

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Scientific research output in orthopedics from China and other top-ranking countries: A 10-year survey of the literature
<b>AUTHORS</b>	Zou, Yuming; Li, Quan; Xu, Weidong

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Vinícius Ynoe de Moraes Federal University of São Paulo, Brazil
<b>REVIEW RETURNED</b>	07-Apr-2016

<b>GENERAL COMMENTS</b>	Hypothesis should be clearly stated Objetives should be clearly stated Manuscript needs revision, specially regarding to the search strategy rationale Manuscript needs some inferential statistics input, for comparison validity As a non-native, I have noticed some words that are not a common place in scientific writing;
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<b>REVIEWER</b>	Kaissar Yammine Center for Evidence-based Research, Dubai and Beirut
<b>REVIEW RETURNED</b>	11-Apr-2016

<b>GENERAL COMMENTS</b>	Review for the article: Scientific research outputs in orthopedics from China and other top-ranking countries: a ten-year survey of the literature Abstract: please refer to the comments below Introduction: concise and well written Methods: - Line 7: search instead or research strategy - Need to reference all the following claims: "the cumulative and average impact factors (IF) were calculated according to the journal Citation Reports (JCR) 2014 published by Thomson Reuters. Secondly, citation reports of literatures in each region were collected through Web of Science. Thirdly, the number of articles published in the top 10 high-impact orthopedics journals were counted and 10 most popular orthopedics journals in each region were also identified." - You mentioned "The number of specific types of articles including clinical trial, randomized controlled trials (RCTs), meta-analysis and review were also identified." However, the results included five publication types - I don't know whether case reports and narrative reviews would be an important added value to the research output - Please rephrase the following sentence "Trends of publication were
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	<p>our primary focus but not verifying the hypothesis that differences of contributions exist in these regions”.</p> <p>Results</p> <ul style="list-style-type: none"> <li>- Total amount and share of publications</li> </ul> <p>“MC's gross domestic spending on research and experimental development (R&amp;D) had been growing rapidly in recent years, from \$78.7 billion to \$317.8 billion between 2005 and 2014, and now was only after USA, according to estimates by Organization for Economic Cooperation and Development (OECD)[5]”. This should be written and explained in details in the methods section not in the results. Is the gross domestic spending on R&amp;D limited to medical research at least? If not, I would advise the authors to remove the results of such variable for irrelevance.</p> <p>Discussion</p> <ul style="list-style-type: none"> <li>- “RCTs were considered as the best evidence for clinical practice.’ RCTs are still considered as the highest form of evidence.</li> <li>- The following sentence should be removed: “It should be pointed out that meta-analysis is not really original research.”</li> </ul> <p>Though meta-analyses are secondary research, they provide one of the best tools for quality clinical evidence on very specific topics. It has been reported a 10-fold increase in the number of orthopedic systematic reviews and/or meta-analyses in the past ten years (Yammine K. Open access of evidence-based publications: the case of the orthopedic and musculoskeletal literature. J Evid Based Med. 2015 Nov;8(4):181-4) indicating a higher effort for production and awareness of their usefulness amid the medical research community.</p> <ul style="list-style-type: none"> <li>- The following sentence need to be rephrased: ‘First, the relatively low doorsill to perform meta-analysis; Second, many RCTs performed by scientists are available, and the fact that well-performed meta-analyses are the highest evidence in the hierarchy of clinical evidence and; Thirdly, the need of Chinese scholars to publish in peer-reviewed academic journals also contributed.”</li> <li>- “The data on total and average citations is actually also quite telling, as it shows that although MC has increased its publications by many folds, the average citation is extremely low compared to the other countries”.</li> </ul> <p>It might be low because of the very recent date of the MC publications.</p> <ul style="list-style-type: none"> <li>- Conclusions related to R&amp;D results should be reconsidered and not based on the relevant “R&amp;D” results; the latter are to be removed as mentioned above.</li> <li>- It could be interesting to perform a second statistical analysis while including Spine and J Arthroplasty as a sensitivity analysis to your primary results.</li> </ul>
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<b>REVIEWER</b>	Julio Urrutia Pontificia Universidad Catolica de Chile Chile
<b>REVIEW RETURNED</b>	12-Jun-2016

