Content Analysis of Published Articles Across Four Disciplines: A Text Network Approach

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BACKGROUND

• Content analysis provides a framework of understanding patterns within unstructured data
• Analyzing unstructured abstracts from published journals provides information on topical and methodological trends from a specific discipline
• Understanding and comparing these trends, particularly between disciplines provides information that can be used in identifying areas of opportunity and areas of collaboration
• Text networks is a natural language methodology that robustly studies content of unstructured data (Rule et al., 2015)
• Text networks relate words or agents together based on a similarity measure (Bail, 2016)

Purpose: The aim of this work is to describe the content and patterns of abstracts from nursing, medicine, health policy and health professions using text networks

METHODS

• Study Design: An explorative retrospective analysis
• Data: Abstracts from selected journals from academic disciplines for the year 2019
• Disciplines classified by Sciramo Journal and Country Rank
• Disciplines include: Nursing, Medicine, Health Policy, and Health Professions

Test Networks

• A co-occurrence network where nodes are words and ties co-occurrence
• An algorithm creates the network

Culture Network (Discipline)

• A co-occurrence network where nodes are disciplines and ties are similarity measures
• An algorithm creates the network

Statistical Analysis

• Descriptive Analysis
• Community algorithm
• Important words – Frequencies and PageRank

RESULTS

Table 1: Top 10 Most Frequent Words by Discipline

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Word</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>study, result, participant, background, patient, care, design, nurse, data</td>
<td>2.95 x 08</td>
</tr>
<tr>
<td>Medicine</td>
<td>result, conclusion, study, method, pharmacy, drug, patient, data, finding, disease</td>
<td>2.35 x 06</td>
</tr>
<tr>
<td>Health Policy</td>
<td>result, conclusion, study, method, policy, data, finding, background, effect</td>
<td>2.95 x 08</td>
</tr>
<tr>
<td>Health Professions</td>
<td>result, conclusion, market, participant, research, finding, artic, practice, data</td>
<td>2.01 x 06</td>
</tr>
</tbody>
</table>

Table 2: Top 10 Highest PageRank Words by Discipline

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Word</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td>fluid, intake, cycle, scoping review, allocation, factor structure, government, eligibility, scoping, review</td>
<td>11828</td>
</tr>
<tr>
<td>Medicine</td>
<td>outcome, data, therapeutic, intervention, population health, multicentre, review, method, patient, study, intervention</td>
<td>11146</td>
</tr>
<tr>
<td>Health Policy</td>
<td>outcome, data, therapeutic, intervention, population health, multicentre, review, method, placebo, group, removal</td>
<td>11466</td>
</tr>
<tr>
<td>Health Professions</td>
<td>trial, experimental, trial, participant, intervention, finding, data, patient, health, intervention</td>
<td>10844</td>
</tr>
</tbody>
</table>

DISCUSSION

For 2019 publications, nursing and health professions publication patterns were the closest out of all possible relationships

• Medicine and health professionals were the farthest apart
• Medicine only had three journals represented which biased the results

• Further, data collection is needed
• Importance word analysis suggest that nursing valued scoping reviews and psychometrics as a methodology
• Health policy valued multicentre, population health, and outcomes per important word analysis
• Word frequency and pageRank are inadequate to fully capture publication patterns

Next steps:
- Collection for more medicine journal representatives
- Topical coding using the communities
- Exploring different options for building the co-occurrence networks

DISCLOSURES/REFERENCES

No disclosures or conflict of interest

Bail, C.A. (2016). Combining natural language processing and network analysis to examine how advocacy organizations stimulate conversation on social media. PNAS, 113 (42): 11823-11828