

EHMA 2024

Shaping and managing
innovative health ecosystems

Circular Economy Practices in Healthcare Institutions: A Bibliometric Analysis

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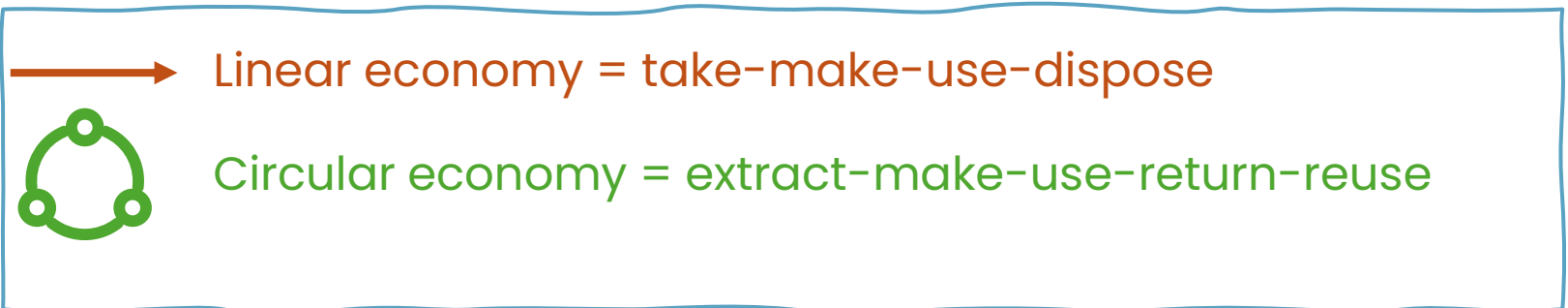
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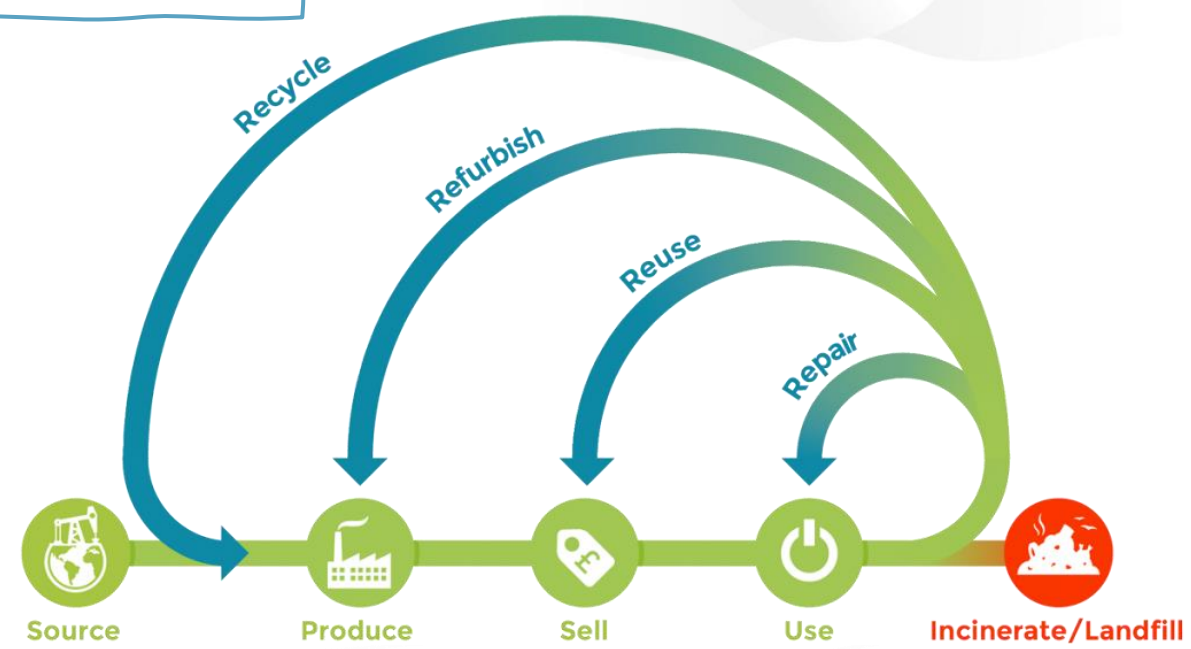
Introduction

Circular Economy



“a sustainable system that eliminates waste by continuously reusing, recycling, and renewing products and materials.”

