Author’s response to reviews

Title: Factors associated with online media attention to research: A cohort study of articles evaluating cancer treatments

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Subject: Major Revision for “RIPR-D-17-00006
Factors associated with online public attention to research: A cohort study of articles evaluating cancer treatments”

Dear Dr. Kowalczuk,

We thank you for your interest in our manuscript and the reviewers’ useful comments that greatly improved the quality of our manuscript. We answered all reviewers’ comments and modified the manuscript accordingly.

We would be grateful for your kind consideration for publication of this manuscript.

Yours sincerely,

Ms. Romana HANEEF

RIPR-D-17-00006
Factors associated with online public attention to research: A cohort study of articles evaluating cancer treatments

Reviewer #1: This manuscript reports an analysis of "public" attention to studies of oncological interventions reported over a 6-month period in 25 high impact medical journals. The authors use the Altmetric score as a measure of attention, and demonstrate a relationship with journal impact factor and press release, but not study design and positive conclusions.

The article is well written and clear, and the methods are well designed. There are a few issues and limitations that warrant further discussion:

Answer: Thank you very much for your interest in our work and your comments that improved our manuscript.

1) The authors describe, in the title and elsewhere, the Altmetric score as a measure of "public" interest in an article. This is not strictly true - whilst some of the sources (news, possibly twitter and facebook) may reflect true public interest, others (F1000, Mendeley etc.) are more likely to reflect professional interest in an article. The is supported by the relationship between Altmetric score and subsequent citation rates in previous analyses. It would probably be better to term it "media interest" rather than "public interest".

Answer: We agree and replaced the “public attention” with “media attention” in the title and in the whole manuscript.

2) As above, it would be very interesting to measure the impact of the various predictors (press release, article type, impact factor etc.) on each component of the Altmetric score, rather than the composite.

Answer: Thank you for raising this point. Actually, we did discuss this analysis at an early stage and decided not to perform univariate and multivariate analysis for each component of the Altmetric score because of lack of power. Indeed, the number of articles with attention for each source was too low. For example, only 17% (135/792) of all articles received attention in news, 9.2% in blogs, and 18.5% on facebook.

We now highlight this point in discussion section:

“Further research is needed to measure the impact of cancer research on individual components of media such as news, social media, etc.”

3) There are some methodological limitations that require further discussion. The search strategy is very basic, using the word "cancer" without MeSH subheadings or alternative terms such as "malignancy". Data extraction was limited to one reviewer for 75% articles (although the authors did assess agreement in the first 25%). Using a fixed time-point for the Altmetrics score
means that the length of follow-up varied between articles. Whilst the authors try to correct for this in analysis, this may not be robust as the cumulation of altmetric score over time is not linear.

Answer: We agree that these limitations need to be discussed.

1. Search strategy

We agree that our search strategy could appear simple because it relied on the word “cancer” in all fields.

However, this search strategy was actually very large as it retrieved 4038 citations, of which only 792 were selected. Indeed, this search actually correspond to the following search details in PubMed: "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields]. We performed the search again, adding “malignancy” as a MeSH subheading, and no new citation was retrieved.

We now clarify in the methods section that the word “cancer” search corresponded to "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields] in PubMed.

Furthermore, we highlight this point in the discussion section.

“Our search strategy was simple, relying only the term “cancer” in all fields, but was very large and unspecific.”

2. Data extraction

We agree. We did not perform double data extraction with agreement for all data extractions because 1) the data to extract were very simple and did not involve any subjectivity and 2) we had excellent agreement, with a kappa coefficient > 0.9, for the first 25% of the articles.

This is now highlighted as a limitation in the discussion section as follows:

“Data extraction was limited to one reviewer for 75% articles. However, we assessed the quality of data extracted because a second reviewer independently extracted the data for 25% articles and the reproducibility was very good, with kappa coefficient > 0.9.”

3. Using a fixed time-point for the altmetrics score

We agree and as requested, use of a fixed time-point for the Altmetrics score is now highlighted as a limitation.

Indeed, we did not have access to the Altmetric score over time.

This is now highlighted as a limitation.
"The Almetrics score, which was registered at a fixed time point, may have influenced the results. However, a major part of this influence is corrected by adjustment on post-publication exposure periods even if cumulation of Altmetric score over time is probably not linear."

4) The 25 source journals should be listed in the supplemental digital content.

Answer: The file describing the selected journals has been attached as an additional file 3.

5) A number of the RoM values for predictor variables have wide confidence intervals, and so there is possibility of a type II error

Answer: We agree and this is now highlighted in the discussion section as a limitation as follows:

“The results should be interpreted with caution because the RoM value for press releases had wide confidence intervals.”

6) I am struggling to understand what figure 3 represents - if it is to be retained, it requires much more explanation

Answer: We agree that this figure is difficult to understand and we simplified it.

This figure represents the amount of attention that studies received in different online media sources. Each bar represents the proportion of studies with no mention or attention (sky blue), 1-5 mentions per study (racing green), 6-10 mentions per study (jade green), 11-15 mentions per study (yellow), 16-20 mentions per study (orange) and 20 mentions per study (red).