<b>GENERAL COMMENTS</b>	In this study, the authors performed a descriptive evaluation of the orthopedic literature from China in ten years (2005 to 2014); as contrast, they showed the same evaluation of orthopedic literature originated in the USA, the UK, Germany, and Japan. The authors evaluated the number of articles originated in these countries, their
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	<p>impact factor, the type of articles (RCT, clinical trials, case reports and meta-analyses) from each country, the number of orthopedic publications adjusted by the total amount spend in R&amp;D in each country (not only in the orthopedic field), and the number of articles published in the top 10 highest-impact orthopedic journals. While the study has some interest, there are several significant drawbacks that the authors should address before this article could be considered for publication.</p> <ol style="list-style-type: none"> <li>1. The authors should clarify how they decided the "country of origin" of each article. It is very common that articles published in main journals result from a combined effort of scientists from different countries. How did decide the "country of origin" if the first author was from a particular country (e.g.: the USA) and the corresponding was from another one (e.g.: Germany). What happened if the authors were from three of the countries evaluated? This is a very important definition since it may affect the results (especially as the authors evaluated the number of publications adjusted by the gross spend in R&amp;D).</li> <li>2. The authors used the word "trend" in several parts of their manuscript. This is incorrect; they did not perform any trend analysis. In fact, they did not perform any statistical analysis at all. As an example, at the beginning if the "Statistical analysis" subsection, they wrote "Trends of publication...."</li> <li>3. As the authors acknowledged, they did not perform any statistical analysis. Therefore, they should avoid misleading phrases such as "However, when the numbers were divided by total article volume of each region, the difference was not that obvious". Such a statement should be based on a statistical analysis; otherwise, it is meaningless.</li> <li>4. Please define what a "popular" orthopedic journal is. Is a popular journal one with the largest number of subscriptions? Or with more downloads? Or the one which accepts more articles from a given country?? The word popular is not very scientific in this setting.</li> <li>5. At the beginning of the Discussion section, the authors wrote: "Our study compared the quantity and quality of scientific publications..." They did not compare the quantity of publications; they just described it. Furthermore, I feel the characteristics they evaluated from published articles cannot be a synonym of quality.</li> <li>6. In the Discussion section, at the beginning of the third paragraph, the authors wrote "'RCT were considered as the best evidence for clinical practice". That is incorrect. In fact, in the following paragraph, the own authors acknowledge that "well-performed meta-analyses are the highest evidence in the hierarchy of clinical evidence".</li> <li>7. In the Conclusion of the Abstract, the authors wrote: "the quality of publication is far from satisfactory". That is a subjective statement; I suggest them to use a more scientific writing.</li> <li>8. In the last paragraph of the Introduction section, the second phrase should be part of the Materials and Methods, not a part of the Introduction section. Furthermore, they should avoid any mention to Taiwan; scientific articles from Taiwan are always clearly identified, and scientific communications should not involve political issues.</li> <li>9. The authors wrote "By average IF calculation, Germany ranked first, followed by USA". That information is inconsistent with the data shown in Table 1; please check your data.</li> <li>10. The article requires a professional language (English) edition before it can be considered for publication. As a few examples: <ol style="list-style-type: none"> <li>a) 29 September 2015, 1 January 2005 and 31 December 2014 should be corrected</li> <li>b) All of the 73 journals in the Orthopedics category.....covers resources... (Should be cover)</li> </ol> </li> </ol>
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	<p>c) "From \$78.7 billion to \$317.8 billion between 2005 and 2014, and now was only after USA" could be From \$78.7 billion in 2005 to \$317.8 billion in 2014, and now it is second only after the USA</p> <p>d) "The publication trend of RCTs for rest countries under surveyed". Maybe they meant the number of RCT published for the rest of the countries under surveillance.</p> <p>e) The Citation reports sub-section should be completely re-written. This reviewer could not understand it.</p> <p>f) "But the general quality of publications was dissatisfying. " What is satisfying? Please use a scientific language. The Discussion section contains several language errors that should be edited.</p> <p>11. The authors should update their references citing the main articles on this topic in the orthopedic field.</p> <p>Some minor concerns:</p> <ol style="list-style-type: none"> <li>1. Please describe the columns in Table 1</li> <li>2. In the Methods section, the authors should explain what do the numbers in the research strategy represent (ISSN).</li> </ol>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

-Hypothesis should be clearly stated

Response: We have revised the manuscript according to the reviewer's suggestion (Page 3, Lines 78-81).

