

## PEER-REVIEW REPORT

**Name of journal:** World Journal of Psychiatry

**Manuscript NO:** 64964

**Title:** G-protein coupled receptors and synaptic plasticity in sleep deprivation.

**Reviewer's code:** 05945693

**Position:** Peer Reviewer

**Academic degree:** MD

**Professional title:** Doctor

**Reviewer's Country/Territory:** Canada

**Author's Country/Territory:** Canada

**Manuscript submission date:** 2021-02-25

**Reviewer chosen by:** Jin-Lei Wang

**Reviewer accepted review:** 2021-03-29 13:59

**Reviewer performed review:** 2021-04-06 18:55

**Review time:** 8 Days and 4 Hours

<b>Scientific quality</b>	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
<b>Language quality</b>	<input type="checkbox"/> Grade A: Priority publishing <input checked="" type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
<b>Conclusion</b>	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input type="checkbox"/> Minor revision <input checked="" type="checkbox"/> Major revision <input type="checkbox"/> Rejection
<b>Re-review</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Peer-reviewer statements</b>	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



**Baishideng  
Publishing  
Group**

7041 Koll Center Parkway, Suite  
160, Pleasanton, CA 94566, USA  
**Telephone:** +1-925-399-1568  
**E-mail:** bpgoffice@wjgnet.com  
<https://www.wjgnet.com>

## **SPECIFIC COMMENTS TO AUTHORS**

Your review article entitled “G-protein coupled receptors and synaptic plasticity in sleep deprivation” by Parmar et al. attempted to summarize the recent findings on GPCRs and their role in the formation of long-term memories which occurs while you sleep. In the event you suffer from inadequate sleep or sleep deprivation, these memory consolidation processes (synaptic plasticity via LTP and LTD) are affected which can explain memory loss and other psychoneurological processes that are associated with sleep deprivation. Essentially the authors concluded that this is an issue for drugs used to treat neurological conditions since they act on or are GPCRs and that this information is essential when it comes to drug development. In general, I found the article to be well written, organized in a logical way and fairly easy to read. I did identify a few spelling and syntax errors and well as some inconsistencies with the spelling of some terms. I also identified a few instances where more detail could be added to improve the review article, particularly in the conclusion and with regards to the figures. 1. Since sleep is so fundamental to this review, I feel the last paragraph on page 5 of section I. a. Sleep and Its significance could be expanded. You describe what normally occurs in the brain when one sleeps however with regards to sleep deprivation you don’t explain what changes or differs with regards to the REM and SWS. What are some typical and atypical scenarios where people would suffer from sleep deprivation? Do people who work nights or shift work suffer from more memory impairment than those who work during the day? 2. In the last sentence on Page 6/first sentence of Page 7 you define LTP (high frequency stimulation = high  $\text{Ca}^{2+}$  influx) but you don’t define LTD (low frequency stimulation = low  $\text{Ca}^{2+}$  influx). As I continue to read the article you frequently talk about “LTP and LTD” and so describing the processes for each of these synaptic mechanisms would help the reader understand both the difference and importance of each of these processes and what happens (i.e.  $\text{Ca}^{2+}$  increases, AMPA

receptors, etc). I strongly suggest a table or figure be created to represent this. 3. In the last paragraph on page 10 you mention a hypothesis by Lynch. I felt you did not summarize the findings of the article adequately. Something is missing. What caused the increase in the number of glutamate receptors and what did it have to do with calcium proteinases? 4. Midway through page 11 you talk about now ionotropic and metabotropic receptors are included in synaptic plasticity and have different mechanisms of action. It would be great to give the reader an example of each type of receptor (in brackets) and the different mechanism of action it has with regards to synaptic plasticity like the ones you talk about later in the article. 5. Within the last few lines on page 14, you say "Considering that NO has a role in so many other important physiological functions, " I feel you should give an example of an important physiological function. 6. On page 15, section 4 and specifically In line number 8 you write "high in the hippocampus (300) and about 20..." what does the (300) refer to? Is it a reference? Or are you referring to how many transcripts? Please clarify 7. I see several instances where you write "post synaptic", "post-synaptic" and "postsynaptic". Please make it consistent throughout the manuscript. The same for "pre-synaptic". 8.

Regarding the last 2 sentences in section "a." on page 21, you summarize the results from reference 131. However, something is missing. Please review the 2 sentences and possibly add more detail about the study. How were the rats sleep deprived? What part of the brain did the authors study? Which method was used to measure the expression levels of the receptors? 9. In both Figure 1 and in the concluding paragraph on page 24-25 you talk about psychiatric therapeutics, however you don't list any examples. I strongly suggest you highlight (and give examples) of a few drugs that are used to treat the disorders you talk about in your manuscript particularly those that are or act upon GPCRs. Also what is the mechanism of action of these drugs? Do they increase the availability of neurotransmitters which in turn will cause an increase the transcription of



**Baishideng  
Publishing  
Group**

7041 Koll Center Parkway, Suite  
160, Pleasanton, CA 94566, USA  
**Telephone:** +1-925-399-1568  
**E-mail:** [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)  
<https://www.wjgnet.com>

their respective receptors? Are they GPCRs themselves? 10. I believe a much stronger link needs to be made with regards to sleep deprivation and psychiatric disorders. I can see where you are trying to go with regards to the conclusion of this review, that being that changes are occurring to GPCRs as a result of sleep deprivation and it is important to study this because it can affect the formation of memories as well as the ability of drugs that target these receptors to perform their action when it comes to treating neuropsychiatric disorders. One angle that you could take to make the link stronger is maybe highlight how one of the side effects of taking drugs that treat neuropsychiatric disorders is (likely) problems with sleeping (which you kind of touch on in the future direction paragraph). I think it would also be a good idea to briefly describe drugs that treat sleeping problems as well unless wordcount/space is an issue.

## RE-REVIEW REPORT OF REVISED MANUSCRIPT

**Name of journal:** World Journal of Psychiatry

**Manuscript NO:** 64964

**Title:** G-protein coupled receptors and synaptic plasticity in sleep deprivation.

**Reviewer's code:** 05945693

**Position:** Peer Reviewer

**Academic degree:** MD

**Professional title:** Doctor

**Reviewer's Country/Territory:** Canada

**Author's Country/Territory:** Canada

**Manuscript submission date:** 2021-02-25

**Reviewer chosen by:** Man Liu

**Reviewer accepted review:** 2021-07-28 14:37

**Reviewer performed review:** 2021-08-02 15:08

**Review time:** 5 Days

<b>Scientific quality</b>	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
<b>Language quality</b>	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
<b>Conclusion</b>	<input checked="" type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
<b>Peer-reviewer statements</b>	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

## SPECIFIC COMMENTS TO AUTHORS

The revised version of the manuscript is adequate as well as the responses to each



**Baishideng  
Publishing  
Group**

7041 Koll Center Parkway, Suite  
160, Pleasanton, CA 94566, USA  
**Telephone:** +1-925-399-1568  
**E-mail:** [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)  
**https://**[www.wjgnet.com](http://www.wjgnet.com)

suggested revision.