or substantial role in nutritional risk screening, assessment, or whole-process intervention; 3) Empirical research designs including RCTs, quasi-experimental studies, and observational cohorts.

For Review Articles: 1) Focused exclusively on nurse-led or nursing-involved nutritional interventions for GI cancer patients; 2) Included systematic reviews, meta-analyses, and scoping reviews that synthesized primary empirical evidence.

Exclusion Criteria: Conference abstracts, editorials, correspondence, news items, errata, duplicate publications, and reviews lacking explicit focus on nursing roles in nutritional care.

2.3. Literature Screening and Data Analysis

After removing duplicates, 136 records remained for title and abstract screening, of which 3 were excluded. Full-text assessment was then performed on the remaining 133 articles, leading to the exclusion of 3 additional records. The final dataset comprised 130 eligible publications, consisting of 107 original articles and 23 reviews.

Original articles and reviews were analyzed jointly, as reviews serve as pivotal knowledge synthesis nodes in this emerging field. Separating them would obscure their role in shaping keyword bursts and cluster labels. Although reviews may disproportionately influence co-authorship networks, integrated analysis better captures the field's holistic knowledge structure and evolutionary trajectory.

2.4. Data Preprocessing and Parameter Justification

Prior to CiteSpace import, data cleaning was performed: 1) Keyword synonyms and singular/plural variants were merged manually (e.g., "colorectal cancer" and "colorectal neoplasms"; "quality of life" and "QoL"); 2) Author and institution names were standardized to resolve spelling inconsistencies and affiliation changes; 3) Non-standard abbreviations were corrected. The g-index (k = 25) was selected to balance network coverage and readability, while combined Pathfinder/MST pruning was chosen to retain essential structural links while removing redundant connections. Sensitivity testing confirmed that core clustering results remained stable across varying pruning thresholds and filtering parameters, supporting the robustness of the reported network structures.

3. Results

3.1. Publication Trajectory

As shown in **Figure 1**. From 2000 to 2014, annual publication output remained low, with an average of fewer than three papers per year. Minor publication peaks appeared in 2015 (6 papers), 2017 (7 papers) and 2019 (7 papers). A clear inflection point emerged in 2020, with annual publications rising steadily from 11 to 14 by 2024 and reaching an all-time peak of 25 papers in 2025. The 8 publications recorded in 2026 only represent literature indexed up to the retrieval date in mid-2026, and thus do not reflect the full annual output.

The developmental timeline of this field can be divided into three distinct phases: the embryonic stage (2000-2014), steady growth stage (2015-2021), and rapid acceleration stage (2022-present). The rise in publications in 2015 coincided with the release of ESPEN clinical nutrition guidelines and wide clinical adoption of ERAS protocols for gastric and colorectal surgery. The rapid post-2022 growth may be associated with global promotion of the GLIM malnutrition diagnostic criteria, as well as expanding nursing research outputs across the Asia-Pacific, especially Chinese mainland. The roughly 3.6-fold increase in annual publications between 2019 (7 papers) and 2025 (25 papers) indicates a fundamental maturation of the research field rather than minor incremental growth.

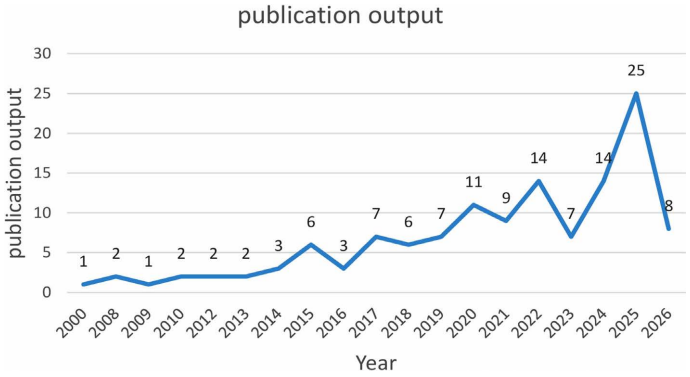

Figure 1. Annual publication trend of nurse-led nutritional intervention research on gastrointestinal cancer (2000-2026).

3.2. Author Collaboration Network

As shown in **Figure 2**. Multiple independent, tightly connected author clusters were identified, with limited cross-group communication.