-Objectives should be clearly stated

Response: Thank you for your suggestion, We have revised the manuscript according to the reviewer's suggestion (page 4, 82-85) .

-Manuscript needs revision, especially regarding to the search strategy rationale

Response : We have made revision to the search strategy part (page 4, 100-101) .

-Manuscript needs some inferential statistics input, for comparison validity

Response : We have conducted statistical analysis in our revision according to the Reviewer's comments. (page 4, line 113-117)

-As a non-native, I have noticed some words that are not a common place in scientific writing.

Response: We have asked help from a native English speaker for language polishing. This revised manuscript has been edited and proofread by Elsevier Language Editing Services.

Reviewer: 2

- Line 7: search instead or research strategy

Response: We are very sorry for our incorrect writing and have corrected this error in our revision.

- Need to reference all the following claims: "the cumulative and average impact factors (IF) were calculated according to the journal Citation Reports (JCR) 2014 published by Thomson Reuters. Secondly, citation reports of literatures in each region were collected through Web of Science. Thirdly, the number of articles published in the top 10 high-impact orthopedics journals were counted and 10 most popular orthopedics journals in each region were also identified."

Response: Thank you for this suggestion. We have referenced the above mentioned claims. (page

4, line 108-109)

- You mentioned "The number of specific types of articles including clinical trial, randomized controlled trials (RCTs), meta-analysis and review were also identified." However, the results included five publication types

Response: We are very sorry for our negligence of writing. We indeed included five publication types including clinical trial, randomized controlled trials (RCTs), meta-analysis, review, and case reports. Correction has been made in the revised manuscript (Page 4, Line 104).

- I don't know whether case reports and narrative reviews would be an important added value to the research output

Response: Case reports are generally considered anecdotal evidence, they had their intrinsic methodological limitations, but they case reports do have genuinely useful roles in medical research and evidence-based medicine, such as the facilitating of recognition of new diseases and adverse effects of treatments. (For example: the recognition of the link between administration of thalidomide to mothers and malformations in their babies was triggered by the report of a particular case.)

Review articles analyze or discuss research previously published by others, they were often written by an expert in a specific topic, readers can benefit from the expert's explanation and assessment of the validity and applicability of individual studies.

Case reports and reviews have their value in scientific research, so we included these two types of publications in our analysis.

- Please rephrase the following sentence "Trends of publication were our primary focus but not verifying the hypothesis that differences of contributions exist in these regions".

Response:

Response: We have made revisions to the statistical analysis part. (page 4, line 113-117)

## Results

- Total amount and share of publications

"MC's gross domestic spending on research and experimental development (R&D) had been growing rapidly in recent years, from \$78.7 billion to \$317.8 billion between 2005 and 2014, and now was only after USA, according to estimates by Organization for Economic Cooperation and Development (OECD)[5]". This should be written and explained in details in the methods section not in the results.

Response: Considering the Reviewer's suggestion, we have re-written this part (page 3, 68-72).

-Is the gross domestic spending on R&D limited to medical research at least? If not, I would advise the authors to remove the results of such variable for irrelevance.

Response: Indeed, gross domestic spending on R&D is not limited to medical research. We have made amendments according to the reviewer's suggestion.

## Discussion

- "RCTs were considered as the best evidence for clinical practice." RCTs are still considered as the highest form of evidence.

Response: Thank you for this insight full suggestion. Amendments have been made in our revisions (page 10, 205-206).

- The following sentence should be removed: "It should be pointed out that meta-analysis is not really original research."

