Pediatric Radiology

Presentation to Publication: Proportion of abstracts published for ESPR, SPR and IPR

--Manuscript Draft--

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Abstract:	Background: Advancement of knowledge requires presentation and publication of high-quality scientific research. Studies submitted for presentation undergo initial peer review before acceptance and the rate of subsequent publication may be taken as an indicator access to publication for paediatric radiology studies. Objectives: Evaluate the proportion of abstracts also published in journals for paediatric radiology conferences and identify factors associated with publication success. Methods: All Medline articles that originated from oral presentations at ESPR, SPR or IPR conferences between 2010 - 2012 were evaluated. Descriptive statistics to evaluate published and unpublished groups were calculated overall and split by characteristics of the abstracts such as number of authors. Results: Overall number of abstracts published was 300/715 (41.9%), with most articles published in radiology specific journals (181/300; 60.3%), with median impact factor 2.31 (IQR 1.65-3.14, range 0 - 18.03). Those published after the conference (262/300, 87.6%) had a median time to publication of 18 months and for those published before, the median time was -11 months. Median sample size in published articles was 52 (IQR 33-105, range 1 - 6351). Conclusions: 41.9% of paediatric radiology oral abstracts achieve publication after a period of at least 3 years from presentation. Studies originating from certain countries and on certain subspecialty topics were more likely to get published.
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	Dear Dr Rigsby, We would be grateful if you would re-consider our revised manuscript submission entitled "Presentation to Publication: Proportion of abstracts published for ESPR, SPR and IPR" for publication in Pediatric Radiology. We have amended our article in line with the editor and reviewer comments for your approval. We apologise for the slight delay in the response for the revision, but are grateful for your time and attention to our re-submission. We hope this will be of interest to your readership. Yours sincerely, Susan Shelmerdine Paediatric Radiology Fellow The Hospital for Sick Children, 555 University Avenue, Toronto CANADA M5G 1X8

Original article

Presentation to publication: proportion of abstracts published for ESPR, SPR and IPR

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Abstract

Background Advancement of knowledge requires presentation and publication of high-quality scientific research. Studies submitted for presentation undergo initial peer review before acceptance and the rate of subsequent publication may be taken as an indicator access to publication for paediatric radiology studies.

Objectives Evaluate the proportion of abstracts also published in journals for paediatric radiology conferences and identify factors associated with publication success.

Materials and methods All Medline articles that originated from oral presentations at the European Society for Paediatric Radiology (ESPR), the Society for Pediatric Radiology (SPR) or the International Pediatric Radiology (IPR) conferences between 2010 – 2012 were evaluated. Descriptive statistics to evaluate published and unpublished groups were calculated overall and split by characteristics of the abstracts such as number of authors.

Results Overall number of abstracts published was 300/715 (41.9%), with most articles published in radiology specific journals (181/300; 60.3%), with median impact factor 2.31 (interquartile range [IQR] 1.65-3.14, range 0 - 18.03). Those published after the conference (262/300, 87.6%) had a median time to publication of 18 months and for those published before, the median time was -11 months. Median sample size in published articles was 52 (IQR 33-105, range 1 - 6351).

Conclusion 41.9% of pediatric radiology oral abstracts achieve publication after a period of at least 3 years from presentation. Studies originating from certain countries and on certain subspecialty topics were more likely to get published.

Keywords Publications, Conferences and Congresses, Medical Societies, Abstracts, Radiology

Introduction

Advancement of medical knowledge in any subspecialty field requires presentation and publication of high-quality scientific research [1]. In paediatric radiology, there has long been concern regarding the quality of research output with the majority of publications being descriptive, rather than hypothesis-driven in nature [2] [3] [4].

The main outlet for the presentation of new paediatric radiology studies is through the 'Society for Pediatric Radiology' (SPR) and European Society of Paediatric Radiology (ESPR) meetings. A joint meeting, the International Pediatric Radiology (IPR) conference, replaces both meetings every 5 years. Studies submitted for presentation undergo initial peer review before acceptance and the rate of subsequent publication may be taken as an indicator of access to publishing within the specialty and availability of study results to a wider general audience. Studies analyzing the publication rate of abstracts presented at general radiology conferences have found that this ranges between 33% [5] to 47% [6], with paediatric radiology believed to fall below, at approximately 30% [7].

Studies published within higher impact journals (a measure reflecting the average number of citations to recent articles published in that journal, which is frequently used as a proxy for the relative importance of a journal within its field) are presumed to have wider reaching appeal and influence. Whilst there are no published figures for the median impact factor of published articles from other radiology subspecialty conferences, the median impact factor of all journals within the 'radiology & medical imaging' category according to the Journal Citation Reports database for 2014 is 1.751. [8, 9, 10].

The objectives of this study are to primarily quantify the proportion of abstracts published in paediatric radiology, describe potential publication prognostic factors and destination journal

characteristics. Comparison with published data from other radiology subspecialty conferences will also be performed.