European research cluster centered on Radboud University (Huisman-de Waal, van Noort, Vermeulen): primary focus on perioperative nutritional assessment for GI cancer patients;

UK research group led by Burden: influential studies on home-based nutritional support after colorectal cancer resection;

Harvard-affiliated research team (Giovannucci, Ogino, Chan, Wu, Fuchs): integrates nutritional epidemiology and long-term cancer survivor nutritional care;

Asia-Pacific research consortium (Yoon, Cao, Wang, Luan, Lai): dominates recent studies on post-gastrectomy nutritional management and mHealth intervention programs.

Intra-cluster cooperative relationships were robust, while cross-cluster and transnational collaborative links were extremely sparse.

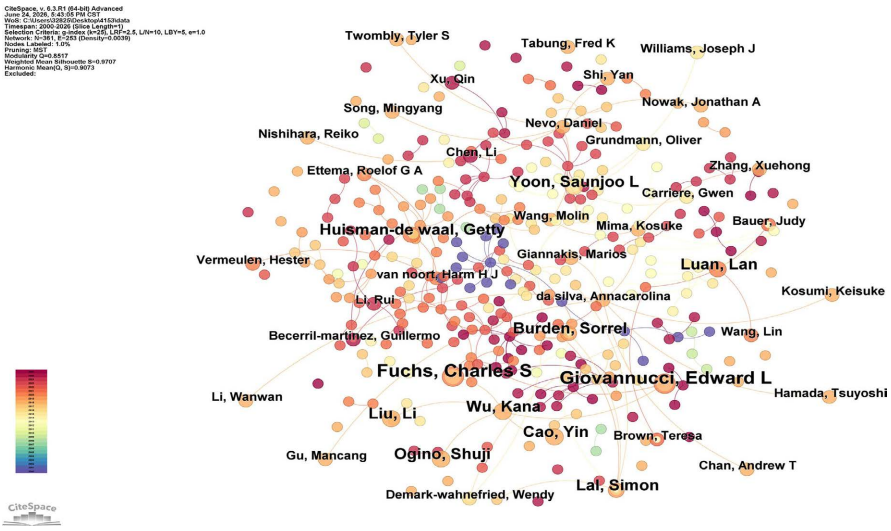

Figure 2. Author collaboration network of nurse-led nutritional intervention research on gastrointestinal cancer.

3.3. Institutional Collaboration Network

As shown in Figure 3. Institutional publication distribution exhibited obvious geographical clustering characteristics.

The largest research hub consisted of Harvard-affiliated institutions, including Harvard Medical School, Harvard T.H. Chan School of Public Health, Brigham and Women's Hospital, Dana-Farber Cancer Institute, and Massachusetts General Hospital. The second major cluster centered on the University of Sydney in collaboration with Cancer Council New South Wales. Multiple Chinese academic institutions (Sun Yat-sen University, Nanjing Medical University, Huazhong University of Science and Technology, Xuzhou Medical University, Shanghai Jiao Tong University, and Shanxi Medical University) formed a fast-growing East Asian research hub. European research forces were mainly concentrated at Radboud University, Utrecht University, Wageningen University and Salford University. Overall, cross-national institutional cooperation remained insufficient across all geographic regions.