The legend is modified.

“Legend: Online media attention of articles by sources”

We also report the above explanation in the results section as follows:

“Figure 3 describes the amount of attention that studies received in different online media sources. Overall [...]. In this figure, each bar represents the proportion of studies with no mention or attention (sky blue), 1-5 mentions per study (dark green), 6-10 mentions per study (jade green), 11-15 mentions per study (yellow), 16-20 mentions per study (orange) and 20 mentions per study (red).

For example, in news media, 83% studies (657/792) received no attention, 11% (87/792) were mentioned 1-5 times, 3.1% (25/792) were mentioned 6-10 times, 1.4% (11/792) were mentioned 11-15 times, 0.5% (4/792) were mentioned 16-20 times, and only 1% (8/792) were mentioned 20 times.”
Reviewer #2: The manuscript reads well. It analyzes factors confounding the impact of cancer-related research.

Thank you very much for your useful comments, which helped us improve the quality of this manuscript.

1. Introduction. It would be appropriate to analyze "new metrics" and other factors associated with online public attention. Altmetric score is not the only factor of the scholarly impact. Proper selection of keywords, open access, downloads, letters-to-editors, and other factors attract readers' attention.

Answer: We agree that the Altmetric score is not the only factor of scholarly impact. We focused on this metrics because it is widely used by journal editors and researchers to analyze the effect of the research. Traditionally, the scholarly impact of articles was assessed by impact factor and number of citations of a published article.

This is now highlighted in the introduction section just before the end of the second paragraph as follows:

“However, the Altmetric score is not the only factor of scholarly impact. This score is […]”

2. Study design. It is necessary to justify the choice of "high-impact journals" for this research, and particularly because Conclusions consider the Journal Impact Factor (JIF) as a determinant of public attention. The latter would be correct if diverse journals, with high- and low-impact were examined.

Answer: Thank you for this important comment. The use of “high-impact-factor journals” is probably inappropriate in that diverse types of journals with high and low impact factors were actually included. The strategy we used to identify journals was not clearly reported.

We screened the highest impact-factor journals in the following categories: 50 in “Oncology”, 25 in “Medicine, General and Internal”, and 25 in “Medicine, Research and Experimental” (Journal citation report 2013, Thomson Reuters). We selected the journals that were publishing clinical studies or systematic reviews of clinical studies or observational studies evaluating the effect of interventions on humans and identified 24 journals from “Oncology”, 17 from “Medicine, General and Internal”, and 6 from “Medicine, Research and Experimental.”

After screening, we selected 792 articles published in 31 journals with a diverse range of impact factors, from 3.9 to 54.4.

This information has been clarified in the abstract, methods section (identification of articles under search strategy) and results (under general characteristics of articles) as follows:

Abstract
Methods

“[…] 6 months of 2014 in oncology and medical journals with a diverse range of impact factors, from 3.9 to 54.4, and selected a sample […]

Identification of articles

Search strategy

We screened the highest impact-factor journals in the following categories: 50 in “Oncology”, 25 in “Medicine, General and Internal”, and 25 in “Medicine, Research and Experimental” (Journal citation report 2013, Thomson Reuters). We selected the journals that were publishing clinical studies or systematic reviews of clinical studies or observational studies evaluating the effect of interventions on humans and identified 24 journals from “Oncology”, 17 from “Medicine, General and Internal”, and 6 from “Medicine, Research and Experimental”. We then searched […]

Results

General characteristics of articles

“Among 47 selected journals, 4,038 citations were retrieved. The 792 articles identified were published in 31 journals with a diverse range of impact factors, from 3.9 to 54.4.”

3. Search Strategy has several limitations that should be discussed in Discussion: why the authors searched through MEDLINE only, why not Scopus, Cochrane databases, CINAHL?? Dateline of searches is too short (6 months), and it needs to be explained why that specific period of time was chosen.

Answer: We now discuss and justify these choices

• Searched through MEDLINE only:

We decided to search MEDLINE only because in our search it is the most frequently used database; our aim was not to perform a systematic review, and the search strategy focused on specific journals, so the risk of missing relevant articles was limited.

We now highlight this in the discussion section.

“The search was performed with MEDLINE only because it is the most frequently used database, and we did not aim to perform a comprehensive search.”
• Dateline of searches (6 months):

We decided to limit our search to 6 months because 1) we aimed to have a post-publication exposure period (i.e., period from last publication date [June 30, 2014] to the Altmetric search date [May 1, 2015]) of at least 10 months to ensure that the Altmetric score would be stabilized for most articles and we wanted to have a sufficient delay since the launch of Altmetric, in 2012, to ensure that most journals would be adequately indexed.

We report following information in the discussion section under limitations:

“Our search period focused on the first 6 months of 2014 because we wanted to have sufficient delay since the launch of Altmetric, in 2012, and we aimed to have a post-publication exposure period (i.e., period from last publication date [June 30, 2014] to the Altmetric search date [May 1, 2015]) of at least 10 months to ensure that the Altmetric score would be stabilized for most articles.”