



The Quality of Reporting of Randomized Control Trials in Radiology in the Last 10 Years

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DISCLOSURE

- Yoan Kagoma:
 - No conflicts to disclose
- Basma Al-Arnawoot:
 - Resident representative for CAR CPD Working Group for 2016/2017 ASM
- Mohit Bhandari:
 - Grants/honoraria from Stryker, Smith and Nephew, Johnson and Johnson
- Mary Chiavaras:
 - In kind research support from Arthrex Pharmaceuticals
 - Grant/honoraria from IICME
 - Current PI of IMPROVE trial

RATIONALE

- In the past 10 years, there has been a trend to assess the quantity and quality of RCTs in different specialities including plastic surgery, neurosurgery, and orthopedics^{1,2,3}.
- However, no similar assessment has ever been completed in radiology.

1. Bhandari M et al. The Quality of Reporting of Randomized Trials in the Journal of Bone and Joint Surgery From 1988 Through 2000. JBJS. 84A(3). March 2002.

2. Yarascavitch BA et al. Levels of Evidence in the Neurosurgical Literature: More Tribulations than Trials. Neurosurgery. 71(6). December 2012.

3. Chuback JE et al. Evidence in the Aesthetic Surgical Literature over the Past Decade: How Far Have We Come?. Plastic and Reconstructive Surgery. 129(126e). January 2012.

GOALS AND OBJECTIVES

The objectives of this study were to:

1. Identify the number of radiology-related RCTs published over the past 10 years
2. Assess the quality of the identified RCTs
3. Identify predictors of high quality studies

METHODS

1) Electronic Database Search

- Medline and Cochrane databases were systematically reviewed using the following keywords and their permutations:
 - Randomized control trial
 - Radiology
- Results were filtered to include:
 - Human trials
 - Publication dates between January 1, 2003 and November 16, 2013
 - English language

METHODS

2) Abstract Screening

- Abstract and title screening was completed in duplicate (Authors YKK and BA).
- If an abstract was incomplete, it was included for full-text review.
- Discrepancies were resolved by consensus with a third co-author consulted if necessary.

METHODS

3) Full Text Screening

- The first 18 articles underwent full-text screening in duplicate to ensure a unified approach.
- Thereafter, full text screening was completed independently using the following inclusion criteria:
 - Studies that affected the practice of radiology and included at least one of the following:
 - Were associated with a department of radiology
 - A radiologist was listed as an author
 - A radiologic modality was being investigated

METHODS

4) Data Abstraction

The following data were collected:

- Publication year
- Journal of publication
- Number of authors
- Name and specialty of first author
- Duration of study
- Departments involved
- Country
- Number of subjects
- Number of centers

METHODS

5) Quality Assessment/Data Analysis

- The Detsky quality index was used to score methodology¹ and assesses:
 - Randomization, outcome measures, eligibility criteria, intervention description, statistical analysis
- Scores were standardized to a 100 point scale. A score >75% was designated as high-quality.
- Means, standard deviations, and abstract screening agreement were calculated.

1. Detsky AS et al. Incorporating variations in the quality of individual randomized trials into meta-analysis. *Journal of Clinical Epidemiology*. 45:225-65. 1992.

Systematic Review Flowchart

Electronic database search identified:

Cochrane: N=83

Medline: N=983

Papers for title and abstract screening

N=1066

N=992 Papers excluded for not meeting filter criteria

Papers for review of full text

N=74

Articles excluded:

- Did not affect practice of radiology N=10
- Did not involve a radiologist N=2
- Did not investigate a radiological modality N=1
- Was not a complete article N=3
- Was not an RCT N=15
- Was not in English N=7

Articles included

N=36

RESULTS

- Total of 36 studies were included in the final analysis of which 19 were published in a primary radiology journal.
- Study populations ranged from 12 to 31,057 participants and duration ranged from 17 days to 48 months.
- 69% of studies were conducted at a single institution.
- 20 studies were conducted in North America. The remainder were in Europe.

RESULTS

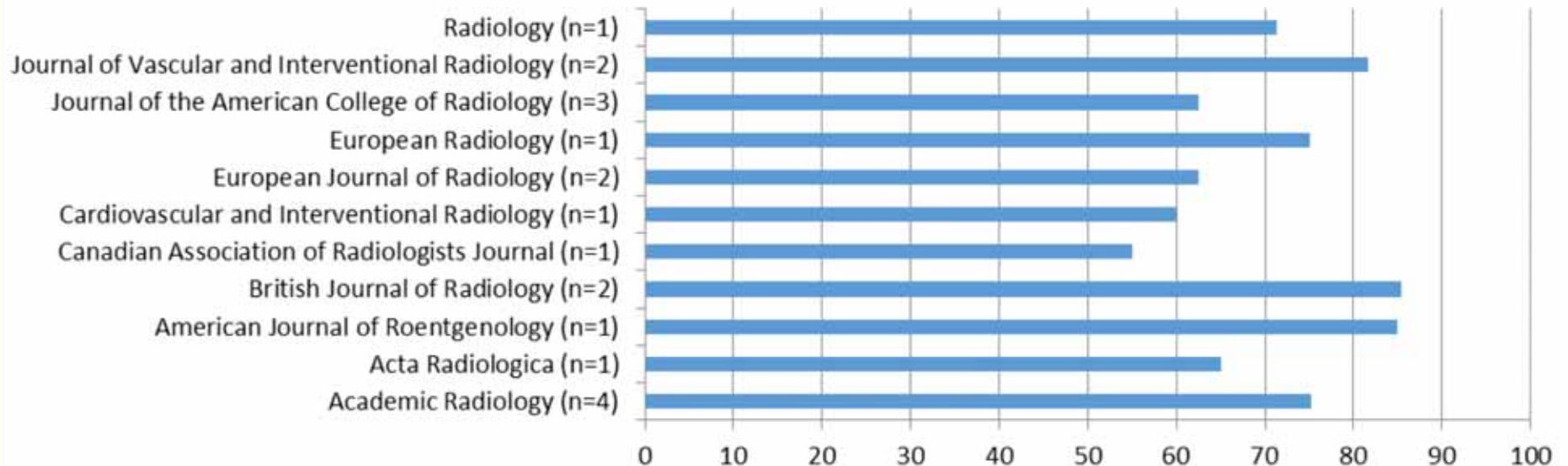
CHARACTERISTICS OF STUDIES	NUMBER OF STUDIES (N=36)
First Author	
Radiologist	19
Non-Radiologist	17
Modality/Radiological Sub-Speciality	
Mammography	4
Ultrasound	4 (3 Ultrasound Guided Interventions)
IR	12
CT	6
MRI	0
Radiography	4
Multimodality/others	6
Number of Centres	
1	23
≥ 2	12
Not specified	1