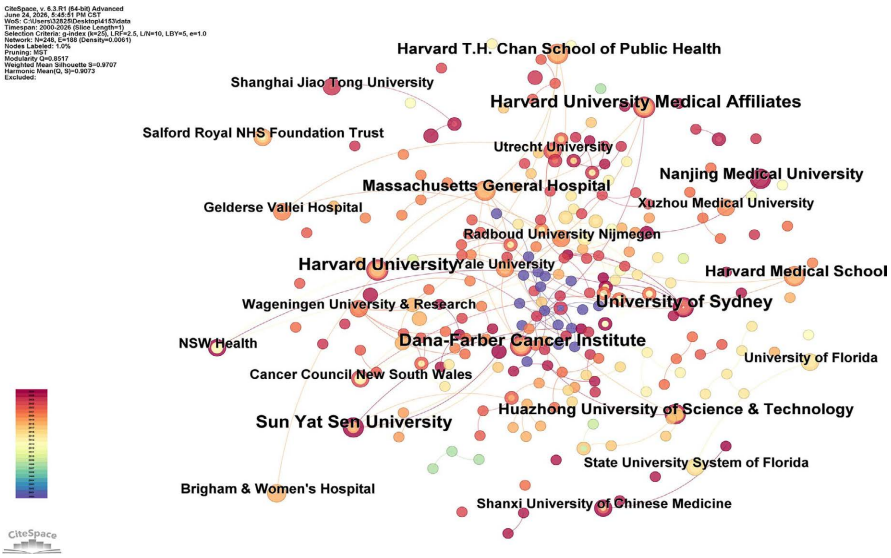

Figure 3. Institutional collaboration network of nurse-led nutritional intervention research on gastrointestinal cancer.

3.4. Keyword Co-Occurrence Analysis

As shown in Figure 4. The keyword co-occurrence network formed an interconnected network structure with distinct core nodes. High-frequency keywords fell into four categories:

Disease categories: gastric cancer, colorectal cancer, esophageal cancer;

Intervention modalities: nutritional support, enteral nutrition, early enteral nutrition, ERAS, nursing intervention, preoperative care, oral nutritional supplements;

Clinical outcome indicators: quality of life, nutritional status, immune function, body weight, handgrip strength, gastrointestinal function, patient satisfaction;

Research populations and methodologies: cancer survivors, family caregivers, systematic review.

Nutritional status, quality of life and immune function possessed the highest betweenness centrality values, representing core connecting nodes of the entire research network.

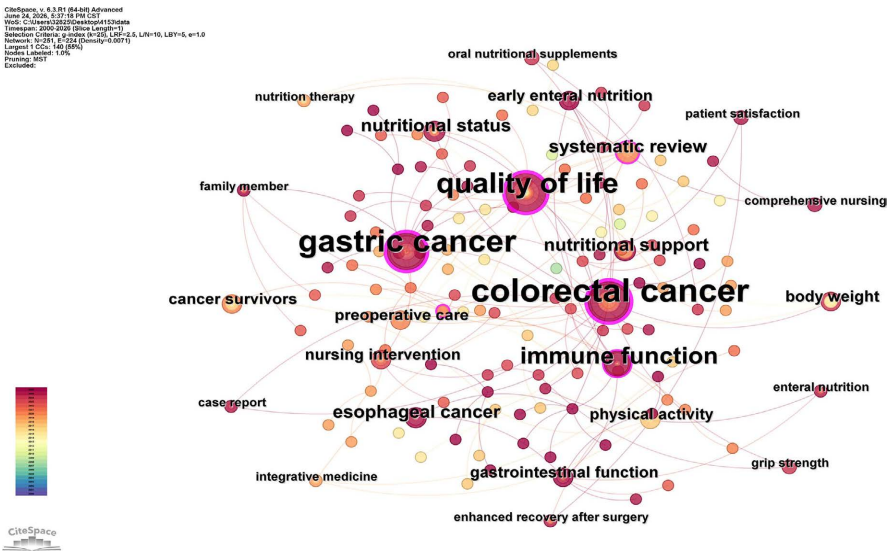

Figure 4. Keyword co-occurrence network of nurse-led nutritional intervention research on gastrointestinal cancer.

3.5. Keyword Clustering Analysis

As shown in Figure 5. Clustering analysis generated stable, interpretable research clusters with good structural consistency. Seven major keyword clusters were extracted:

0) Colorectal cancer (largest cluster): perioperative nutritional management and ERAS implementation;

1) Gastrointestinal function: early oral feeding and postoperative gastrointestinal functional recovery;

2) Gastric cancer: post-gastrectomy nutritional support and oral nutritional supplement application;

3) Quality of life: patient-reported outcome measurement;

4) Systematic review: evidence synthesis research emerging after 2018;

5) Body weight: sarcopenia screening and GLIM phenotypic diagnostic criteria;

6) Natural health products: immunomodulatory nutritional supplementary agents.