Materials and methods

Ethical approval was not required for this retrospective, bibliometric study.

A review was conducted for all oral presentation (scientific and educational) abstracts published in the conference proceedings for five pediatric radiology meetings over a three-year period (ESPR 2010 [11], SPR 2010 [12], IPR 2011 [13], ESPR 2012 [14] and SPR 2012 [15]). Poster presentations and review courses were not included in this analysis.

The abstracts were searched for publication using the PubMed server (www.ncbi.nlm.nih.gov) over a 2-week period starting from 1st March 2015. Searches were performed by two radiology interns (S.C.S., J.O.L. – a pediatric radiology fellow and senior radiology trainee respectively) using the following sequential criteria until a matching publication was found:

Surname, initial of first author

Keywords from abstract title

Surname, initial of last author

Publications were included where data and/or study methodology was similar to conference abstract. There were no duplicated abstracts within the conferences analysed. To reduce search errors, 20 abstracts were randomly selected and searches repeated by the supervising investigator (O.J.A., a consultant pediatric radiologist).

The following data were collected from the abstracts and published manuscripts:

Publication: time between conference and publication in print, journal name and impact factor.

Authors: institution name and type (academic, tertiary hospital, both, neither), country of first author, total number of authors and position of first author on subsequent publication.

Study: design (retrospective, prospective, unknown, non-applicable), sub-type, sample size, sub-specialty (determined by conference proceedings) and international collaboration.

Impact factor for year of publication (or previous year) was used, depending on latest available.

Study sub-types included: audit (including studies relating to quality improvement and patient safety), cross-sectional/epidemiological studies, ideas/opinions, case reports, case series, pictorial reviews (including educational material), case control study, survey, cohort study, randomized control trial (RCT), meta-analyses/systematic review, pre-clinical studies. Studies that described radiological features (normal variants, normal values or disease characteristics) were classified as case series. Those comparing one method of imaging or interventional technique to conventional treatment or lack of treatment, or where a hypothesis was declared and tested were classified as cohort studies [16]. Studies not involving human subjects were classified as 'pre-clinical' studies. Where there was doubt regarding study type, a decision was reached with the supervising investigator.

Statistical analysis

The percentage of conference abstracts with associated publications are presented overall and by study design, institution type, study type, subspecialty, country and conference. The

median, inter-quartile range (IQR) and range of sample size and number of authors are presented overall and split by those published and unpublished. Furthermore, the median journal impact factor for the published abstracts are presented by country of the first author. Countries submitting less than 5 abstracts, or those with less than 3 publications were excluded from the main summaries presented as there were too many countries with sparse data. No formal statistical tests were carried out because the statistics presented could not be considered 'sample estimates' due to the systematic nature of this review. Statistics were calculated in SPSS (version 11.0, Chicago Ill.).

Results

300 / 715 (41.9%) oral abstracts were expanded into publications. 38/300 (12.6%) were published prior to conference date with 262/300 (87.3%) articles published after the conference date. 20 randomly selected re-assessed abstracts did not reveal errors in search methodology.

There was little difference in the percentage of published abstracts for prospective studies compared to retrospective studies (83/188 (44.1%) and 216/520 (41.5%) respectively), although more abstracts overall were retrospective in design (520/715; 72.7%). Table 1 summarizes differences in characteristics between abstracts achieving and not achieving publication.

Abstracts accepted for presentation originated mainly from academic and/or tertiary pediatric centres. Countries producing the highest number of publications included the United States, Canada, France and the United Kingdom. International multicentre collaboration was present in 19 (6.3%) published articles. **Table 2** shows differences in percentage of abstracts published by country and differences in the impact factor of the journals in which they were

published. **Table 3** shows the differences in percentage of abstracts published for the different conferences analysed during the study period.

The median author number as specified in the abstract was 5 for both published (IQR 4-6, range 1-12) versus unpublished (IQR 3-6, range 1-15) abstracts. The median author number in the published articles was 6 (IQR 4-8, range 1-34). The total number of authors in the final published article remained unchanged from the abstract in 89 (29.7%). In 177 (59%) the total number of authors increased. In the majority of published articles the first author remained unchanged in position (192, 64%). In 42 (14%) the first author moved to second author position, 24 (8%) moved to third author position or more and in 34 (11.3%) they became the final 'supervising' author. In 8 (2.6%) cases, they were not included on final publication.

The median sample size within the oral abstracts achieving publication was 46 (IQR 20-101, range 1 - 2626) compared to 36 (IQR 16-97, range 1 - 8574) for those remaining unpublished. Median sample size within published articles was 52 (IQR 33-105, range 1 - 6351). In 138 (46%), sample size differed from the abstract (82 (27.3%) were larger, 56 (18.7%) were smaller than originally presented).

181 (60.3%) articles were published in radiology journals, 47 (15.7%) in paediatric subspecialist journals, 46 (15.3%) in clinical medical journals and 26 (8.7%) in medical physics journals.