“it promotes efficient resource use and clean energy, ensuring environmental and economic benefits through collaboration among consumers, industries, and policymakers.”



Introduction

Circular Economy in Healthcare

Why Circular Economy?

- Environmental pollution
- Deterioration of environmental conditions
- Climate change
- Waste generation
- Resource scarcity
- Regulatory Pressures
- Corporate Responsibility
- Economic Benefits
- +++

Why Circular Economy in healthcare?

- Increased use of materials, energy, and resources
- High healthcare expenditures
- Hazardous and non-hazardous waste
- Negative environmental impacts
- Risk of contagious and hazardous waste
- Recycling and reusing materials
- Global efforts
- +++





Rationale and Objectives

- The research and scientific content of the circular economy is unorganized (Korhonen et al., 2018).
- The most important reason for this situation is the increasing number of studies from various scientific fields (Nikolaou et al., 2021).
- To ensure understanding of the concept, it may be beneficial to identify studies done in the field and to systematically examine the studies using reference lists or citations (Suárez-Eiroa et al., 2019).

In this context, the aim of the study is to retrospectively analyze publications on circular economy practices in healthcare institutions by identifying basic thematic clusters and trends, understanding the concept of circular economy in the field of healthcare and leading the studies to be carried out.

Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: the concept and its limitations. *Ecological economics*, 143, 37-46.

Nikolaou, I. E., Jones, N., & Stefanakis, A. (2021). Circular economy and sustainability: the past, the present and the future directions. *Circular Economy and Sustainability*, 1, 1-20.

Suárez-Eiroa, B., Fernández, E., Méndez-Martínez, G., & Soto-Oñate, D. (2019). Operational principles of circular economy for sustainable development: Linking theory and practice. *Journal of cleaner production*, 214, 952-961.

Method

Methodology

: Systematic review + bibliometric analysis

Database

: Web of Science



Search Strategy

: "Circular economy," "Circular*," "Reus*," "Remanufactur*," "Recycl*," "Reprocess*," "Sustainabl*," "Hospital," "Healthcare Institution," and "Health care Institution" were searched in the title, abstract, and keywords, using boolean operators

Timeline

: No time restriction (search conducted at the end of 2023)

