

## Comments, Observations, and Rebuttals

### Headaches Due to Personal Protective Equipment During COVID-19 Pandemic: A Comment

We appreciate the comments in response to our recent article related to headache, among frontline healthcare workers, related to the use of personal protective equipment (PPE).<sup>1</sup> Our cross-sectional study was aimed to determine the risk factors associated with the development of *de novo* PPE-associated headaches as well as the perceived impact of these headaches on their health and work performance. Additionally, we evaluate the impact of PPE on pre-existing headache disorders in our study population.

We acknowledge that headaches are commonly associated with an increased prevalence of depression, anxiety and stress, especially in the context of the COVID-19 pandemic.<sup>2</sup> However, we found that the *de novo* headaches reported among our study cohort were suggestive of PPE-associated headaches, rather than a tension-type headache, as the interval between the donning of the PPE to the onset of headaches was less than 60 minutes and resolved within 30 minutes in the majority of the participants.<sup>1</sup>

Furthermore, the assumption that healthcare workers working in high-risk areas are under significant psychological distress is flawed. A recent study conducted on the frontline healthcare workers in our tertiary care institution during the COVID-19 pandemic showed that non-medically trained healthcare workers had a higher prevalence of anxiety than their medically trained counterparts (specifically doctors and nurses).<sup>3</sup> A similar observation was reported in another recent study in China, which showed that frontline nurses had lower vicarious traumatization scores than non-frontline nurses and general public.<sup>4</sup> It is important to note that PPE used in our study included the N95 respirator mask and goggles, which

are worn only by the frontline healthcare workers directly involved in the care of COVID-19 patients.

We agree that headache reported by healthcare workers may be associated with

sleep problems as well as with psychological distress.<sup>5,6</sup> We agree that these factors might have contributed to the headaches in some participants in our study population. However, the prevalence (81%) of *de-novo* headaches reported by our PPE donning healthcare workers outweighs the considerably lower prevalence of sleep problems and psychological distress.

Last, we acknowledge the potential issue of recall bias of utilizing self-administered questionnaires. However, the study was performed during the zenith of the COVID-19 pandemic in Singapore when healthcare workers were using the PPE for extended periods, mitigating the effects of this bias.

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*Conflict of Interest:* None

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