

English for Medical Purposes: Fundamentals of Bibliometric Analysis

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Abstract

English for Medical Purposes (EMP) is becoming necessary for healthcare professionals in academics and communication. Bibliometric analysis on EMP is a quantitative approach to study publications in EMP to know the trends, identify gaps and know the discipline's impact and productivity. The paper discusses the significance of the bibliometric analysis for EMP, brings out the widely used bibliometric indicators, analysis, and tools and presents the steps in the analysis. It concludes by touching on the implications of bibliometric analysis for EMP pedagogy.

Keywords: Bibliometric analysis, English for Medical Purposes (EMP), English for Specific Purposes (ESP)

Introduction

English for Specific Purposes (ESP) is a specialized approach focused on teaching a specific genre of English to learners with specific goals (Georgy, 2023). Unlike General English, which provides a broad foundation of English language skills, ESP tailors language instruction to meet the specific requirements of learners in their chosen professional domains. English is today's lingua franca of medical international communication, the same as Greek and Latin were in the past; therefore, it is an essential prerequisite for a medical career (Pavel, 2014). English for Medical Purposes (EMP) is a specialized branch of English for Specific Purposes (ESP) that is concerned with teaching and developing English language skills specifically for healthcare professionals and students in the medical field. EMP aims to enhance communication within medical contexts and

facilitate effective interaction between healthcare professionals, patients, and colleagues. Besides EMP for academics and communication, studies in the United Kingdom have pointed to it as an indicator of workplace readiness because nurses and midwives must mandatorily undergo a language competency test before registration (Allum, n.d).

Bibliometrics is the quantitative study of academic publishing to describe publishing trends and highlight relationships between published works (Ninkov et al., 2022). Bibliometrics has been used in medical research (Diekhoff, 2013; Kumar et al., 2022; Yang et al., 2022) and in English for academic purposes (Hyland & Jiang, 2021). However, there are a few studies on applying bibliometric analysis in EMP. This gap creates a need for discussing the bibliometric approach to EMP. This paper responds to the gap by discussing the significance of the bibliometric analysis for EMP, discussing the indicators, tools and steps involved in the analysis. A bibliometric analysis of EMP involves examining the scholarly literature on the use of English in the medical domain for informing curriculum development, improving language teaching methodologies, and meeting the language needs of medical professionals. In the framework of this understanding of the relationship between EMP and bibliometrics, this paper aims to address the following questions:

1. What is the significance of bibliometric analysis in EMP?
2. What are the common bibliometric indicators, analysis and tools used to analyze publications in EMP?
3. What are the steps in bibliometric analysis in EMP?

Significance of Bibliometric Analysis in EMP

Bibliometric analysis plays a significant role in EMP, although its direct relevance and impact vary depending on the specific research goals and objectives. The application of bibliometric analysis in EMP can provide valuable insights into trends and assess the impact of research outputs, identify gaps in the knowledge field, identify emerging areas of studies, identify influential institutions and researchers, evaluate the productivity of researchers or institutions and assess the impact of funding programmes and policies. However, it is imperative to acknowledge that bibliometric analysis should be used with other research methods, such as qualitative research and needs analysis, to gain a holistic understanding of EMP pedagogy and the needs of learners.

Bibliometric Indicators, Analysis and Tools for EMP Studies

Bibliometric Indicators

A few frequently used bibliometric indicators include:

- **Citation Count:** The number of times a publication has been cited by other works, reflecting a paper's influence or visibility within the scientific community.
- **H-index:** A measure of a researcher's productivity and citation impact.
- **Journal Impact Factor:** A measure of the average number of citations received by articles published in a particular journal that indicates a journal's relative importance or prestige within its field.
- **Co-authorship Analysis:** Examining patterns of collaboration between authors to identify research networks and collaborations.
- **Keyword Analysis:** Analysing the occurrence and frequency of specific keywords to identify research themes, trends, or emerging areas.

Bibliometric Analysis

Bibliometric analysis is the use of quantitative techniques to bibliographic data. Generally, there are two kinds of bibliometric analysis—performance analysis and science mapping analysis (Donthu et al., 2021, p. 287). Performance analysis refers to the contribution of research constituents (e.g., Total number of co-authored papers). In contrast, science mapping refers to contributions between research constituents (e.g., relationships among topic and year of publications). While science mapping analysis includes performance analysis, performance analysis does not include science mapping analysis.

The analyses that are generally used are:

- **Citation Analysis:** This analysis analyzes citations to identify highly cited papers and influential authors in EMP and determine citation trends over time to observe the impact and evolution of EMP research.
- **Co-citation Analysis:** Performing co-citation analysis to identify EMP's key concepts, themes, and intellectual structures and identifying frequently co-cited authors, indicating influential

researchers and their contributions. This analysis assumes that similarly cited publications are thematically similar.

- **Bibliographic Coupling Analysis:** This analysis assumes that publications with common references are similar in their contents. This coupling helps to identify closely related research groups, themes, or methodologies and explore how bibliographic coupling evolves, reflecting shifts in research focus and collaboration patterns.
- **Co-authorship Analysis:** Investigating co-authorship patterns to identify prolific authors and collaborative networks within EMP and exploring co-authorship trends, including the growth of interdisciplinary collaborations and international partnerships.
- **Content Analysis:** Performing content analysis to extract and analyse keywords, abstracts, and full texts of publications in EMP and identifying core language competencies, topics, and discourse patterns prevalent in EMP literature.
- **Keyword Co-occurrence Analysis:** Conducting keyword co-occurrence analysis to identify significant terms and topics within EMP and generating a network of co-occurring keywords to visualize core research themes and subfields.
- **Network Analysis:** Visualising and exploring the structure of academic collaboration within EMP and identifying key authors, institutions, research topics and their centrality within the network. Network analysis and visualization are often regarded as enrichment analysis because they enrich the outcome of the analytical technique used (Donthu et al., 2021).