Though meta-analyses are secondary research, they provide one of the best tools for quality clinical evidence on very specific topics. It has been reported a 10-fold increase in the number of orthopedic systematic reviews and/or meta-analyses in the past ten years (Yammine K. Open access of

evidence-based publications: the case of the orthopedic and musculoskeletal literature. *J Evid Based Med.* 2015 Nov;8(4):181-4) indicating a higher effort for production and awareness of their usefulness amid the medical research community.

Response: We have removed the above mentioned sentence as suggested by the reviewer (page 10, line 209-213).

- The following sentence need to be rephrased: 'First, the relatively low doorsill to perform meta-analysis; Second, many RCTs performed by scientists are available, and the fact that well-performed meta-analyses are the highest evidence in the hierarchy of clinical evidence and; Thirdly, the need of Chinese scholars to publish in peer-reviewed academic journals also contributed.'

Response : We have completely re-written this part. (Page 10, 205-213)

- "The data on total and average citations is actually also quite telling, as it shows that although MC has increased its publications by many folds, the average citation is extremely low compared to the other countries".

It might be low because of the very recent date of the MC publications.

Response: An article published earlier might have a greater chance of citation by other articles. We accept that the recent booming of articles from China might, in part, contribute to the low average citation. (page 10, line 228 to 229)

-Conclusions related to R&D results should be reconsidered and not based on the relevant "R&D" results; the latter are to be removed as mentioned above.

Response: As gross domestic spending on R&D is not limited to medical research, the result based on R&D is removed in the revision according to the suggestions made by the reviewer.

- It could be interesting to perform a second statistical analysis while including Spine and J Arthroplasty as a sensitivity analysis to your primary results.

Response: Thank you for this suggestion. We included Spine and J Arthroplasty as a sensitivity analysis. (page 7-8, line 170-173)

Reviewer: 3

Reviewer Name: Julio Urrutia

Institution and Country: Pontificia Universidad Catolica de Chile, Chile

Competing Interests: I have no competing interests

In this study, the authors performed a descriptive evaluation of the orthopedic literature from China in ten years (2005 to 2014); as contrast, they showed the same evaluation of orthopedic literature originated in the USA, the UK, Germany, and Japan. The authors evaluated the number of articles originated in these countries, their impact factor, the type of articles (RCT, clinical trials, case reports and meta-analyses) from each country, the number of orthopedic publications adjusted by the total amount spend in R&D in each country (not only in the orthopedic field), and the number of articles published in the top 10 highest-impact orthopedic journals.

While the study has some interest, there are several significant drawbacks that the authors should address before this article could be considered for publication.

1. The authors should clarify how they decided the "country of origin" of each article. It is very common that articles published in main journals result from a combined effort of scientists from different countries. How did decide the "country of origin" if the first author was from a particular country (e.g.: the USA) and the corresponding was from another one (e.g.: Germany). What happened if the authors were from three of the countries evaluated? This is a very important definition since it may affect the results (especially as the authors evaluated the number of publications adjusted by the gross spend in R&D).



Response: We are sorry for not clearly explain this problem. In this article, we decided the “country of origin” based on the affiliation (ad) of the first author. This is consistent with other similar articles as mentioned in our manuscript. (Page 4, line 101-103) Besides, we excluded our analysis based on R&D spending according to suggestions made by other reviewers. As proposed by the reviewer, it is very common that articles published in main journals result from a combined effort of scientists from different countries, it was indeed difficult to define the “country of origin” in these articles. But it is generally accepted that the first author contributed the greatest part to an article. Our definition has its limitations, but it was the best way we have currently.

2. The authors used the word “trend” in several parts of their manuscript. This is incorrect; they did not perform any trend analysis. In fact, they did not perform any statistical analysis at all. As an example, at the beginning if the “Statistical analysis” subsection, they wrote “Trends of publication....”

Response: We conducted statistical analysis as suggested by reviewers in our revision and revised our manuscript.

3. As the authors acknowledged, they did not perform any statistical analysis. Therefore, they should avoid misleading phrases such as “However, when the numbers were divided by total article volume of each region, the difference was not that obvious”. Such a statement should be based on a statistical analysis; otherwise, it is meaningless.

Response: We conducted statistical analysis as suggested by reviewers in our revision and revised our manuscript.

