

PEER-REVIEW REPORT

Name of journal: *World Journal of Psychiatry*

Manuscript NO: 82160

Title: Functional near-infrared spectroscopy in elderly patients with four types of dementia

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05688164

Position: Peer Reviewer

Academic degree: BSc, MD, PhD

Professional title: Research Fellow

Reviewer's Country/Territory: Hungary

Author's Country/Territory: China

Manuscript submission date: 2022-12-07

Reviewer chosen by: Dong-Mei Wang

Reviewer accepted review: 2023-01-28 12:41

Reviewer performed review: 2023-02-01 09:16

Review time: 3 Days and 20 Hours

Scientific quality	☐ Grade A: Excellent ☐ Grade B: Very good ☒ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Novelty of this manuscript	☐ Grade A: Excellent ☒ Grade B: Good ☐ Grade C: Fair ☐ Grade D: No novelty
Creativity or innovation of this manuscript	☐ Grade A: Excellent ☒ Grade B: Good ☐ Grade C: Fair ☐ Grade D: No creativity or innovation

Scientific significance of the conclusion in this manuscript	☐ Grade A: Excellent ☒ Grade B: Good ☐ Grade C: Fair ☐ Grade D: No scientific significance
Language quality	☐ Grade A: Priority publishing ☒ Grade B: Minor language polishing ☐ Grade C: A great deal of language polishing ☐ Grade D: Rejection
Conclusion	☐ Accept (High priority) ☐ Accept (General priority) ☐ Minor revision ☒ Major revision ☐ Rejection
Re-review	☒ Yes ☐ No
Peer-reviewer statements	Peer-Review: ☒ Anonymous ☐ Onymous
	Conflicts-of-Interest: ☐ Yes ☒ No

SPECIFIC COMMENTS TO AUTHORS

1 February 2023 The review report on the manuscript titled 'Functional near-infrared spectroscopy in elderly patients with four types of dementia: Case reports', submitted to World Journal of Psychiatry Manuscript ID: 82160 Dear Authors, The present research article entitled 'Functional near-infrared spectroscopy in elderly patients with four types of dementia: Case reports' is a well-written and useful summary of the current status of knowledge on the possible implementation of functional near-infrared spectroscopy (fNIRS) technique in identifying symptoms of dementia and this neurodegenerative's progression. For this purpose, here authors presented four cases of patients with different types of dementia: with the use of fNIRS, different hemodynamics characteristics of prefrontal cortex were identified, providing evidence that this imaging tool might be very useful for the differential diagnosis between dementia subtypes. In general, I think the idea of this manuscript is really interesting and the authors' fascinating observations on this timely topic may be of interest to the readers of World Journal of Psychiatry. However, some comments, as well as some crucial evidence that should be included to support the author's argumentation, needed



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to be addressed to improve the quality of the manuscript, its adequacy, and its readability prior to the publication in the present form, in particular reshaping parts of the Introduction and Methods sections by adding more evidence and theoretical constructs. Please consider the following comments: 1. Abstract: Please proportionally present background, purpose, methods, results, and conclusion. Also, in my opinion, a lack of explanation of the fNIRS imaging technique and of its clinical application in Neuroscience makes the reader unable to grasp the key aspects of this paper by consulting the abstract. I suggest reorganizing the abstract, making sure to include an explanation of this concept. 2. Keywords: Please list five keywords and use them as many as possible in the first two sentences of the abstract. 3. A graphical abstract is highly recommended. 4. In general, I recommend authors to use more evidence to back their claims, especially in the Introduction of the article, which I believe is currently lacking. Thus, I recommend the authors to attempt to deepen the subject of their manuscript, as the bibliography is too concise: nonetheless, in my opinion, less than 50/60 articles for a research paper are really insufficient. Therefore, I suggest the authors to focus their efforts on researching more relevant literature: I believe that adding more studies and reviews will help them to provide better and more accurate background to this study. 5. The objectives of this study are generally clear and to the point; however, I believe that there are some ambiguous points that require clarification or refining. In my opinion, authors should be explicit regarding how they assessed the reliability of fNIRS in estimating global cerebral function and how it could be a critical tool to investigate frontal lobe oxygenation in patients with different types of dementia. 6. Introduction: I suggest the authors to reorganize the Introduction section, which seems inhomogeneous and dispersive, and specifically, not enough informative as an Introduction should be. For this reason, I believe that a general overview about the use of optical techniques, specifically fNIRS, to study brain hemodynamics and to assess prefrontal cortex's

