

Peer Review File

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Reviewer A

Comment 1: Ljne 73: “To our knowledge, scientometrics has not been applied to analyze the status and foci of migraine research”. This assertion is contraindicated by several existing studies in the literature: Growth of Headache Research: A 1983–2014 bibliometric study. Cephalalgia. 2017;37(13):1299-1309. doi:10.1177/0333102416678636; Scientometric Assessment of India’s Migraine Research Publications during 2006-15 Journal of Young Pharmacists, 2016; 8(4):294-301 doi:10.5530/jyp.2016.4.2. Please reference these papers and expand on what your paper adds to the existing scientometric studies.

Response: Thank you for your careful review and kind suggestion. We have read these two studies and found that the two studies only focused on the field of headaches and the countries, institutions, and journals related to migraine in India. Both studies did not explore the knowledge base and emerging topics of migraine globally, which is different from our manuscript focused on the global trends and explored emerging topics in migraine research in recent years. Thanks again for reminding this, we have revised this sentence to “To our knowledge, scientometrics has not been applied to analyze the status and foci of global migraine research over the past decade”. **(Line 92)**

Comment 2: Line 106 “The annual output of migraine research showed a stable rising trend from 2010 to 2019”. I would delete the word ‘stable’, as publications do not uniformly increase following on from the previous year, although there is an upward trend, particularly in the

last 2 years.

Response: Thank you for your kind suggestion. Based on your suggestion, we have revised this sentence in result section to “The annual output of migraine research showed a rising trend from 2010 to 2019”. (Line 132)

Comment 3: Line 123: “Albert Einstein College of Medicine ranked first”. Please state the countries of the reported institutions, i.e. “..., USA”

Response: Thank you for your kind suggestion. We have presented the country of the top 10 institutions in Table 1 and describe them as “Among the top 10 institutions (Table 1), six are in the United States, and four are in European countries”. (Line 151)

Comment 4: Line 169, line 172, line 223, Please note ‘Goadsby’ is misspelled

Response: Thank you for your kind suggestion. We have cross-checked all references and revised the mistakes. (Line 207, Line 210, Line 268)

Comment 5: Line 186, “Lipton RB, et al. (21) in Headache” This reference (21) is the same as the reference just before and therefore must be incorrect. It may be necessary to cross-check all references thoroughly.

Response: Thank you for your kind suggestion. We have checked the references and revised it to (22) according to your requirements and checked all references thoroughly. (Line 227)

Comment 6: Line 209-210: ...” indicating that the field is currently at a stable development stage”. This is meaningless and should be deleted.

Response: Thank you for your kind suggestion. We had deleted this sentence as your requirements.

Comment 7: Line 213-214 “As for productive institutions, most are in the United States, Albert Einstein College of Medicine with most publications and ranks first”. This sentence

does not make sense and should be revised.

Response: Thank you for your kind suggestion. Based on your suggestion, we have revised this sentence to “Most productive institutions are located in the United States, among which the Albert Einstein College of Medicine has the most publications, ranking first.” (Line 256)

Comment 8: Line 219-222 “These journals are sources of submissions and references, thereby providing the field with critical references. The dual-map overlay of journal analysis also provides indispensable references for future migraine research. In particular, we found that some publications in Neurology may be related to the pathogenesis of migraine (5,33)” These sentences do not provide any meaningful information and I would recommend deleting or restructuring them.

Response: Thank you for your kind suggestion. Based on your suggestion, we have deleted this sentence “These journals are sources of submissions and references, thereby providing the field with critical references.” As the dual-map overlay of journal can provide the relationship between citations and cited journals, which can also provide a necessary reference for future migraine research. In particular, our research results found that some publications on the pathogenesis of migraine appeared in Neurology journals. These sentences are critical to understanding our results, so they are retained. (Line 263)

Comment 9: Line 226 “the field of migraine has attracted strong attention in recent years and is at a sustainable development stage”. This should be rephrased; whilst the number of publications may have increased, it is impossible to say if this relates to the field of migraine attracting stronger attention. Similarly, the term ‘a sustainable development stage’ is tenuous and imparts very little.

Response: Thank you for your careful review. According to your suggestion, we have revised this sentence to “the field of migraine may have attracted more and more attention in recent years and will remain in a sustainable development stage.” (Line 271) ‘a sustainable development stage’ refers to the stage of continuous development.

Comment 10: Discussion line 229-266: In general, this section is quite rambling. When describing studies on the basis of co-citations, the description of studies does not appear to follow a logical order e.g. by order of co-citations or by time. Certain lines e.g. line 243-246 “The International Headache Society (IHS) provides diagnostic criteria for headaches in which migraine is classified as with aura (including sensory or other central nervous system symptoms usually associated with migraine) or without aura (with many symptoms such as nausea, photophobia, phonophobia) appear slotted in without obvious relevance or context. This section requires substantial restructuring and editing.

Response: Thank you for your careful review and kind suggestion. When describing studies, we found that these studies could be divided into pathophysiological mechanisms, epidemiological characteristics, diagnostic criteria, disease burden, and treatment drugs. Therefore, we follow the above classification and describe each part according to the publication time. According to your suggestion, we have described the Knowledge base by order of time. “IHS provides diagnostic criteria for headaches in which migraine is classified as with aura (including sensory or other central nervous system symptoms usually associated with migraine) or without aura (with many symptoms such as nausea, photophobia, phonophobia).”, which is a study published by Bes A et al., in *Cephalalgia* in 2013, and we have added reference number 1. (Line 313)

Comment 11: Line 240 “In 2006, Olesen J et al. published a paper with 301 co-citations in

Cephalalgia that provided new diagnostic criteria for chronic migraine based on the duration of medication use (36). The cited article (Solomon S. New appendix criteria open for a broader concept of chronic migraine. Cephalalgia 2007;27:469; author reply -70.) is in fact a letter to the editor from S Solomon and reply by Olesen, relating to a prior publication in which the new diagnostic criteria were proposed (Olesen J, Bousser M-G, Diener H-C, et al. New Appendix Criteria Open for a Broader Concept of Chronic Migraine. Cephalalgia. 2006;26(6):742-746). The diagnostic criteria for chronic migraine are based on clinical features and headache frequency, rather than the duration of medication use. This statement needs close review. The same mistake is repeated in line 246-247.