The top three destination journals included Pediatric Radiology (79; 26.3%), American Journal of Roentgenology (34; 11.3%) and Radiology (22, 7.3%). All articles were published in English apart from 3 (1%) in German. The median impact factor for all published studies was 2.31 (IQR 1.65-3.14, range 0 - 18.03). The median impact factor for prospective studies was 2.36 (IQR 1.65-3.07, range 0.41 –18.03) compared to 2.31 (IQR 1.65-3.14, range 0 - 18.03) for retrospective studies.

For abstracts which were published after the conference date (262/300, 87.6%), the median time to publication was 18 months (IQR 12-28 months, range 1-59). 72/262 (27.4%) were published in less than 12 months. Of the abstracts published prior to the conference date (38/300, 12.7%), the median time prior to conference date was 10 months (IQR 3-14, range 0-67). 20/38 (52.6%) were published within the preceding 12 months from the conference date.

Discussion

This study found that 41.9% of paediatric radiology oral abstracts were published either before (38, median of 11 months before) or after the conference (262, median of 18 months after. A notably higher percentage are published in certain subspecialty fields (such as musculoskeletal radiology, child abuse and neuroradiology), and originating from the United States.

Our results are comparable to studies assessing publication rates of paediatric studies within general radiology conferences (37% - 41% [**Error! Bookmark not defined.**,**Error! Bookmark not defined.**]) and compare favorably with other radiology subspecialty conferences (e.g. 39% for musculoskeletal [17], 40% for gastrointestinal [18] and 37% for neuroradiology [19]). One possible reason why certain subspecialties within paediatric radiology are likely to reach publication could stem from specific prolific research groups, but may also be influenced by subspecialty sections assigned to them within the conference proceedings, which may have been allocated to suit conference programme organisation.

The number of authors in the abstract did not appear to result in publication success. Most studies were cohort or case series in nature and were retrospective, in keeping with other published data (62.5% [23]). This may be due to ease and reduced administration times in obtaining ethical approval board approval for retrospective studies.

The United States continues to lead the world in paediatric radiology output, similar to general radiology output [**Error! Bookmark not defined.**]. This may be in part due to a greater number of paediatric radiologists working in tertiary paediatric centres with job plans that allow for dedicated academic time, funding opportunities and available resources. Although an imperfect measure, many regard the impact factor of a journal as a marker of 'publication quality' [20]. In our study, Pediatric Radiology (latest 2014 impact factor 1.570) was the most frequent destination journal, an unsurprising result as this is the representative society journal for ESPR and SPR. However, the median impact factor of destination journals was higher than the median impact factor of all journals within the 'radiology & medical imaging' category according to the Journal Citation Reports database for 2014 was 1.751 (range 1.589 -1.861). [21, 22, 23].

As with retrospective studies, our data had limitations. Although including publications within the Embase database and those published prior to conference presentation would have yielded a higher percentage of abstracts published, these were not methods employed in other similar studies for different radiology subspecialties and therefore not included here in order to allow ease of comparability with other studies. A longer follow-up time could have also yielded an increase in publication rates, although this is usually highest during the first three years following presentation and unlikely to yield a significant amount of further publications if the study time was any longer [24]. Other factors such as non-inclusion of studies currently undergoing peer review, accepted or pending manuscript changes may also play a part. It is possible that studies could have been published without the involvement of the first or final abstract author escaping our search methodology. Nevertheless these cases are likely to be few, and counterbalanced by the strengths of our study, which include its all-encompassing nature across a large number of submitted abstracts to North American and European conferences, and detailed sub-type analysis.

Although promising, our data should not be interpreted as the state of the publication output of pediatric radiology as a whole, as some studies may have been presented at non-radiological conferences or simply not presented. In addition, we presume that studies submitted for an oral presentation were eventually submitted for journal publication, however cannot tell if the abstracts were fully written up as manuscripts and submitted (then rejected), never proceeded further than oral presentation, or indeed whether the results presented formed a subset of findings for a larger study that was later published with a different abstract, not recognizable to the study presented at a conference. Further work on this topic may include identification of factors not resulting in publication and remedies by which to overcome this.

In order to improve the quality and degree of evidence in pediatric radiology research, greater emphasis should still be placed upon producing prospective, hypothesis driven studies, even though these did not appear to be indicators of publication success. Assistance in applying for ethical approval, international collaborative initiatives and statistical support may be beneficial in this regard.

Conclusion

The percentage of paediatric radiology abstracts published compare favorably with other radiologic subspecialties. Most studies were retrospective in design and the most common study types included case series and cohort studies.