3.6. Keyword Burst Detection

As shown in Figure 6. A total of 25 burst keywords were detected, grouped into three chronological research waves:

First wave (2015-2017): physical activity (burst strength = 1.68), unintentional

weight loss (1.28), bioelectrical impedance analysis (1.28), cancer survivors (1.07);

Second wave (2018-2021): systematic review (2.01), comprehensive nursing care (1.60), preoperative care (1.60), nutritional support (1.44);

Third wave (2022-present, current frontier): gastric cancer (2.08), quality of life (1.90), immune function (1.87), early enteral nutrition (1.39), oral nutritional supplements (1.21), handgrip strength (1.21), patient satisfaction (1.08), comprehensive nursing (1.08).

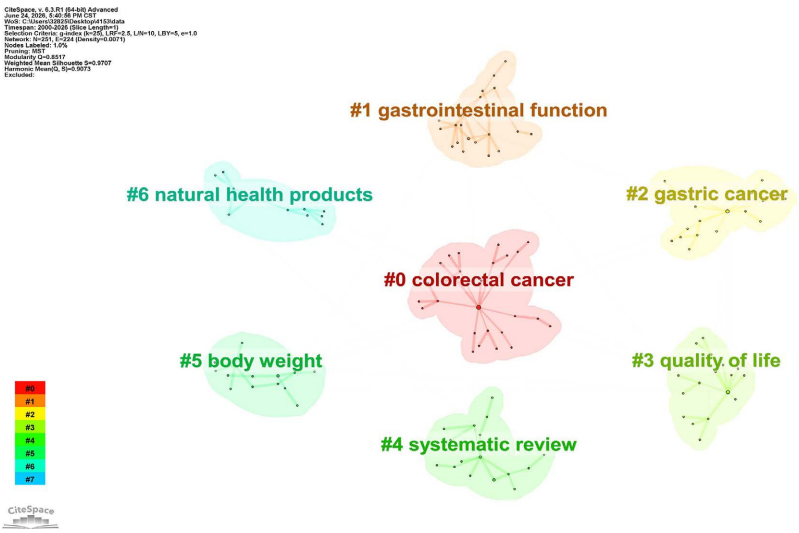

Figure 5. Keyword clustering analysis of nurse-led nutritional intervention research on gastrointestinal cancer.

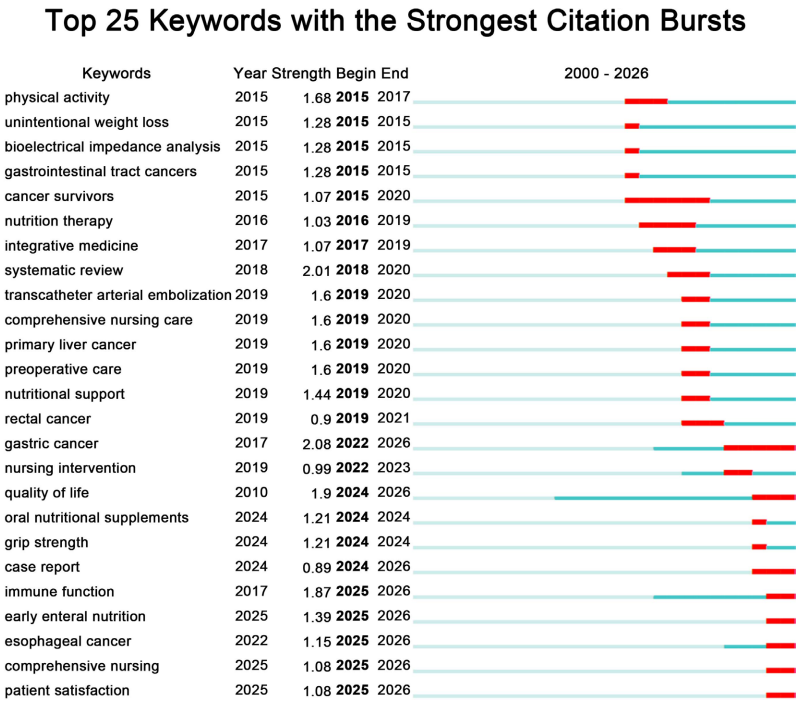

Figure 6. Top 25 keywords with the strongest citation bursts in nurse-led nutritional intervention research on gastrointestinal cancer.

