Does FUTON & NAA Bias Impact Visibility of Cardiology Research?

Murali NS, Auethavekiat P, Murali HR and Ghosh AK*

Mayo Clinic, Rochester, MN USA
Background

• EBM has been revolutionized by access to the Internet

• Scientific articles on the Internet are either available as

  **FUTON** – Full Text On the Net
  **NAA** – No Abstracts Available

*Wentz R: Lancet 360:1256, 2002*
<table>
<thead>
<tr>
<th>#</th>
<th>Search History</th>
<th>Results</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Myocardial Infarction/</td>
<td>88906</td>
<td>Display</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>88906</td>
<td>Display</td>
</tr>
<tr>
<td>3</td>
<td>limit 2 to ovid full text available</td>
<td>7073</td>
<td>Display</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>88906</td>
<td>Display</td>
</tr>
<tr>
<td>5</td>
<td>limit 4 to abstracts</td>
<td>46168</td>
<td>Display</td>
</tr>
</tbody>
</table>

Enter **Keyword** or phrase:  
[Map Term to Subject Heading]

**Limit to:**
- [ ] Ovid Full Text Available
- [ ] Human
- [ ] English Language
- [ ] Review Articles
- [ ] Abstracts
- [ ] EBM Reviews
- [ ] Latest Update
- [ ] History of Medicine

Publication Year [ ]


Background

There is a tendency to rely on full text articles on the net and selectively ignore articles without abstracts, “picking the low-hanging fruit.”

This tendency creates a bias in FUTON Bias & NAA Bias that may impact visibility of research.
Background

Impact factor: Institute for Scientific Information, Journal Citation Reports, 2001

Measure of the frequency with which an average article in a journal has been cited in a particular year
Objective

Does Impact Factor (IF) affect availability of articles as FUTON for cardiology journals online?
Methods

• Identified all cardiology journals
  *MEDLINE, EmBase, BioMed Central MegaSearch Engines*

• Online status on *MEDLINE* was ascertained FUTON, NAA or abstracts only

• IFs were abstracted from the ISI, JCR 2001
## Results

<table>
<thead>
<tr>
<th>Identified</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>cardiology journals</td>
<td>144</td>
</tr>
<tr>
<td>FUTON</td>
<td>51</td>
</tr>
<tr>
<td>NAA</td>
<td>28</td>
</tr>
<tr>
<td>Abstracts</td>
<td>65</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Impact factor</th>
<th>Mean ± SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUTON</strong></td>
<td>2.04 ± 0.23</td>
</tr>
<tr>
<td><strong>NAA</strong></td>
<td>0.00 ± 0.30</td>
</tr>
<tr>
<td><strong>Abstracts</strong></td>
<td>1.05 ± 0.20</td>
</tr>
</tbody>
</table>
Results

A 1-way ANOVA & Tukey Kramer HSD (P=0.0001) in the IF of journals by their availability as:

- FUTON
- NAA
- Abstracts
Results: 1-Way Analysis of IF
Results: 1-Way Analysis of IF to NAA

Tukey-Kramer
0.05

FUTON

NAA
Conclusion

This is the first study to show that cardiology journals with higher impact factors are more frequently available as FUTON.
Conclusion

We know

- Libraries are moving towards more and more online subscriptions
- That more than half of Internet sessions end with downloading a full text article*
- That there is a universal tendency to “pick the low-hanging fruit”

*Delamothe: BMJ 325, Dec 2002
Conclusion

FUTON bias, the trend to pick the low-hanging fruit, and report visible articles

- Will likely affect their impact factor
- Could potentially lead to ignoring relevant NAA articles
- Create a bias similar to publication or language bias