A Comprehensive Analysis of Authorship in Radiology Journals

Wilfred Dang, BHSc
Matthew DF. McInnes MD, FRCPC
Ania Z. Kielar MD, FRCPC
Jiho Hong, BMSc

Presented By: Stephanie Kenny, MD
Disclosures:

• Wilfred Dang: No Commercial Relationship

• Matthew DF. McInnes: No Commercial Relationship

• Ania Kielar: No Commercial Relationship

• Jiho Hong: No Commercial Relationship

• Stephanie Kenny: No Commercial Relationship
Background:

- Assignment of inappropriate authorship credit is a frequently reported problem in major radiology journals [1-4].

- Many radiology journals have endorsed International Committee of Medical Journal Editors (ICMJE) guidelines to ensure proper attribution of authorship [5-9].

- An objective and comprehensive evaluation of the impact of ICMJE guidelines on authorship rates in radiology journals has not yet been done [4, 10].
Study Aim:

To investigate trends in authorship rates in radiology journals, and whether ICMJE recommendations have had an impact on these trends.
Methods: Overview

1. A list of 49 ‘clinical radiology journals’ was comprised and organized by radiology topic.

- Journals focused on Nuclear Medicine and experimental techniques were not included
- Journals selected represent a range of radiology topics and is varied in impact factor and history of publication.

2. Article data for each journal was retrieved and categorized from Ovid MEDLINE from Dec 1946 to Dec 2013

- Articles were limited by publication type to exclude letters to the editor and editorials
- Articles included must have had at least one main author indexed on MEDLINE.
- For research groups, each contributing author within the group must be listed.

3. The following data was exported and analyzed: authors’ full name, year of publication, author institution information, language of publication and publication type.
Methods: Journals & Categories

EDUCATION/REVIEW JOURNALS (not MRI
original research)
ULTRASOUND Q
MAGN RESON IMAGING CLIN N AM
RADIOGRAPHICS
RADIOL CLIN NORTH AM
SEMIN ULTRASOUND CT MR
SEMIN ROENTGENOL
NEUROIMAGING CLIN N AM
SEMIN MUSCULOSKELET RADIOL

Abdominal
ABDOM IMAGING

Ultrasound
J CLIN ULTRASOUND
J ULTRASOUND MED
ULTRASCHALL MED
ULTRASON IMAGING
ULTRASONICS
ULTRASOUND MED BIOL
ULTRASOUND OBSTET GYNECOL
ULTRASOUND Q
SEMIN ULTRASOUND CT MR

CT
J COMPUT ASSIST TOMOGRA
SEMIN ULTRASOUND CT MR

J CARDIOVASC MAGN RESON
J MAGN RESON IMAGING
MAGN RESON IMAGING
MAGN RESON IMAGING CLIN N AM
MAGN RESON MED
MAGN RESON MED SCI
SEMIN ULTRASOUND CT MR

General Radiology
ACAD RADIOL
Acta Radiologica
AJR
Br J RADIOL
CAN ASSOC RADIOL J
CLIN IMAGING
CLIN RADIOL
EUR J RADIOL
EUR RADIOL
INVEST RADIOL
J RADIOL
JBR-BTR
KOREAN J RADIOL
RADIOLOGE
RADIOLOGY
ROFO
SEMIN ROENTGENOL
SEMIN ULTRASOUND CT MR

Neuroradiology
AJNR
J NEUROIMAGING
J NEURORADIOLOGY
NEUROIMAGING CLIN N AM
NEURORADIOLOGY

MSK Radiology
SEMIN MUSCULOSKELET RADIOL
SKELETAL RADIOL

Pediatrics
PEDIATR RADIOL

Cancer
CANCER IMAGING

Thoracic
J THORAC IMAGING

Cardiovascular
INT J CARDIOVASC IMAGING
J CARDIOVASC MAGN RESON

Misc
J DIGIT IMAGING
SURG RADIOL ANAT
Methods: Data Extraction

- A series of Microsoft Excel scripts and formulas were used to a) count the number of authors per publication and to categorize article data by b) country of origin of the corresponding author’s home institution, c) language of the article, and d) publication type.