Protocol

: PRISMA Guidelines



Software

: Microsoft Office Excel, EndNote 21, VOSviewer v. 1.6.20



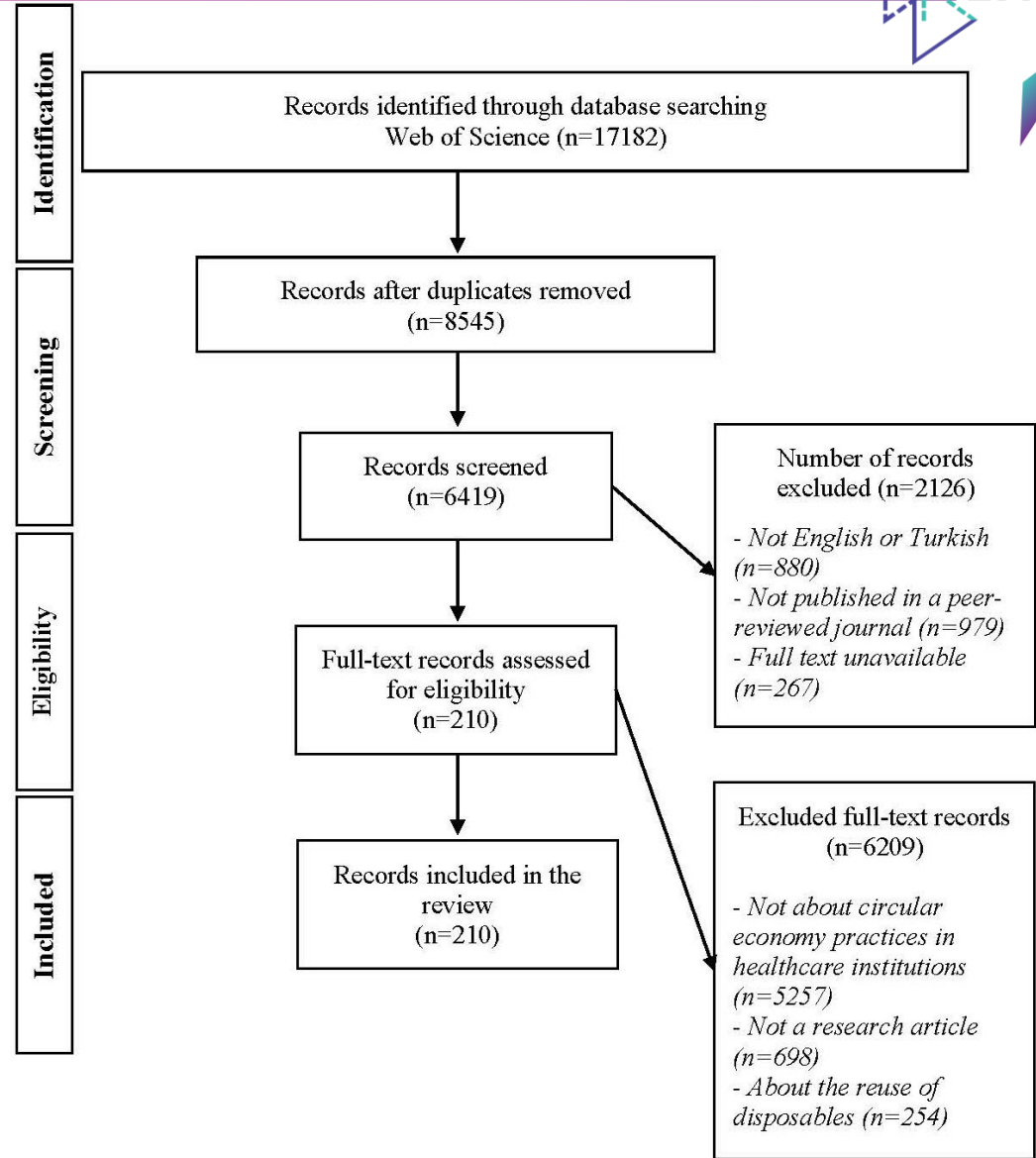
Method

Published in a peer-reviewed journal
 In English or Turkish
 A research article
 Included a circular economy practice in healthcare institutions
 Full text available

Not published in a peer-reviewed journal
 Not in English or Turkish
 Not a research article
 Didn't include a circular economy practice in healthcare institutions
 Full text unavailable
 Evaluation of reusable of disposables

Quality Assessment : 11 items (min 8 points)
 Mean : 8.93 points
 Min : 8 points
 Max : 11 points

-No study eliminated-



Bibliometric Analysis Summary

1991-2023



210 articles



999 Authors



146 journals



485 institutions



106 funding
agency



56 countries



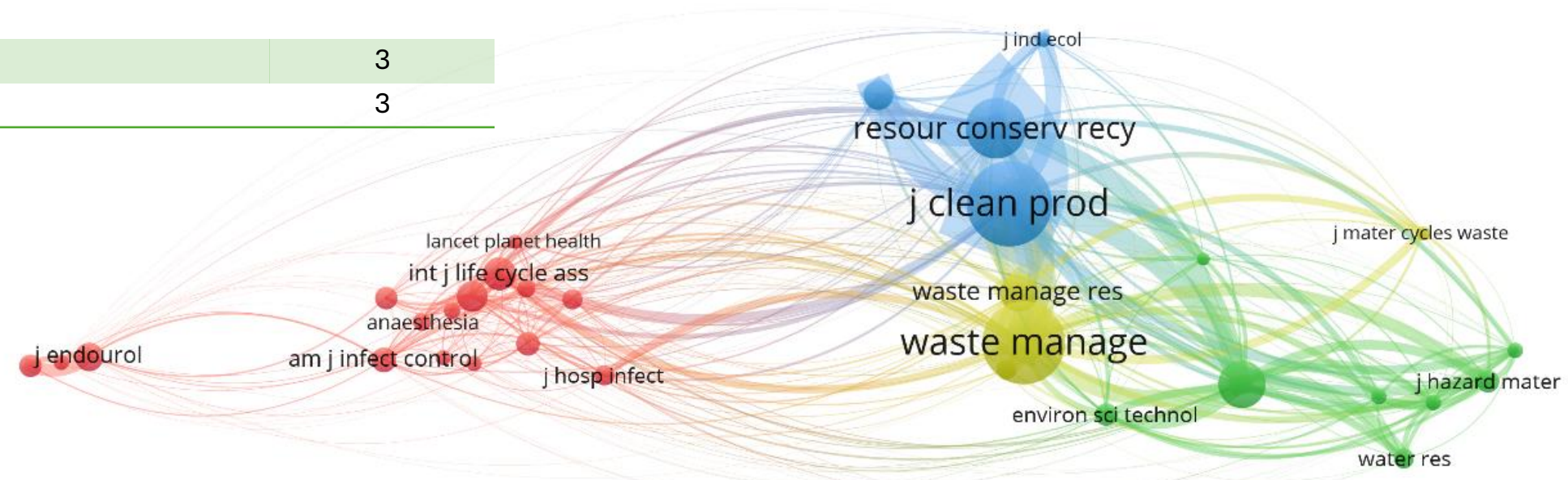
4491 citations



Results

Journals, Co-citation sources analysis

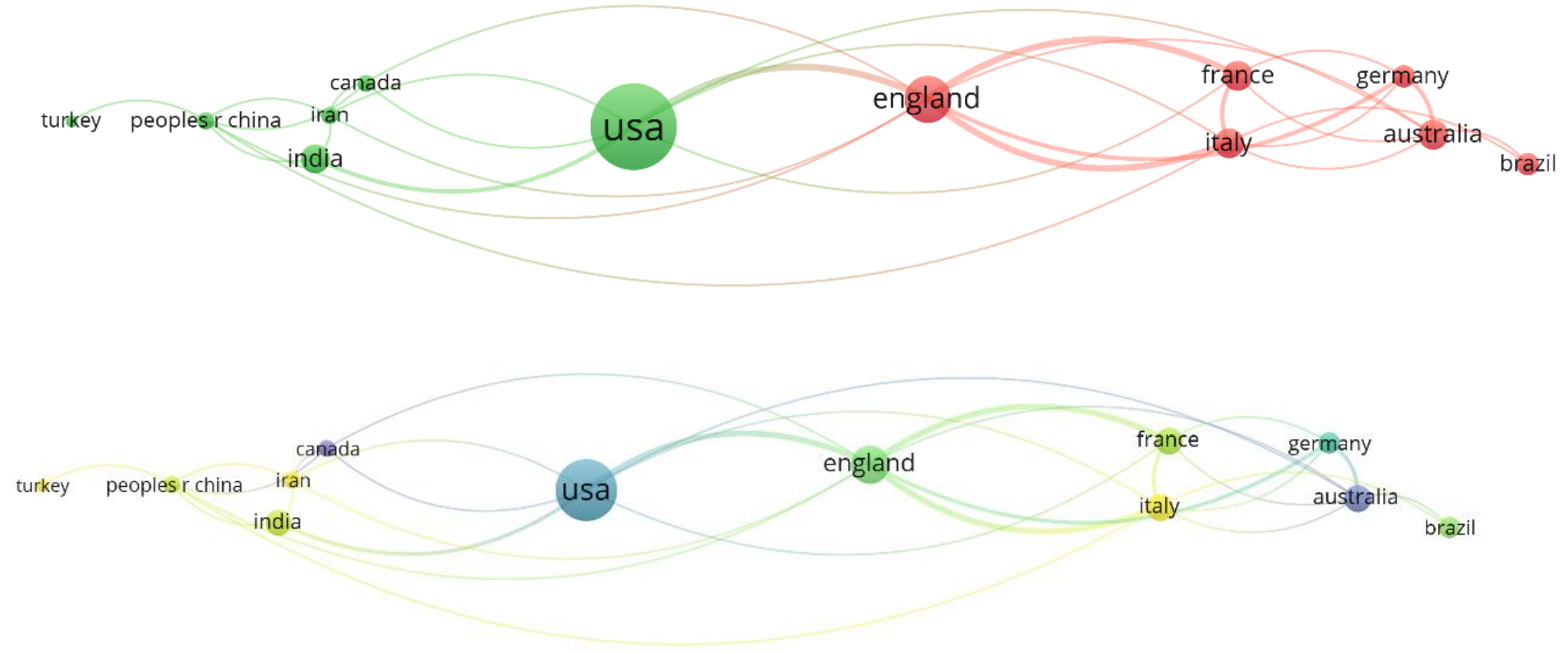
Top 10 Journals	Article Count
Journal of Cleaner Production	10
Sustainability	10
Resources Conservation and Recycling	7
Waste Management	6
Waste Management Research	5
Anesthesia and Analgesia	4
International Journal of Life Cycle Assessment	4
Surgical Endoscopy and Other Interventional Techniques	4
Anaesthesia	3
Science of the Total Environment	3



Results

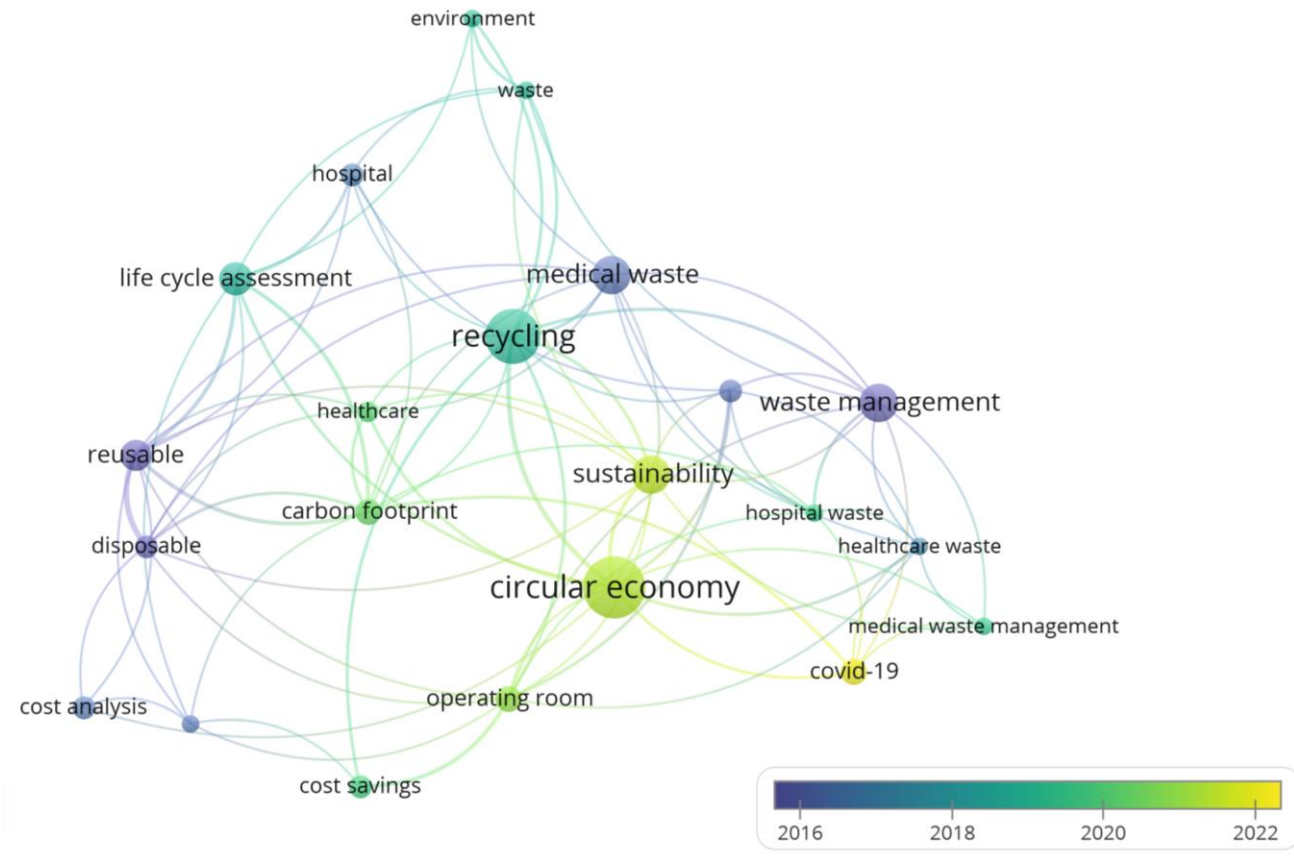