RESULTS

- The mean Detsky score for quality was 76% with a standard deviation of 15%.
- 58% (21/36) of the studies were considered high-quality (score > 75%).
- Of the 15 low-quality studies, 14 failed to blind assessors and 13 failed to calculate sample size.

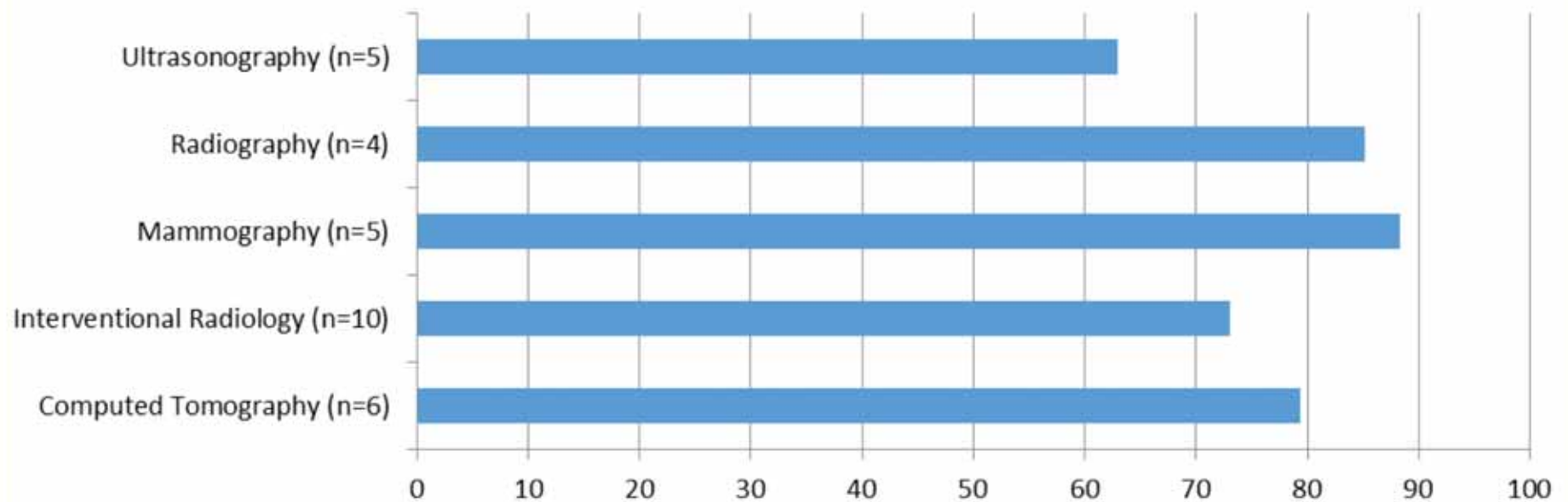
RESULTS

Average Detsky Score (%) by Radiology Journal



RESULTS

Average Detsky Score (%) by Imaging Modality



DISCUSSION

- A low number of radiology-related RCTs have been published compared to other specialties.
- Only 53% of published studies were in a radiology journal or had a radiologist as a first author.
- However, the quality of published RCTs (mean Detsky score of 76%) is comparable to orthopedics (68%), neurosurgery (81%), and plastic surgery (68%)^{1,2,3}.

1. Bhandari M et al. The Quality of Reporting of Randomized Trials in the Journal of Bone and Joint Surgery From 1988 Through 2000. JBJS. 84A(3). March 2002.

2. Yarascavitch BA et al. Levels of Evidence in the Neurosurgical Literature: More Tribulations than Trials. Neurosurgery. 71(6). December 2012.

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DISCUSSION

Strengths

- Systematic database search methodology
- Large number of articles assessed.
- Validated quality assessment tool.
- Results directly comparable with analyses in other specialties.

Limitations

- Small number of studies in the final analysis limiting quantitative analyses.
- English-language only

CONCLUSION

Improved awareness of the value of high-level evidence is of great importance to ensure that radiologists continue to provide quality care.

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