Response: Thank you for your careful review and kind suggestion. Based on your suggestion, we have checked the references and revised this sentence to “In 2006, Olesen J et al. published a paper with 301 co-citations in *Cephalalgia* that provided new diagnostic criteria for chronic migraine based on clinical features and headache frequency.” (Line 298, Line 555) And have deleted the sentence “Similar to Olesen J et al.,(36) the diagnostic criteria for chronic migraine is based on medication duration(1).”

Comment 12: Figures and tables: Overall the quality of some of the figures is poor, and the overall number excessive. In particular, 4a, 5 and 7 are almost illegible. The number of figures needs to be cut down, and assessed for quality. With regard to Figure 8 and Table 4: I would suggest including the titles of the related research papers in these tables. I would describe them in the text in the same order as they appear in the tables, unless there is a reason not to.

Response: Thank you for your kind suggestion. We modified the resolution of the pictures as suggested, and uploaded some pictures in the supplemental material. According to your suggestion,

I have revised them in the order of appearance in Figure 8, and the basis of co-citation by order of time, including the titles of co-cited references in Table 4. (Line 277-Line 317; Line 334- Line 394)

Reviewer B

Comment 1: As stated above, it is believed that the findings related to the critical topics published are of utmost importance in helping to inform and drive future research pursuits, and should be given more preferential treatment in the manuscript (more so than authors/institutions/countries). These findings were only very briefly described in the results section, but then described in too much detail in the discussion section (specifically the “Knowledge Base” section of the discussion is unclear and likely better explained in the introduction and results sections). The manuscript would likely benefit from giving more background information related to this in the introduction section (past trends), more details in the results section, and brief summarizations and details related to relevance in the discussion section.

Response: Thank you for your kind suggestion. To make the results section concise and clear, we describe the overall results of the references with citation bursts, such as burst strengths and burst durations. In the discussion of emerging topics, the main topics and research findings are described and summarized in detail, since it may reflect emerging themes of migraine research. Similarly, the result of co-cited references and co-cited relationships are depicted in the results section, while presenting the co-cited references in Table 4. In the discussion of a knowledge base, these findings are described and summarized in detail. We find that some of co-cited references have been cited in the introduction, such as references (1) and (5).

Comment 2: Abstract first sentence—why has migraine attracted increasing research attention? First sentence feels generic and should be more specific.

Response: Thank you for your kind suggestion. The increase number of migraine publications, which may reflect that the field of migraine has attracted more and more attention in recent years. According to your suggestion, we have revised this sentence to “In recent years, migraine has been widely studied by scholars from all over the world.” (Line 46)

Comment 3: Introduction—General information about migraine could be strengthened and more closely related to the study’s purpose (using scientometrics to explore migraine research patterns). In addition, a more updated list of medications is likely more relevant than those provided (i.e., triptans; CGRP inhibitors)

Response: Thank you for your kind suggestion. According to your suggestion, we have revised this sentence to “Therefore, this study aims to use scientometric methods to explore research patterns and frontiers in the field of migraine research.” (Line 94) We only provide some medications for migraine treatment, which may be missed. We have supplemented them as your suggestion. (Line 79)

Comment 4: End of introduction—why is using scientometrics to study migraine research important? How might researchers or healthcare professionals use this information?

Response: Thank you for your kind suggestion. As scientometrics can quantify the growth of literature in specific subjects and the impact of individual research results, which is considered an ideal methodological choice for evaluating research trends. Researchers or healthcare professionals can learn about research trends and frontiers in the field of migraine research. According to your suggestion, we have supplemented this sentence “We hope that this scientometric analysis can

provide migraine researchers with research directions, improving the quality of research, to ultimately benefit migraine patients.” (Line 96)

Comment 5: The sentences related to the circle/bubble size as an indication of more publications, etc are too repetitive (in every paragraph of results section). Might be better to indicate this more clearly in the methods section and then individual sentences in results are not necessary.

Response: Thank you for your kind suggestion. According to your suggestion, we have described the circle/bubble size in the methods section and revised these sentences in the results. (Line113, Line146, Line157, Line 177, Line188, Line210, Line218, Line231)

Comment 6: When discussing citation bursts in the results section, give more detail about what these publications entailed (topics, relevance, etc).

Response: Thank you for your kind suggestion. In the results section, we only describe the overall results of the references with citation bursts, such as burst strengths and burst durations. In the discussion, *Emerging topics* summarized the main topics and research findings of the references with citation bursts. (Line 328)

Comment 7: How might this manuscript be useful for researchers and healthcare professionals? Give specific examples of how it may advance the field (i.e., what may be next in the research realm?).

Response: Thank you for your kind suggestion. Researchers or health care professionals can grasp the current status, and understand the knowledge base and emerging topics in the field of migraine research, which can provide research directions for future research, such as migraine disease burden, pathophysiological mechanisms, and effective treatments. (Line 427)