4. Please define what a “popular” orthopedic journal is. Is a popular journal one with the largest number of subscriptions? Or with more downloads? Or the one which accepts more articles from a given country?? The word popular is not very scientific in this setting.

Response: We are sorry for our poor expression in English. We have substitute the word “popular” with “published” in this part. (Page 8, line 177)

5. At the beginning of the Discussion section, the authors wrote: “Our study compared the quantity and quality of scientific publications...” They did not compare the quantity of publications; they just described it. Furthermore, I feel the characteristics they evaluated from published articles cannot be a synonym of quality.

Response: Thank you for this insight full suggestion. We conducted statistical analysis as suggested by reviewers. (page 4, line 113 to 117)

6. In the Discussion section, at the beginning of the third paragraph, the authors wrote ““RCT were considered as the best evidence for clinical practice”. That is incorrect. In fact, in the following paragraph, the own authors acknowledge that “well-performed meta-analyses are the highest evidence in the hierarchy of clinical evidence”.

Response: Well designed, conducted, and reported RCTs represent the gold standard in evaluating healthcare intervention, while well-performed meta-analyses are the best evidence in the hierarchy of clinical evidence. We have made the amendments in our revision. (Page 9, line 205-206)

7. In the Conclusion of the Abstract, the authors wrote: “the quality of publication is far from satisfactory”. That is a subjective statement; I suggest them to use a more scientific writing.

Response: We have made many language mistakes in this article. We have sent our revision for language polishing by native speakers before submission. (page 2, line 51-52)

8. In the last paragraph of the Introduction section, the second phrase should be part of the Materials and Methods, not a part of the Introduction section. Furthermore, they should avoid any mention to Taiwan; scientific articles from Taiwan are always clearly identified, and scientific communications should not involve political issues.

Response: Thank you for this insightful suggestion. We conducted our revision as suggested by the reviewers. (Page 3, 82-83 )

9. The authors wrote “By average IF calculation, Germany ranked first, followed by USA”. That information is inconsistent with the data shown in Table 1; please check your data.

Response: We checked our data, we committed a mistake in the previous manuscript. By average IF calculation, generally speaking, USA (2.192) ranked first, followed by Germany (2.162), Japan (2.111), MC (1.917) and UK (1.802).

10. The article requires a professional language e (English) edition before it can be considered for publication. As a few examples:

- a) 29 September 2015, 1 January 2005 and 31 December 2014 should be corrected
  - b) All of the 73 journals in the Orthopedics category.....covers resources... (Should be cover)
  - c) “From \$78.7 billion to \$317.8 billion between 2005 and 2014, and now was only after USA” could be From \$78.7 billion in 2005 to \$317.8 billion in 2014, and now it is second only after the USA
  - d) “The publication trend of RCTs for rest countries under surveyed”. Maybe they meant the number of RCT published for the rest of the countries under surveillance.
  - e) The Citation reports sub-section should be completely re-written. This reviewer could not understand it.
  - f) “But the general quality of publications was dissatisfying. “ What is satisfying? Please use a scientific language. The Discussion section contains several language errors that should be edited.
- Response: We performed professional language edition before we submitted our revision.

11. The authors should update their references citing the main articles on this topic in the orthopedic field.

Response: We updated our references as suggested by the reviewer. (Reference 7 reference 8)

Some minor concerns:

1. Please describe the columns in Table 1

Response: We described the columns as suggested. (page 6, line 137-143)

2. In the Methods section, the authors should explain what do the numbers in the research strategy represent (ISSN). The full search strategy from the methods section was include it in a supplementary information file. The corresponding journal title of ISSN was also included in a supplementary file. (See supplementary file 1)

## VERSION 2 – REVIEW

<b>REVIEWER</b>	Kaissar Yamine Center of Evidence-based Anatomy, Sports & orthopedics The Foot & Hand Clinic Lebanon
<b>REVIEW RETURNED</b>	22-Jul-2016

<b>GENERAL COMMENTS</b>	The reviewer completed the checklist but made no further comments.
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<b>REVIEWER</b>	Julio Urrutia Department of Orthopaedic Surgery School of Medicine Pontificia Universidad Catolica de Chile
<b>REVIEW RETURNED</b>	31-Jul-2016