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Compliance with ethical standards

Conflicts of interest None

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Table 1 Differences in study factors and design among abstracts that achieved subsequent publication status versus those that did not. Data are in the form of a proportion with percentages given in parenthesess

		Total abstracts, *n*=715	**Published (%), *n*=300**	**Unpublished (%), *n*=415**
Study design	Prospective	188	83 (44.1)	105 (55.9)
	Retrospective	520	216 (41.5)	304 (58.5)
	Not applicable	4	4 (100)	0 (0)
	Not stated	3	1 (33.3)	2 (66.7)
Institution	Academic	162	66 (40.7)	96 (59.3)
	Tertiary paediatric	7	2 (28.6)	5 (71.4)
	Both	540	229 (42.4)	311 (57.6)
	Neither	6	3 (50.0)	3 (50.0)
Study type	Audit	12	2 (16.7)	10 (83.3)
	Opinions/Ideas	4	2 (50.0)	2 (50.0)
	Educational review	3	0 (0)	3 (100)
	Survey	7	2 (28.6)	5 (71.4)
	Preclinical study	63	27 (42.9)	36 (57.1)
	Case report	1	1 (100)	0 (0)
	Case series	327	124 (37.9)	203 (62.1)
	Case control trial	39	21 (53.8)	18 (46.2)
	Cohort study	243	111 (45.7)	132 (54.3)
	Observational/ descriptive	2	0 (0)	2 (100)
	Cross-sectional study	8	6 (75.0)	2 (25.0)
	Epidemiological	2	1 (50.0)	1 (50.0)
	RCT	2	2 (100)	0 (0)
	Meta-analysis or systematic review	2	1 (50.0)	1 (50.0)
Subspecialty	Chest	53	20 (37.7)	33 (62.3)
	Cardiovascular	53	16 (30.2)	37 (69.8)
	Education	21	6 (28.6)	15 (71.4)
	Fetal imaging	48	17 (35.4)	31 (64.6)
	Functional imaging	23	13 (56.5)	10 (43.5)
	Gastrointestinal	84	37 (44.0)	47 (56.0)
	Genitourinary	55	19 (34.5)	36 (65.5)
	Novel imaging Techniques	22	7 (31.8)	15 (68.2)
	Interventional Radiology	38	9 (23.7)	29 (76.3)
	Musculoskeletal	84	43 (51.2)	41 (48.8)
	Abuse	18	12 (66.7)	6 (33.3)
	Neuroradiology	110	54 (49.1)	56 (50.9)
	Oncology	42	17 (40.5)	25 (59.5)
	Radiation safety	64	30 (46.9)	34 (53.1)
Sample Size (in	Median	40	46	36

abstract)	IQR	17 – 100	20 - 101	16 – 97
	Range	1-8573	1 - 2626	1 - 8573
	Not stated	18	5	13
	Not applicable	49	19	30
Sample Size (in published article)	Median	-	52	-
	IQR	-	33 - 105	-
	Range	-	1 - 6351	-
	Not stated	-	6	-
	Not applicable	-	22	-
Author No (in abstract)	Median	5	5	5
	IQR	3 - 6	4 - 6	3 - 6
	Range	1 - 15	1 - 12	1 - 15
Author No (in published article)	Median	-	6	-
	IQR	-	4 - 8	-
	Range	-	1 – 34	-

IQR interquartile range, *RCT* randomized control trial

Table 2 Table demonstrates the number of published abstracts and median impact factors of destination journals for studies according to country of origin of the first author

Country	No. Abstracts	No. Publications (%)	Median Impact Factor (range)
United States	382	169 (44.2)	2.53 (0–18.03)
United Kingdom	56	15 (26.8)	2.56 (0.98–6.21)
Canada	43	18 (41.8)	2.68 (0.58–6.08)
France	39	16 (41.0)	2.85 (1.56–6.39)
Italy	32	8 (25.0)	2.01 (1.56–4.33)
Germany	18	8 (44.4)	1.89 (1.08–6.06)
Greece	14	5 (35.7)	1.65 (1.49–5.25)
Norway	12	8 (66.7)	2.86 (1.35-5.72)
China	11	4 (36.4)	4.32 (1.01–14.5)
Netherlands	9	7 (77.8)	3.04 (1.24-6.21)
South Korea	9	5 (55.6)	2.36 (0.52-6.33)
Israel	8	7 (87.5)	2.24 (0.80–7.13)
Belgium	7	4 (57.1)	4.47 (1.01–6.06)
India	7	3 (42.9)	2.17 (0.61–2.77)
South Africa	6	4 (66.7)	1.55 (1.16–1.56)
All other countries*	62	19 (30.7)	1.42 (0–3.39)

*Other countries with <6 abstracts or <3 publications include: Austria (1/11), Australia (1/6), Spain (1/5), Ukraine (0/5), Brazil (0/4), Hong Kong (1/4), Switzerland (2/4), Turkey (2/3), Argentina (1/2), Hungary (0/2), Ireland (1/2), Romania (1/2), Serbia (1/2), Bulgaria (1/1), Denmark (1/1), Estonia (1/1), Finland (1/1), Japan (1/1), Nigeria (1/1), Poland (0/1), Slovenia (1/1), Thailand (0/1) and Tunisia (0/1). Numbers in parentheses represent the number published/total