activity of older adults for detection of certain types of seizures and cortical spreading deactivation in cognitive tasks, would provide a more defined background here. In this regard, I believe that it could be useful to focus on 'Dissecting Neurological and Neuropsychiatric Diseases: Neurodegeneration and Neuroprotection' and on representation of altered prefrontal mechanisms reflected by fNIRS imaging (<https://doi.org/10.17219/acem/146756>; <https://doi.org/10.1111/psyp.14122>). This additional information may help in understanding how fNIRS stimulation could have the potential to develop accessible neuroimaging biomarkers for different neurodegenerative disorders (<https://doi.org/10.3390/cells11162607>; <https://doi.org/10.3390/biomedicines9040340>), as 'Accuracy of Biomarkers in the Detection of Clinical Outcome in Disorders after Severe Acquired Brain Injury: Preliminary Results of a Pilot Study Using a Machine Learning Approach'. 7. Case reports: I suggest the authors to better explain and further describe data about the subject and provide full information about their clinical assessment (i.e., severity of disorder, pharmacotherapy duration etc.). Moreover, I suggest the authors to use more references to back their claims, especially when describing the laboratory tests used. Moreover, I suggest the authors to use more references to back their claims, especially when describing the laboratory tests used. 8. I think the 'Conclusions' paragraph would benefit from some thoughtful as well as in-depth considerations by the authors, because as it stands, it lists down all the main findings of the research, without really stressing the theoretical significance of the study. Authors should make an effort, trying to explain the theoretical implication as well as the translational application of their research. 9. In according to the previous comment, I would ask the authors to better define a 'Limitations and future directions' section before the end of the manuscript, in which authors can describe in detail and report all the technical issues brought to the surface. 10. Regarding the Figures: Please provide an explanatory caption for each figure

within the text. I hope that, after these careful revisions, this paper can meet the Journal's high standards for publication. I am available for a new round of revision of this paper. I declare no conflict of interest regarding this manuscript. Best regards,
Reviewer

PEER-REVIEW REPORT

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Manuscript NO: 82160

Title: Functional near-infrared spectroscopy in elderly patients with four types of dementia

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 06228844

Position: Peer Reviewer

Academic degree: PhD

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Reviewer's Country/Territory: Taiwan

Author's Country/Territory: China

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Reviewer chosen by: Dong-Mei Wang

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Reviewer performed review: 2023-02-10 14:17

Review time: 2 Days and 6 Hours

Scientific quality	☐ Grade A: Excellent ☐ Grade B: Very good ☒ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Novelty of this manuscript	☐ Grade A: Excellent ☐ Grade B: Good ☒ Grade C: Fair ☐ Grade D: No novelty
Creativity or innovation of this manuscript	☐ Grade A: Excellent ☐ Grade B: Good ☒ Grade C: Fair ☐ Grade D: No creativity or innovation

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Conclusion	☐ Accept (High priority) ☐ Accept (General priority) ☐ Minor revision ☒ Major revision ☐ Rejection
Re-review	☒ Yes ☐ No
Peer-reviewer statements	Peer-Review: ☒ Anonymous ☐ Onymous
	Conflicts-of-Interest: ☐ Yes ☒ No

SPECIFIC COMMENTS TO AUTHORS

The study demonstrated the use of functional near-infrared spectroscopy (fNIRS) during two tasks and a resting state to differentiate four types of dementia (FTD, LBD, PDD, AD). The presentation of the main results is clear and concise. The results are valuable and worthy of being published taking into account their possible applications in the clinical diagnosis of different types of dementia using fNIRS. However, there are some issues that need to be addressed first to improve the quality of the manuscript. Some comments are detailed below. The description in the Introduction chapter is too brief, and some descriptions about the application of past studies are mixed in the Discussion chapter. It is recommended to supplement and take stock of the evidence of fNIRS applied to various dementias (at least the four mentioned in this study) and the advantages and disadvantages of this method. Although the Data analysis chapter describes the tools and analysis methods used, it is a general description without too much in-depth explanation. Please add explanations or cite appropriate literature to help readers obtain relevant information or have the opportunity to reproduce the steps of the experiment. The Case Report chapter clearly and completely describes the condition