<b>GENERAL COMMENTS</b>	The article has improved from its former version.  For the current version, I have only some minor concerns: 1. In the Abstract section, the last phrase is still “the quality of these
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	<p>publishing efforts needs improvement.” I suggest changing for “an increase in their IF should be attempted for the next years”.</p> <p>2. Scientific articles are usually written in past time; as a few examples that should be changed I can cite:</p> <p>a) Abstract section, Objectives subsection: “we aim” should be “we aimed”</p> <p>b) Introduction section, at the beginning of the third paragraph: again, “we aim” should be “we aimed”</p> <p>c) Introduction section, at the end of the third paragraph: “and provide” should be “and to provide”</p> <p>3. Results section, first paragraph: “the share of publication numbers attributed to the USA has been in decline for the last 10 years.” I suggest: “the share of publication numbers attributed to the USA has decreased for the last 10 years.”</p> <p>4. In line 141, after USA (<math>p &lt; 0.001</math>) there should be an end of parenthesis “USA (<math>p &lt; 0.001</math>)”</p> <p>5. Last column of Table 2 should be changed; numbers are overlapped</p> <p>6. Line 179: it is not J Clin Orthop Relat Res. It is Clin Orthop Relat Res.</p> <p>7. Discussion section, first paragraph, first line: the authors wrote “Our study compared the quantity and quality of scientific publications.” That is not true; they compared the quantity and IF of scientific publications. This concern was already expressed in my first review, but it was not answered or changed.</p>
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## VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Reviewer Name: Kaissar Yammine

Institution and Country: Center of Evidence-based Anatomy, Sports & orthopedics, The Foot & Hand Clinic, Lebanon

Competing Interests: None

None

Response: Thank you for your recommendations for our previous revision, which were quite helpful in improving our work.

Reviewer: 3

Reviewer Name: Julio Urrutia

Institution and Country: Department of Orthopaedic Surgery, School of Medicine, Pontificia Universidad Catolica de Chile

Competing Interests: None declared

Please leave your comments for the authors below

The article has improved from its former version.

Response: We would like to thank you for your helpful suggestions in improving our work.

For the current version, I have only some minor concerns:

1. In the Abstract section, the last phrase is still “the quality of these publishing efforts needs improvement.” I suggest changing for “an increase in their IF should be attempted for the next years”.

Response: Based on your recommendation and comments from others, we slightly revised this sentence. (Page 2, Line 52)

2. Scientific articles are usually written in past time; as a few examples that should be changed I can

cite:

a) Abstract section, Objectives subsection: “we aim” should be “we aimed”

b) Introduction section, at the beginning of the third paragraph: again, “we aim” should be “we aimed”

c) Introduction section, at the end of the third paragraph: “and provide” should be “and to provide”

Response: Thank you for your careful review. We have made revisions accordingly. (Page 2, Line 30; Page 2, Line 82; Page 3, Line 84)

2. Results section, first paragraph: “the share of publication numbers attributed to the USA has been in decline for the last 10 years. “I suggest: “the share of publication numbers attributed to the USA has decreased for the last 10 years.”

Response: We have made revisions accordingly. (Page 5, Line 124)

3. In line 141, after USA ( $p < 0.001$  there should be an end of parenthesis “USA ( $p < 0.001$ )”

Response: We are sorry for our carelessness. A parenthesis was added as reminded. (Page 6, Line 141)

4. Last column of Table 2 should be changed; numbers are overlapped

Response: The format of Table 2 was changed. (Page 6, Line 153, Table 2)

5. Line 179: it is not J Clin Orthop Relat Res. It is Clin Orthop Relat Res.

Response: we have corrected this error as you have reminded. We are sorry for our clerical error. (Page 6, Line 169)

6. Discussion section, first paragraph, first line: the authors wrote “Our study compared the quantity and quality of scientific publications.” That is not true; they compared the quantity and IF of scientific publications. This concern was already expressed in my first review, but it was not answered or changed.

Response: We have revised this sentence based on your recommendation. We are sorry for our carelessness in the last revision. (Page 9, Line 186)