4. Discussion

Over the past 26 years, nursing research on GI cancer nutrition appears to have evolved through three phases. During 2000-2014, studies were surgeon- and dietitian-led, with nurses as secondary contributors. The post-2015 publication increase coincided with ESPEN guidelines and ERAS recommendations [3], likely facilitating expanded nursing roles in nutritional screening and perioperative feeding. Similarly, the 2018 GLIM consensus may have contributed to unified diagnostic terminology [11]. Since 2022, surging output—particularly from China—may reflect expanded graduate training, evidence-based education, and improved publication channels, though direct causal links cannot be established from bibliometric data alone.

Collaboratively, intra-national networks are mature but cross-continental partnerships remain scarce. Reliance on single-center small-sample trials limits guideline generalizability and increases publication bias risk, consistent with prior oncology nutrition bibliometrics [12]. Future international nursing consortia should integrate fragmented data to generate high-grade evidence for clinical practice.

Beyond identifying themes, analyzing underlying mechanisms is critical. The five core research themes share four drivers: urgent clinical demand, guideline-driven standardization, nursing care continuity, and clinical operability, whose unique combinations shape each research stream.

4.1. Core Interpretation of Main Research Themes

4.1.1. Perioperative Continuous Nutritional Care

Perioperative nutritional management remains the dominant research focus for three interconnected reasons. First, malnutrition directly increases postoperative complication risks in GI cancer patients, with robust causal evidence confirmed by multiple clinical studies [3] [4]. Second, DRG and DIP payment reform systems tie complication rates and hospital stay duration to institutional performance assessment, which may bring tangible economic benefits to standardized nutritional management beyond clinical gains. Third, nurses are the only clinical workforce responsible for patient care throughout the full admission-to-discharge continuum [13]-[15]. These factors generate quantifiable clinical outcomes, standardized operational procedures, and verifiable research hypotheses, accelerating cumulative evidence production. This explains why colorectal cancer forms the primary anchor of the keyword network, and ERAS-related terms continuously appear in recent burst keyword analyses.

4.1.2. Nutritional Screening and Localized GLIM Implementation

Nutritional screening and GLIM criterion application remain persistent research themes due to nursing's pursuit of independent clinical decision-making authority. Traditional screening tools (NRS-2002, MUST) only identify malnutrition risk without formal diagnosis; PG-SGA achieves definitive diagnosis but requires lengthy assessment time [16]. The two-step GLIM framework allows nurses to complete

bedside malnutrition diagnosis within minutes without relying on physicians or dietitians for diagnostic confirmation. However, the muscle mass evaluation criteria embedded in GLIM demonstrate poor population adaptability for Asian GI cancer patients [17]. This unresolved clinical issue explains the emergence of handgrip strength as a 2024 burst keyword and the widespread use of calf circumference as a practical bedside surrogate marker for muscle mass assessment.

4.1.3. Enteral Immunonutrition

Immunomodulatory enteral nutrition maintains sustained research attention based on three practical foundations: commercially available specialized formulations enriched with arginine, omega-3 fatty acids and glutamine; meta-analytic evidence demonstrating a 25% - 40% reduction in postoperative infectious complications [18] [19], and heavy reliance on nursing proficiency for successful implementation. Outstanding unresolved questions regarding administration timing, perioperative versus preoperative-only application, and optimal dosing indicate that intervention efficacy depends more on standardized nursing execution (formula preparation, infusion rate adjustment, adverse intolerance monitoring) than the nutritional formulation itself.

4.1.4. mHealth and Digital Post-Discharge Interventions

Digital nutritional interventions fill an unmet gap in clinical service delivery rather than representing purely technological innovation. Most Asian GI cancer patients receive 7 - 10 days of inpatient treatment, yet nutritional recovery extends over several months post-discharge. Widespread smartphone penetration (exceeding 90%) and policy recognition of remote nursing follow-up create favorable conditions for digital care implementation [6]-[8]. Representative studies by Jiang *et al.* [8] and the CANCER-AIMS program developed by Ren *et al.* [7] deliver value not through novel technological tools, but by standardizing individualized nutritional assessment, scheduled remote follow-up, and standardized escalation protocols, converting experiential follow-up into replicable nurse-led intervention frameworks.