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of the case and the relevant examination results. However, the LBD and AD cases do not mention the findings obtained by MRI or CT imaging examination. It is suggested that in addition to the results of the fNIRS examination, the results of other routine examinations should be added for comparison and discussion in each case, so as to achieve a more correct and objective interpretation of the results of the fNIRS examination. Regarding the description of the fNIRS results (only brief figures), there is no description of the fNIRS results in the Case Report chapter and the Discussion chapter. It is difficult to understand the degree of activation of these 4 cases and the status of resting state functional connections. It is recommended to first introduce the interpretation level and key points of the inspection results, and then supplement the results obtained in these cases and their significance in detail. Due to the 4 types of dementia cases selected by the author, complex issues such as individual severity (MMSE score), onset conditions, whether they are mixed with other mental problems, and whether they are typical of the type of dementia are mixed together, which is not easy to understand the essential impact from the test results. Although the author put forward some proof that some activation areas are consistent with the symptoms of individual cases, it is still not enough to enable readers to fully understand and grasp the application and interpretation of fNIRS for dementia detection. For example, why are the MMSE scores of PDD and AD similar, but the functional connection strength is much different? What can be learned from the results of Figure 3? It is recommended that the author make a complete description of the conditions of these cases and the results of fNIRS.

RE-REVIEW REPORT OF REVISED MANUSCRIPT

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Position: Peer Reviewer

Academic degree: BSc, MD, PhD

Professional title: Research Fellow

Reviewer's Country/Territory: Hungary

Author's Country/Territory: China

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Reviewer chosen by: Yu-Lu Chen

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Review time: 1 Day and 17 Hours

Scientific quality	☐ Grade A: Excellent ☐ Grade B: Very good ☒ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Language quality	☐ Grade A: Priority publishing ☒ Grade B: Minor language polishing ☐ Grade C: A great deal of language polishing ☐ Grade D: Rejection
Conclusion	☐ Accept (High priority) ☒ Accept (General priority) ☐ Minor revision ☐ Major revision ☐ Rejection
Peer-reviewer	Peer-Review: ☒ Anonymous ☐ Onymous



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statements

Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

6 March 2023 The 2nd review report on the manuscript titled 'Functional near-infrared spectroscopy in elderly patients with four types of dementia: Case reports', submitted to World Journal of Psychiatry Manuscript ID: 82160 Dear Authors, I am pleased to see that the author took my comments seriously and have solved the issues I raised in the previous round of the decision session. Currently, the manuscript is a well written and nicely presented research article documenting the current status of knowledge on the possible implementation of functional near-infrared spectroscopy technique in identifying symptoms of dementia and neurodegenerative progression. Overall, the manuscript contains three figures, no table, and 56 references. I believe that the manuscript meets the Journal's high standards for publication. I am looking forward to seeing more papers written by the same authors. Thank you. I declare no conflict of interest regarding this manuscript. Best regards, Reviewer

RE-REVIEW REPORT OF REVISED MANUSCRIPT

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Professional title: Research Scientist

Reviewer's Country/Territory: Taiwan

Author's Country/Territory: China

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Review time: 1 Day and 2 Hours

Scientific quality	☐ Grade A: Excellent ☒ Grade B: Very good ☐ Grade C: Good ☐ Grade D: Fair ☐ Grade E: Do not publish
Language quality	☐ Grade A: Priority publishing ☒ Grade B: Minor language polishing ☐ Grade C: A great deal of language polishing ☐ Grade D: Rejection
Conclusion	☐ Accept (High priority) ☐ Accept (General priority) ☒ Minor revision ☐ Major revision ☐ Rejection
Peer-reviewer	Peer-Review: ☒ Anonymous ☐ Onymous

statements

Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

Although there seems to be a problem with the correspondence between the text of the comments and the revised version of the manuscript (reference numbers are different), the author's additions have indeed enhanced readers' understanding of the content of the Introduction chapter. Among them, the author mentions that "fNIRS imaging systems possess high temporal and spatial resolutions". From Figure 2, it is not clear that fNIRS has a high spatial resolution. What are the temporal resolution and spatial resolution of fNIRS? In addition, is there any research comparing the performance of fNIRS and EEG? that can be provided to understand the difference between the two? Regarding the part of the experimental method and the explanation of the results, the author has added further explanations to make the manuscript clearer and more complete.