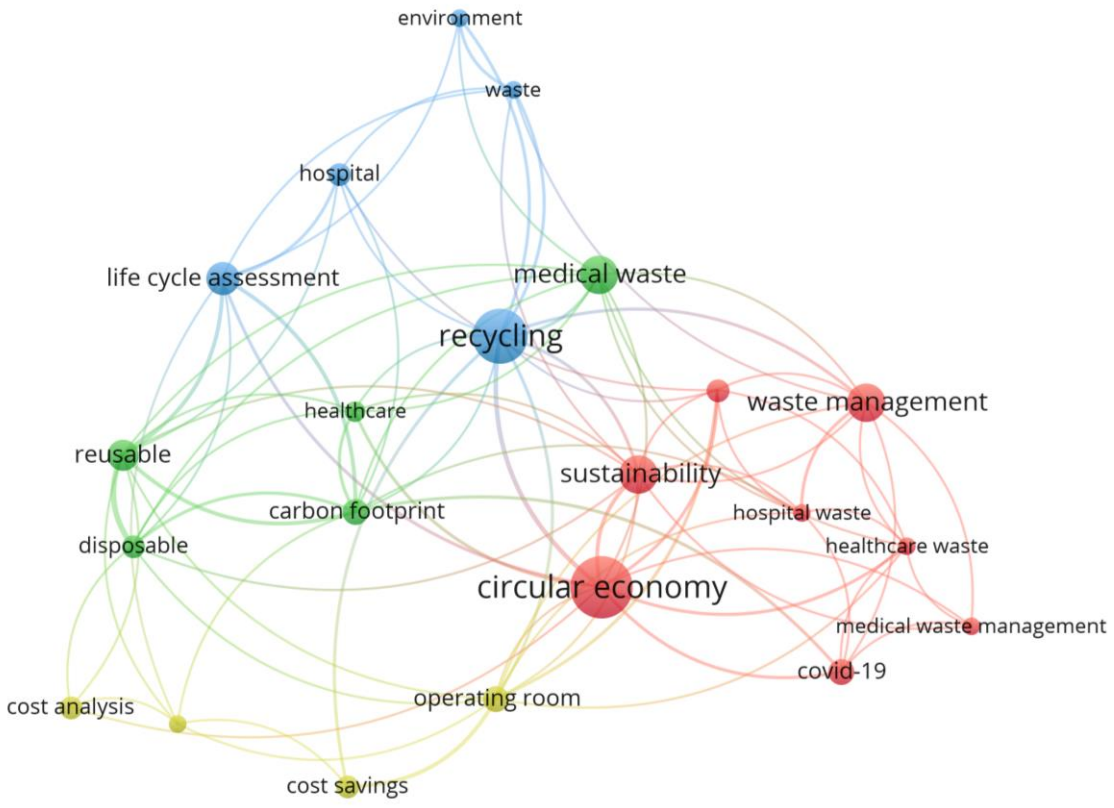
Countries, Co-authorship country analysis