4.1.5. Sarcopenia and Body Composition Assessment

Research focusing on sarcopenia and body composition measurement signals a paradigm shift in clinical outcome evaluation, shifting assessment focus from simple dietary intake adequacy to functional physical recovery. Population aging increases the proportion of elderly GI cancer patients, among whom sarcopenia prevalence exceeds 40% [20]. Accessible routine assessment tools (CT skeletal muscle quantification, bioelectrical impedance analysis, bedside handgrip dynamometry) and value-based healthcare frameworks prioritize functional outcomes alongside traditional endpoints (complication rates, length of hospital stay). A prospective cohort study by Xu *et al.* confirmed that patients with GLIM-defined severe malnutrition carry a 2.5-fold higher risk of sarcopenia [21] [22], integrating sarcopenia screening into nursing's standard nutritional screening-intervention-follow-

up workflow.

4.2. Clinical Implications Derived from Evolving Research Trends

Based on the identified research themes and evolutionary trajectories, the following implications are proposed for clinical consideration. These represent interpretive suggestions derived from literature analysis rather than direct empirical findings:

Mandatory nutritional screening within 24 hours of admission

Embed validated screening tools (NRS-2002, PG-SGA, MUST) into electronic medical record workflows. Establish ward-level quality indicators including screening completion rate, consultation timeliness for high-risk patients, and regular reassessment intervals (every 7 days or prior to major anti-tumor treatment cycles).

Construct integrated perioperative nutritional management chains

Implement sequential standardized interventions: oral nutritional supplements or enteral feeding 7 - 14 days preoperatively for high-malnutrition-risk patients; uniform preoperative carbohydrate beverage administration 2 hours before surgery; progressive oral/enteral nutrition initiation within 6 - 24 hours postoperatively; customized written nutritional discharge plans for all patients. Core monitoring indicators include energy and protein intake target compliance, time to first postoperative enteral feeding, and post-discharge body weight maintenance [13]-[15].

Develop individualized, culturally adaptive health education

Tailor educational materials to patient health literacy (graphical visual aids for low-literacy populations) and accommodate religious dietary restrictions and family cooking habits. Conduct joint education sessions with primary family caregivers, plus simulated home meal training 48 hours before discharge to improve long-term dietary adherence [6] [7].

Standardize immunonutrition clinical operations

Master formulation dilution specifications, initial infusion rates (20 - 30 mL/h with gradual incremental adjustment, temperature control, intolerance identification, and standardized emergency response protocols). Reach pre-agreed administration timing consensus with multidisciplinary dietitian and surgical teams.

Establish sustainable digital post-discharge follow-up systems

Stratify intervention platforms by patient age: dedicated mobile applications or WeChat mini-programs for younger patients; telephone follow-up supported by family caregivers for elderly populations. Set objective warning thresholds: >2% unintentional weight loss within 7 days, or continuous 3-day dietary intake below 60% of energy targets, with pre-defined escalation workflows for abnormal nutritional status [8].

4.3. Future Research Frontiers

Four research directions warrant concentrated investment from nursing research-

ers:

Multimodal nutritional prehabilitation

Prehabilitation has evolved from isolated preoperative protein supplementation into integrated three-dimensional intervention combining nutrition, resistance exercise and psychological support. The core unresolved research question no longer concerns intervention efficacy, but the optimal combined dosage and implementation cycle stratified by cancer subtype and treatment intensity [23]. Nurses maintain frequent preoperative contact with patients, positioning them as ideal coordinators to ensure long-term intervention adherence.

GLIM criterion localization and electronic workflow integration

Large-scale multi-center prospective trials are required to verify population-specific muscle mass cutoff values across CT skeletal muscle index, bioelectrical impedance, calf circumference and handgrip strength for Asian GI cancer patients. Validated reference thresholds should be embedded within nursing assessment forms and electronic medical records rather than limited to research datasets [24].