Software Tools for Bibliometric Analysis

Some common choices for bibliometric analysis include but are not limited to the following:

- **VOSviewer:** This is a free software tool for constructing and visualizing bibliometric networks. It can create co-authorship, citation, and co-citation networks, among others.
- **CiteSpace:** This Java-based software tool for analyzing and visualizing trends and patterns in scientific literature. CiteSpace offers co-citation analysis, burst detection, and keyword co-occurrence analysis.

- SciVal: This web-based research performance analysis tool offered by Elsevier allows researchers to analyze and benchmark the research output of individuals, institutions, and countries.
- Web of Science: This subscription-based bibliographic database is provided by Clarivate Analytics and offers a range of bibliometric analysis features, including citation searching, citation reports, and co-citation analysis.
- Scopus: This subscription-based abstract and citation database, provided by Elsevier, offers comprehensive bibliometric data, including citation counts, h-index, and field-specific metrics.
- Microsoft Academic: This freely accessible academic search engine provides bibliometric data and analysis features. It allows users to search for scholarly publications, analyze citation patterns, and calculate author and journal metrics.
- Bibliometrix: This R package designed explicitly for bibliometric analysis provides various functions for data retrieval, cleaning, and analysis of bibliographic data.

Steps in Bibliometric Analyses of EMP

A bibliometric analysis is a structured framework to study the field of EMP through publications. The steps to conduct a bibliometric analysis of EMP are:

1. Define the Research Scope: Determine the specific aspects of EMP to be analyzed, including medical communication skills, language training programmes, or focus on the curriculum and pedagogy.
2. Identify Relevant Databases: Choose appropriate academic databases that cover the field of medical research and language studies. These databases will provide access to relevant scholarly articles.
3. Develop Search Terms: Construct a set of search terms and keywords that represent the topic of EMP, which may include combinations of "English for Medical Purposes", "Medical English", "Communication Skills," and other related terms.
4. Retrieve Articles: Conduct a search using the selected databases and search terms to retrieve articles relevant to EMP.
5. Analyse the Bibliographic Data: This analysis typically includes

extracting author names, publication years, journal names, countries of origin, citation counts, and keywords.

6. **Bibliometric Indicators:** Apply bibliometric indicators to measure the impact of the literature on EMP. These indicators can provide insights into the influence and visibility of the articles and authors within the field.
7. **Visualize the Data:** Utilize visualization techniques to present the findings effectively. Graphs, charts, and network maps can help illustrate publication trends, collaboration patterns, and the relationships between authors, institutions, and keywords.
8. **Interpret the Results:** Analyze and interpret the findings from the bibliometric analysis. Consider the limitations of the analysis and propose directions for future research based on the identified gaps.

Using bibliometric analysis for EMP, researchers can systematically analyze the academic scenario and identify chief research trends, significant authors, and vital themes. The analysis enables a deeper understanding of the field and facilitates evidence-based decisions in academic endeavours.

Implications of the Bibliometric Findings for Teaching EMP

Understanding the implications of bibliometrics and the findings that flow from it is critical for designing English teaching approaches and course materials that cater to healthcare professionals' specific needs and challenges. The significant implications based on the findings include:

- **Detecting Essential Linguistic Competencies:** The most cited language competencies required in the medical context can be identified and prioritized in teaching these essential language elements in EMP courses.
- **Integrating Discourse Analysis:** The types of discourse prevalent in medical literature can be discerned by examining co-citations and keyword co-occurrences.
- **Incorporating Cultural Competence:** The growing significance of cultural competence in healthcare communication can be highlighted, enhancing healthcare professionals' ability to communicate effectively and respectfully with patients from diverse cultural backgrounds.

- Encouraging Interdisciplinary Collaboration: Discovering collaborative networks through co-authorship analysis can encourage interdisciplinary approaches in EMP teaching.
- Accentuating Collaborative Learning: Educators can foster practical communication skills by inculcating collaborative learning in the EMP curriculum using bibliometric analysis.
- Tailoring Instructional Materials: Content analysis and bibliometric coupling can facilitate the educator in creating tailored instructional materials for teaching EMP.
- Facilitating Professional Development: Co-citation analysis can guide healthcare professionals in selecting high-impact publications for their professional development by identifying influential authors and critical research articles.
- Incorporating these implications into EMP curricula can enhance the effectiveness of language instruction for healthcare professionals. The findings can inform the design and delivery of EMP course materials and contribute to the professional development and training of EMP teachers, which can further advance the theory and practice of EMP as a field of study.

Limitations of Bibliometric Analysis for EMP

The databases indexing articles in the EMP domain may interrupt the bibliometric results' comparability or validity. Moreover, the emergent trends in EMP may not be reflected in the research topics. Bibliometric analysis could also have adversative effects on the research of EMP as it could limit the researcher to conform to certain norms or expectations driven by bibliometric indicators.

Conclusion

The paper introduces readers to the basics of bibliometric analysis and its significance for EMP. It is a systematic approach to study EMP publications quantitatively. This paper details a set of bibliometric indicators and tools for the study of EMP and outlines the main steps in the bibliometric analysis of EMP. The paper briefly touches on the implications of the analysis for teaching EMP. In conclusion, the bibliometric analysis of EMP provides a solid foundation for researchers and educators to make informed decisions, collaborate, and contribute

to developing EMP as a discipline. Further, the bibliometric analysis in EMP opens avenues for future research and practice that would enhance the linguistic competence of healthcare professionals.

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