Top Countries	Article Count
USA	50
England	25
Australia	16
France	16
Italy	16
India	15
Brazil	12
Germany	12
Canada	9
Iran	9
China	9



Results

Keyword Co-occurrence analysis

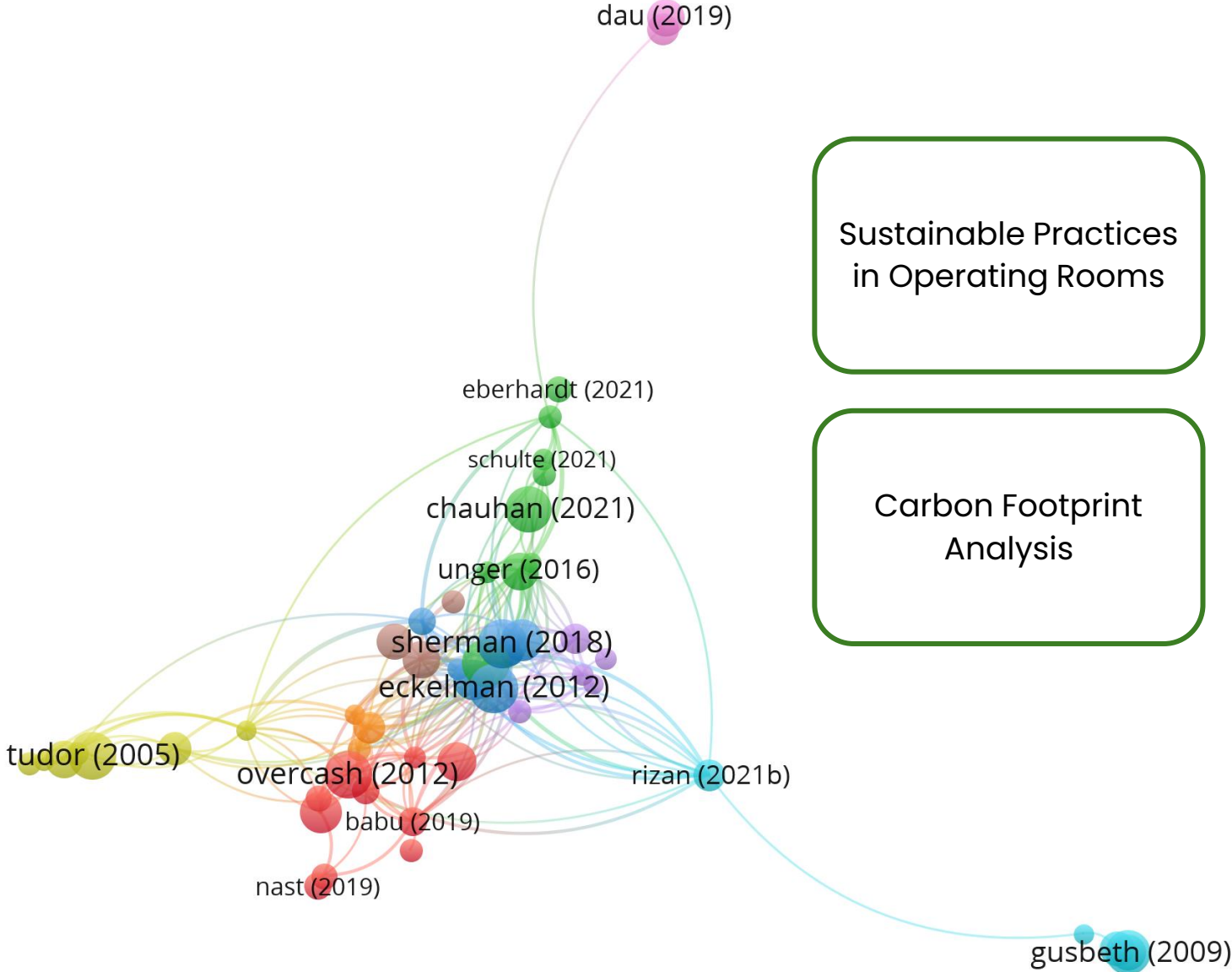


reusable, recycling, and waste management appear across various years, reflecting a **consistent interest** in these topics

The emergence of **sustainability, carbon footprint and life-cycle assessments** reflects an **evolving trend** towards comprehensive environmental strategies

Results

Bibliographic coupling-documents analysis



Clusters

Sustainable Practices in Operating Rooms	Waste Disposal, Segregation, and Management	Life Cycle Assessments and Sustainable Practices in Healthcare Equipment
Carbon Footprint Analysis	Environmental Impact of Hospital Waste Streams	Life Cycle Assessment of Packaging and Surgical Instruments
Sustainable Supply Chain Management		

Conclusion

There has been a steady growth in publications over the past decades, with a surge in recent years.

Many studies emphasize waste reduction and sustainable practices in healthcare, focusing on waste segregation, operating room initiatives, the environmental impact of single-use medical devices, life cycle assessments of healthcare equipment, and integrating circular economy principles into sustainable supply chain strategies.



Recycling is found to be the most common practice, highlighting its importance in managing hospital waste.


The trend towards reducing disposable medical equipment use is widely discussed through reusable instrument.



Conclusion

The most used methods include life cycle assessments, observations, comparative analysis, cost evaluations, and interviews.

Technological advancements in healthcare offer opportunities for sustainable practices by reducing environmental footprints through telemedicine, digital health records, and advanced recycling methods.



Longitudinal studies are needed to evaluate the long-term environmental and economic effects of circular economy practices on costs, resource utilization, and carbon footprints over time.

Future research should also extend studies to diverse healthcare settings beyond hospitals or surgical environments to provide a more holistic view of implementation across various sectors globally.





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Thank you

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