- Following all computerized data analyses by Excel, two authors (WD and JH) independently reviewed the 3 most recent years of all included radiology journals for coding accuracy (2011-2013). Both authors agreed that coding was accurate for 100% (26,268/26,268) of these journal articles, $\kappa=1$. 
Methods: Statistical Analysis

- The overall rate of authorship, rate of authorship and change in rate authorship over time was analyzed per journal, per country of origin, per language, and per publication type.

- The rate of authorship before and after implementation and revision years of ICMJE guidelines were compared.

- The effect of explicitly stating ICMJE guidelines or authorship guidelines on each journal’s website was assessed.

- The change in the rate of authorship per year was compared between different radiology journal focuses.
Results: Overall Rate of Authorship

0.07 authors per articles per year
($R^2 = 0.9728$, $P<0.001$)
Results: Effect of ICMJE Guidelines

• The rate of authorship increased over time despite the implementation and revision of ICMJE guidelines

• Journals that explicitly follow ICMJE guidelines have significantly greater authorship rates
  - \( P=0.02 \) against groups with other authorship guidelines (6.04 vs 4.92 authors/article)
  - \( P=0.03 \) when compared against journals with no explicitly stated authorship criteria (6.04 vs 4.31 authors/article)
Results: By Journal

Average Rate of Authorship per Journal


Rate of Authorship

Year

AJNR AM J NEURORADIOL (0.084)
AJR AM J ROENTGENOL (0.063)
BR J RADIOL (0.062)
CLIN RADIOL (0.066)
EUR J RADIOL (0.088)
J COMPUT ASSIST TOMOGRAF (0.081)
J COMPUT ASSIST TOMOGRAF (0.081)
MAGN RESON IMAGING (0.07)
PEDIATR RADIOL (0.039)
ROFO (0.072)
RADIOLOGY (0.09)
Results: By Country

Average Rate of Authorship per Country

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate of Authorship</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>0.054</td>
<td>Japan</td>
</tr>
<tr>
<td>1990</td>
<td>0.055</td>
<td>USA</td>
</tr>
<tr>
<td>1995</td>
<td>0.058</td>
<td>Canada</td>
</tr>
<tr>
<td>2000</td>
<td>0.070</td>
<td>France</td>
</tr>
<tr>
<td>2005</td>
<td>0.079</td>
<td>Korea</td>
</tr>
<tr>
<td>2010</td>
<td>0.082</td>
<td>Italy</td>
</tr>
<tr>
<td>2015</td>
<td>0.089</td>
<td>China</td>
</tr>
<tr>
<td>2020</td>
<td>0.096</td>
<td>Netherlands</td>
</tr>
<tr>
<td>2025</td>
<td>0.098</td>
<td>Germany</td>
</tr>
</tbody>
</table>
Results: By Publication Type

- Rate of Authorship
- Year
- Original Research
- Review
- Case Report

Trend Lines:
- Trend Line (Original Research)
- Trend Line (Review)
- Trend Line (Case Report)
Study Limitations:

- Limited by a select list of ‘clinical’ radiology journals
  - Non-radiology journals with landmark trials such as JAMA and New England Journal of Medicine were not included in our study
  - New open access journals (non pubmed) not included

- Computerized nature of data extraction
  - Multi-national studies could not be accounted for
  - Research groups that did not list all authors only counted as a single author
Conclusions:

• The overall rate of authorship for 49 radiology journals across 68 years has increased markedly with no demonstrated impact from ICMJE guidelines.

• A higher rate of authorship was seen in articles from: higher impact journals, European and Asian countries, original research type, and those journals who explicitly endorse the ICMJE guidelines.
THANK YOU!
Questions?

mmcinnes@toh.on.ca
wilfreddang@gmail.com
References: