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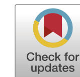
Letter to the Editor



COVID-19 impact on health care workers: Revisiting the metrics

Sir,

This is regarding research article entitled, "**Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and *meta*-analysis" by Pappa S et al., 2020, Brain Behav Immun. 88:901–907** (doi: https://doi.org/10.1016/j.bbi.2020.05.026) published in your esteemed journal.

We recently had the opportunity to discuss the above mentioned research paper in journal club at All India Institute of Medical Sciences (AIIMS), New Delhi, India. The extremely quick analysis and much needed input provided by the article was duly appreciated. This research study analyses and reviews the early evidence that a high proportion of health care workers (HCWs) experience significant levels of anxiety, depression and insomnia during COVID-19 pandemic. Not only this, the subgroup analysis carried out by authors is a significant addition that can potentially help address this issue of mental health problems in HCWs particularly since an end to the Covid-19 pandemic is not immediately in sight. However, some issues need to be addressed.

Pappa et al. (2020) used modified Newcastle-Ottawa scale for quality assessment of studies. In modified Newcastle-Ottawa scale maximum of 10 stars can be given (Modesti et al., 2016) but in this study the modified quality assessment score used a 5 star only scale. Quality assessment of one study i.e. Huang et al. (2020a) is not given while values for an unnamed study have been included in the table. Incidentally, the same study is also incorrectly cited in reference section i.e. Huang et al. (2020b) instead of Huang et al. (2020a). There are few other queries pertaining to quality assessment that have been highlighted in Table 1, namely, as per Criteria 1, if no HCW group is $\geq$65% of total sample, one star will be allocated. But in Du et al. (2020) and Zhang et al. (2020b), although no HCW group is $\geq$65% of total sample, still they have not allocated a star. As per Criteria 3, if the response rate >80%, one star will be allocated. But, in Du et al. (2020), response rate is 43.2%, still authors have allocated star to the study. This changes the quality assessment score although results, where they have given pooled estimates of low bias risk studies should not be affected.

The inclusion criteria as mentioned in methods was, "only those studies evaluating the prevalence rates of depression, anxiety **and/or** insomnia using validated assessment methods were eligible for inclusion". This would preclude inclusion of studies like Qi et al. (2020) where the study has only evaluated insomnia using AIS and PSQI scale. It is likely that the authors were looking for studies reporting prevalence rates of either depression, anxiety or insomnia as in all, there are three studies which do not report prevalence of depression and one of anxiety. Again it is difficult to understand why the prevalence estimate of insomnia in Qi et al. study is included for one scale only.

Subgroup analysis of the prevalence of anxiety and depression by gender, rating scales, severity and professional group has been carried out. In subgroup of rating scales, studies using common screening tools like SAS and GAD-7 in anxiety, and PHQ-9 in depression have been combined (Figs. 2 and 3; Pappa et al., 2020). Since GAD-7 and PHQ-9 used different cut-offs, the appropriateness of these subgroups is questionable. The prevalence would vary with the variation in the cut-off of the scales, hence standardization and validation is recommended. However, the major variables involved are cultural differences, ethnicity, language and geographical region (Rashid et al., 2019, 2020). All but one study included in the metanalysis are from the same region, China.

References

Modesti, P.A., Reboldi, G., Cappuccio, F.P., et al., 2016. Panethnic differences in blood pressure in europe: a systematic review and meta-analysis. PLoS One. 25, 11(1).

Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V.G., Papoutsi, E., Katsaounou, P., 2020. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. Brain Behav. Immun. 88, 901–907. https://doi.org/10.1016/j.bbi.2020.05.026.

Rashid, H., Katyal, J., Sood, M., 2020. Depression in persons with epilepsy: a comparative study of different tools in Indian population. Epilepsy Behav. (Accepted).

Rashid, H., Katyal, J., Tripathi, M., Sood, M., Gupta, Y.K., 2019. Validation of the Indian version of neurological disorders depression inventory for epilepsy (NDDI-E). Epilepsy Behav. 95, 75–78. https://doi.org/10.1016/j.yebeh.2019.03.048.

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Table 1
Modified Newcastle-Ottawa quality assessment scale and total score of each study.

Studies	Year	Modified Newcastle-Ottawa quality assessment scale 1	2	3	4	5	Score
Author	2020	-	-	-	*	*	2 #
Guo et al. (2020)	2020	*	*	-	-	-	2
Du et al. (2020)	2020	- #	-	* #	*	-	2
Huang and Zhao (2020)	2020	-	*	*	*	*	4
Lai et al. (2019) #	2020	*	*	-	*	*	4
Liu et al. (2020)	2020	-	-	*	*	*	3
Liu et al. (2020)	2020	*	*	-	-	*	3
Lu et al. (2020)	2020	-	*	*	*	-	3
Qi et al. (2020)	2020	-	*	*	*	*	4
Tan et al. (2020)	2020	*	-	*	*	*	4
Zhang et al. (2020a)	2020	*	*	*	*	-	4
Zhang et al. (2020b)	2020	- #	*	-	*	*	3
Zhu et al. (2020)	2020	-	*	-	*	*	3

1. Representativeness of sample (no HCWs' subgroup ≥ 65% of total sample);
2. Sample size > 600 HCWs;
3. Response rate > 80%;
4. The study employed validate measurement tools with appropriate cut-offs;
5. Adequate statistics and no need for further calculations.

Note: '#' The queries pertaining to the quality assessment table i.e. table 2 of Pappa et al., 2020.