Advanced clinical artificial intelligence application

Research should move beyond basic nutritional risk prediction models to develop natural language processing algorithms for nursing note analysis, cross-modal predictive systems integrating laboratory data, body composition metrics and symptom trajectories, and closed-loop verification frameworks for AI decision support under standardized algorithmic governance [25].

patient-reported outcomes (PROM)-centered evaluation of nursing intervention value

Persistent high burst strength of quality of life (1.90) and patient satisfaction (1.08) highlights the critical role of patient-reported outcomes. Future studies should combine patient-reported outcomes PROM with traditional nutritional endpoints in composite analyses to quantify tangible, reimbursable nursing value recognized by medical payers and healthcare policymakers.

4.4. Study Limitations

Three limitations constrain the interpretation of this bibliometric analysis:

First, restricted database coverage: Only the Web of Science Core Collection was retrieved, excluding PubMed, Embase, CINAHL, and Chinese domestic databases. This omission may underestimate the total volume of clinical nursing studies, especially manuscripts published exclusively in Chinese. Second, descriptive limitations of bibliometrics: Network visualization only maps domain research distribution and cannot replace systematic reviews to evaluate the clinical efficacy of specific nutritional interventions. Third, absence of methodological quality appraisal: This study did not assess the evidence grade or research quality of individual included publications; keyword clustering and burst trends reflect citation frequency patterns rather than clinical reliability of primary studies. Subsequent mixed-method research combining multi-database systematic reviews,

grounded theory analysis of intervention design, and implementation science evaluation will address these limitations and convert the descriptive research landscape into actionable clinical guidance.

5. Conclusions

Visualization analysis of 130 publications spanning 26 years yields multi-layered implications for disciplinary development, clinical practice, research design, and nursing education policy.

Disciplinarily, nurse-led GI cancer nutritional intervention research has progressed through three evolutionary stages: tool-oriented basic practice, systematic clinical pathway construction, and current evidence-value integrated nursing. Nurses have transitioned from passive treatment implementers to independent intervention designers, process standardization supervisors, and clinical outcome stewards. This role transformation demands four core nursing competencies: clinical nutritional judgment, evidence appraisal, standardized clinical pathway design, and digital health literacy.

Clinically, the dual-cycle care framework forms the core operational backbone: standardized perioperative inpatient nutritional management paired with long-term digital post-discharge follow-up. The five actionable clinical recommendations outlined above provide a feasible implementation roadmap. A composite nursing quality dashboard integrating screening coverage, high-risk patient consultation rates, energy-protein target compliance, time to initial postoperative feeding, weight maintenance, and PROM scores aligns ward-level daily practice with cutting-edge research endpoints.

For academic research, the most urgent developmental bottleneck is the prevalence of single-center small-sample trials. Nursing academia should establish international multi-center research alliances, prioritizing four high-value research streams: GLIM criterion validation in Asian populations, multimodal nutritional prehabilitation, ethical AI-assisted clinical decision support, and PROM-based quantification of nursing intervention value. A three-track research matrix combining randomized controlled trials, implementation science studies, and real-world data analysis generates evidence with both internal validity and policy translational potential, driving updates to international clinical nutrition guidelines.

For nursing education and healthcare policy, oncology nutritional care curricula should be embedded across undergraduate and postgraduate nursing training systems. Formal specialized certification programs for oncology nutrition and ERAS nursing specialists should be established, with nutritional care performance linked to hospital reimbursement and institutional quality assessment systems. Only through aligned integration of clinical evidence, standardized care pathways, professional education, and supportive healthcare policies can nurse-led nutritional interventions evolve from a niche research theme into sustainable mainstream clinical practice, delivering guideline-concordant, individualized continu-

ous nutritional support that comprehensively improves GI cancer patients' nutritional status, physical function and overall quality of life.

Ethics Statement

This study adopts visual network analysis based solely on publicly published literature. No human participants, animals, or identifiable private data were involved. Therefore, ethical approval and informed consent were not required.

Author Contributions

Conceptualization, W.Y.X. and H.W.L.; methodology, W.Y.X. and L.X.C.; software, W.Y.X.; validation, W.Y.X., L.X.C. and H.W.L.; formal analysis, W.Y.X.; investigation, W.Y.X. and L.X.C.; data curation, W.Y.X. and L.X.C.; visualization, W.Y.X.; writing—original draft preparation, W.Y.X.; writing—review and editing, L.X.C. and H.W.L.; supervision, H.W.L. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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