Table 3 Table demonstrates the number of published abstracts for the various individual conferences included in this study period and median and range of impact factors of the destination journals

Conference	No. Abstracts	No. Publications (%)	Median Impact Factor (range)
ESPR (total):	222	85 (38.3)	1.95 (0–7.13)
ESPR 2010	114	53 (46.4)	2.16 (0–6.39)
ESPR 2012	108	32 (29.6)	1.65 (0.91–7.13)
SPR (total):	307	132 (43.0)	2.41 (0–18.03)
SPR 2010	142	66 (46.5)	2.60 (0–18.03)
SPR 2012	165	66 (40.4)	2.31 (0.52–18.03)
IPR 2011	186	83 (44.6)	2.51 (0–14.5)

Table 4 Table demonstrates the destination journal names and number of publications that originated from oral scientific abstract presentations during the study period analysed. The list of journal names has been arranged in decreasing popularity, starting with the most popular destination journal name

Journal Name(s)	**No. Publications, *n*=300 (%)**
Pediatric Radiology	79 (26.3)
AJR (American Journal of Roentgenology)	34 (11.3)
Radiology	22 (7.3)
Journal Magnetic Resonance Imaging	8 (2.7)
AJNR (American Journal of Neuroradiology)	8 (2.7)
European Journal of Radiology	7 (2.3)
Pediatrics	6 (2.0)
Ultrasound in Obstetrics & Gynecology	4 (1.3)
European Radiology	4 (1.3)
Medical Physics	3 (1.0)
Child's Nervous System	3 (1.0)
Acta Paediatrica, Archives of Disease in Childhood - Fetal Neonatal Edition, Arthritis Care & Research, Bone Marrow Transplantation, Cancer, Chest, Clinical Radiology, Emergency Radiology, European Journal of Nuclear Medicine and Molecular Imaging, European Journal of Paediatric Neurology, International Journal of Cardiovascular Imaging, Journal of the American College of Radiology, Journal of Cardiovascular Magnetic Resonance, Journal of Clinical Oncology, Journal International Medical Research, Journal of Neuro-Oncology, Journal of Neuroradiology, Journal of Nuclear Medicine, Journal of Pediatrics, Journal of Pediatric Gastroenterology and Nutrition, Journal of Pediatric Orthopaedics, Journal of Ultrasound in Medicine, Neuroradiology, Neurosurgery, Pediatric Emergency Care, Pediatric Blood & Cancer, Pediatric Pulmonology, Physics in Medicine and Biology, Journal of Pediatric Surgery, Pediatric Transplantation.	2 each, 60 (20.0)
Academic Radiology, Acta Neuropathologica, Acta Radiologica, American Journal of Medical Genetics Part A, Journal of Otolaryngology - Head & Neck Surgery, BMC Medical Imaging, Bone, The Bone & Joint Journal, Canadian Association of Radiologists Journal, Cancer Biomarkers, Chinese Medical Journal (English), Circulation, Clinical Nuclear Medicine, Clinical Orthopaedics and Related Research, Child Abuse & Neglect, Congenital Heart Disease, Developmental Medicine & Child Neurology, Journal of Eating Disorders,	1 each, 62 (20.7)

European Journal of Pediatrics, Fertility and Sterility, Indian Journal of Radiology and Imaging, International Journal Neuroscience, International Journal Pediatric Otorhinolaryngology, Journal of Bone & Joint Surgery, Journal of Cardiovascular Computed Tomography, Journal of Clinical Anesthesia, Journal of Clinical Ultrasound, Journal of Digital Imaging, Journal of Medical Ethics, Journal of Neuroimaging, Journal of the Neurological Sciences, Journal of Neurotrauma, Journal of Paediatrics and Child Health, Journal of Pediatric Urology, Journal of Pediatric Hematology/ Oncology, Journal of Perinatology, The Journal of Rheumatology, Journal of Thrombosis and Haemostasis, Journal of Urology, Journal of Vascular and Interventional Radiology, Japanese Journal of Radiology, Magnetic Resonance in Medicine, Medical Image Computing and Computer-Assisted Intervention, Medical Ultrasonography Journal, Neonatology, Neuromuscular Disorders, Opthalmology, Pediatric Anaesthesia, Pediatric Blood & Cancer, Pediatric Cardiology, Pediatric Neurology, PLoS Public Library of Science, Prenatal Diagnosis, Radiology and Oncology, RoFo, Skeletal Radiology, Radiographics, Ultraschall in der Medizin, Ultrasonography, Upsala Journal of Medical Sciences, World Journal of Pediatrics, Zeitschrift fur Medizinische Physik

ESPR European Society of Paediatric Radiology, *IPR* International Pediatric Radiology, *No*. Number of, *SPR* Society for Pediatric Radiology

UCL INSTITUTE OF CHILD HEALTH &

GREAT ORMOND STREET HOSPITAL FOR CHILDREN

21st April 2016

Assistant Editor, Pediatric Radiology

Dear Dr. Cynthia K Rigsby,

Thank you very much for your careful and considered review of our recent submission to your journal entitled 'Presentation to Publication: Proportion of abstracts published for ESPR, SPR and IPR'.

We have responded to the reviewers below. Their comments have been re-stated, and our responses are highlighted in red font.

Editors' comments:

- Introduction: Please provide a brief discussion of what the impact factor is and how it is calculated.
  Thank you this has been added. We have included this description in the manuscript.

- Please eliminate the abbreviations APR and IF throughout the manuscript.
  Thank you – this has been done and amended accordingly throughout.

- Methods: Please clarify the credentials of the person who performed the searches and the supervising investigator.
  This has now been included in the methods section with the author initials for those performing the searches and checking searches and their rank/job title.

- Methods page 3 line 10: Please clarify what is meant by duplicated publications.
  Any abstract that was found to have been presented at more than one of the several meetings analysed was removed. In actual fact, there were none that were found to be duplicated, so this part of our methodology became redundant and has been clarified.

- Methods: Why eliminate the publications published prior to the conferences? These should be included. Please revise your data.
  We excluded this data as other publications on the same topic regarding abstract to publication ratios in other radiology subspecialties had also eliminated this and we wanted to allow for a fair comparison with other specialties. However, we have now re-analysed the data to include these publications and amended the results section to reflect this.

- Methods: Is the time to publication the time to print or to online?
  It is time to publication print, this has now been clarified in the Methods section.

- Methods: Please determine if there were any differences in publication rates between the ESPR and SPR meetings. Were there any differences in impact factor of the journals that the ESPR and SPR meetings produced?
  A new table (Table 3) has been included to address these results.

- Results: Please provide a list of all journals that the papers were published in.
  A new table has been created to list all journals – Table 4.

- Please eliminate Figure 1. Please add a range of impact factors to Table 2 column 4.
  Figure 1 has been deleted. Table 2 has been amended.

Reviewer 1:

- The authors quote that "the rate of subsequent publication may be taken as an indicator of the scientific level of the meeting, and indirectly, the specialty [5]". I am not sure that I completely agree with that quoted statement. While that might be the case, I suspect that there is often high quality material that does not lead to publication for various other reasons unrelated to the meeting or the field.
  Thank you for this comment. The statement has been removed and amended to suggest access to publication and availability of work to a wider audience (as suggested by reviewer 3).

- Please specify in the Methods as to what kinds of "papers" were included in the analysis. Was this only scientific paper publications?
  They were all oral presentation papers (the majority are scientific papers, although there were a few educational presentations). This has been clarified in the methods.

- Were scientific poster presentation abstracts also included in the analysis?
  No, as described in the methods section – it is all oral presentations. This has been clarified in the methods section.

- Were review courses with abstracts included?
  No, only oral presentations. This has been clarified in the methods section.

- Methods: "Duplicate publications excluded" - please be more specific as to defining what is meant by this. Is this an abstract that was presented at more than 1 meeting (I assume).
  Yes – any abstract that was found to have been presented at more than one of the several meetings analysed was removed. In actual fact, there were none that were found to be duplicated, so this statement has been amended to make this clear.

- Methods: "those published prior to the conference were excluded" - again, please take several sentences to define what this means. Is this referring to an abstract that was presented at a meeting but a manuscript on an identical topic was already published?

We mean that the authors who presented the oral scientific paper had already published their data on the topic prior to the conference in a scientific journal. This data has now been included in the analysis of the data so is not removed. The wording and methods have been changed to reflect this.

- Methods: "To reduce search errors, 20 abstracts were randomly selected and searches repeated by the supervising investigator" - although I applaud the authors for pointing out this apparent limitation, I think it brings up more questions that need to be defined in the manuscript. What was the nature and difference between the investigators doing the initial search and credentials of the "senior investigator"? Please define the background and qualifications of each of the investigators (students, radiology faculty, etc).
  This has now been included in the methods section with the author initials for those performing the searches and checking searches and their rank/job title.

- Methods: How were studies that dealt with issues such as Quality Improvement, Patient Safety, or Education categorized?
  Studies relating to quality improvement and patient safety were categorized as 'audit', those that demonstrated radiological findings for educational purposes were 'pictorial reviews', those relating to radiology education were either classified as ideas/opinions or surveys depending on the nature of the study. This has been clarified in the methods section.

- Discussion: I am guessing that authors from the United States might have some objection to the speculation that the reason for the increase rate of publications in the USA is related to the "dedicated academic time, funding opportunities, and available resources" as many of them probably don't visualize themselves as having this.
  This is only a few possible explanations for the results and for USA leading the world in pediatric radiology output. It may or may not be the case, but the point of the statement is to raise possible areas for discussion.

- I found Figure 1 confusing. Either the description in the legend needs to be expanded upon or alternatively Figure deleted.
  Figure 1 has been deleted.

Reviewer 2:

Authors indicate in the abstract, on page 4 of the statistical analysis paragraph, and in the results (pages 6 and 7) that a multiple linear regression procedure was employed for "publication (YES/NO) and IF, using the four quantitative predictors (academic, tertiary, author number, and sample size) and four qualitative predictors (country, specialty, retrospective / prospective, type of study) in each model." The confusion is that multiple linear regression holds a continuous variable as dependent in the model, not a dichotomous one such as publication yes or no. If the authors are trying to predict, say, the number of publication successes alone then their analysis applies. If they are holding the dependent variable, as written, to be dichotomous then the statistical analysis becomes a binary logistic

regression model, resulting in the presentation of odds ratios of publication success and their 95% confidence intervals. And, as stated, please remove the reference of multiple regression on page 4 to "analysis of variance, ANOVA". Although they are related (ANOVA is a form of regression) their application and output are different. Regression is concerned with prediction and reporting of coefficient values with a one unit change in some predictor, not just reporting overall R-squared values for an "entry method" selection or individually within the "stepwise" procedure. ANOVA concerns itself with comparisons of mean differences between three of more groups, and reporting whether or not the mean differences are statistically significant in pair-wise fashion with some selected post-hoc test. Please be careful.

We agree that the appropriate statistical model was not used to carry out the multiple regression analysis – a logistic regression model should have been used. However, after considering your comment, the decision was made to remove this analysis from the paper for the following reasons: (1) There are too many predictor variables with categories containing a low frequency, in which there is insufficient power to detect a significant difference; (2) The analysis would produce too many p-values creating an issue of multiple hypothesis testing; (3) It may cause the reader to misinterpret the results as a cause-effect association between the predictor variables and publication success. (4) Finally, the following reason has been added to the methods section of the paper: "No formal statistical tests were carried out because the statistics presented cannot be considered 'sample estimates' due to the systematic nature of this review."

Following on page 4 the authors state that regression analyses were performed for publication using "four quantitative predictors (academic, tertiary, author number, and sample size) and four qualitative predictors (country, specialty, retrospective / prospective, type of study) in each model. This is incorrect and just adds confusion, as they are all just simply categorical variables (see Table 1) forced into the regression procedure (Table 1). Use correct statistical descriptions of the scale of the variables.

This analysis has been removed from the paper so the comment is no longer applicable (see above).

In reporting of the regression result (hopefully one that had the continuous variable of publication number and not the dichotomous description as written) the authors report only the amount of explained variable (r-squared) for significant predictor variables. The interesting information is within the coefficient values obtained within the categories of each significant predictor variable.

This analysis has been removed from the paper so the comment is no longer applicable (see above).

Again on page 4, authors state that a 'relative risk' of publication was estimated for countries with the United Kingdom (UK) serving as the standard. The UK was arbitrarily chosen due to its location for the largest pediatric radiology conference within this study (i.e. IPR 2011). That is fine. Yet, reporting the "relative risk" value in this context needs to be explained a

little further. In statistics and epidemiology, relative risk or risk ratio (RR) is the ratio of the probability of an event occurring (for example, developing a disease, being injured) in an exposed group to the probability of the event occurring in a comparison, non-exposed group. Relative risk includes two important features: (1) a comparison of risk between two "exposures" puts risks in context, and (2) "exposure" is ensured by having proper denominators for each group representing the exposure. Authors should clarify that their purpose here was to report some pseudo "probability of publication"
statistic. Truly, the Fisher's Exact test of proportional differences of each country compared to the UK is all that is needed as already reported by the authors in Table 2. I have tried to obtain the same values of relative risk down each country in comparison the UK but I am not obtaining the same values. Please double check.

Thank you for your comment and advice. The 'relative risk' has now been removed from Table 2 to avoid any confusion.

Authors indicate that "Figure 1 (Box Plot) demonstrates destination journal impact factors for published articles according to country of origin of first author. * = The upper limit for journal impact factor for the United States was removed from the graphical representation as it was an extreme outlier. The two highest values were both of IF 18.03. The next highest value is represented within the graph." Although skewness is properly addressed by removing the extreme value it doesn't let the readership know in the text of page 6 let some authors obtained a very high IF publication. If we are in the business of portraying peer review to the public as our most objective truth teller it would be better to report it with and without the "extreme outliner".
This figure has now been removed on the recommendation of the editor and at least 2 reviewers. We believe it is causing more confusion than clarification of data and range of publication journal impact factors have been added to Table 2.

Reviewer 3:

- Were there differences in APR between SPR, ESPR or IPR?
  Yes – a further table has been added (Table 3) to address these differences in publication rates and impact factors of destination journals.

- Occasional odd phrasing: For example, the 1st sentence of the Introduction "plight of research", "long been under concern".
  Thank you – this has been reworded and removed.

- Also, in the Discussion, I would change the phrase "...converted into..." to ..."eventually published..."(Discussion, page 7, line 10)
  Thank you – this has been amended.

- While it may be fine to mention the "evidence hierarchy pyramid", it should be discussed, at least briefly, and how that relates to the stated objectives of the paper. I am not sure that this directly relates to their objectives.

Thank you – this has been removed from the text.

- I believe that most of the accepted publications were from tertiary or academic centers, but I would also bet that most submissions came from these types of institutions as well.
  Most accepted publications and scientific oral presentations originated from academic and/or tertiary pediatric centres – this is correct. This fact is stated in the results section, paragraph 2.

- The 3 top journals (Pediatric Radiology, AJR and Radiology)accounted for less than 50% of publications (119/262=45%). What were the others?
  A full table with list of all published articles in all journals has been included – Table 4.

- In the discussion section, you review predictors of success, and name: authors, topic areas and country of origin. There are brief discussions of these, but I would get more into topic areas, which has limited commentary. This is the 2nd objective of the paper (markers for success in publication) and thus worthy of full discussion. For example, musculoskeletal is mentioned though neuroradiology accounted for more publications percent wise (neuro=17.2%, vs MSK at 15.3%) and abuse had the highest acceptance rate (12/18=67%).

  Thank you for this comment. We have amended the text in the discussion but for the sake of brevity, we did not go into a detailed discussion of individual topic areas, as country of origin and author number seemed to be more important.

- Page 8, Line 6: It is not true that the "majority of publications" were in Pediatric Radiology. It was the single most popular journal but other journals accounted for more than 70% of publications.
  This statement has been amended to read ‘Pediatric Radiology was the most popular destination journal for publications’.

- Page 9, Lines 9-13: I am confused by this paragraph. It seems like an opinion that is only tangentially related to their topic. While I don't doubt their analysis that there is value in prospective, hypothesis driven studies, a study of this was not one of their 2 objectives. Furthermore, their data showed that the APRs for retrospective and prospective studies were not significantly different (38% and 40%, respectively). Related to the above, the final sentence in the conclusion is unclear. It says that more prospective and hypothesis driven studies are required to improve overall quality. While that may be true, it is not directly related to the 2 objectives of the paper and is not (in a clear, obvious way) related to the data. I would tend to focus on what conclusions can be drawn based on the 2 objectives and the data. Perhaps a separate paper based on an analysis of the types of work being submitted for publication and the the types of work known to be highly valued would be useful. This would allow for a fuller discussion of the pyramid mentioned above.
  Thank you for this insightful comment. I have now removed the confusing statement

described above. The closing comments now, only refer to the objectives of the paper.

- I am not sure I fully agree that APR is a measure of the specialty (Introduction, Page 2, line 11). The APR, seen in a general sense as opposed to focusing on an individual paper, seems more a marker of access to publishing. A specialty could produce mediocre work but have a high APR if there are multiple journals dedicated to it (in fact, the more journals there are, the more work that gets published, and the greater chance that inferior work will be published).
  Thank you the comment, we have removed this reference from the introduction.

Reviewer 4:

- Paragraph 2, second sentence - Society for Pediatric Radiology
  Thank you, this has been corrected.

- Paragraph 3 - consider rewording the first sentence - "Studies analyzing the abstract to publication rate of general radiology conferences have found that the APR ranges between…" or something similar.
  This has now been amended.

- Methods: Search criteria - Surname of first/last author is included in #4, but already part of #1 and #3?
  Thank you, #4 has been deleted as the search criteria for 1-3 were included already in number 4, making it superfluous.

- Results: The "relative risk of publication" analysis is mentioned in the "Methods" section, but is never mentioned in the results section. The results of this analysis are included in Table 2, but I would consider at least adding a sentence indicating that the data is in Table 2 in order to call the reader's attention to that result.
  Thank you - this column within Table 2 has been removed on recommendation of a previous reviewer, so there is no comment relating to this column in the text.

- Discussion: When discussing the IF, it would be nice to include the current IF for Pediatric Radiology for the reader to have as a reference point.
  This has been added to the discussion.

- Table 1 is very extensive - The authors could get rid of half of the numbers by just putting in the value instead of putting in the denominator for each entry - for example: 19 (2.8%), instead of 19/677 (2.8%). Since the denominator for each column is consistent through the column, that value could just be put at the top.
  Table 1 has been amended to be more user-friendly.

- Figure 1 just repeats data from Table 2 - I'm not sure it adds much.
  Figure 1 has been deleted.

The newly revised manuscript has been resubmitted and the author guidelines for document formatting have been followed.

We hope that the article will meet with your journal's standards and be of interest to your readership.

Yours sincerely,

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&

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On behalf of all authors.