

# An Effect of Chronic Negative Stress on Hippocampal Structures and Functional Connectivity in Patients with Depressive Disorder [Letter]

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## Dear editor

We have read the paper written by Lili Zhang et al regarding An Effect of Chronic Negative Stress on Hippocampal Structures and Functional Connectivity in Patients with Depressive Disorder.<sup>1</sup> We congratulate all authors who have provided valuable information regarding the relationship between hippocampal structure and functional connectivity (FC) in depressed patients experiencing chronic negative stress. Depressive disorder is a condition that causes patients to have symptoms of poor mood, increased fatigue and anhedonia and deficits in neurocognitive functions, such as impaired memory, visuo-spatial processing and attention.<sup>2</sup> The hippocampus is a brain structure that is involved in stress processing and also depressive disorders if they experience changes in volume are therefore very important to improve our understanding of mental disorders related to the structure of the hippocampus.<sup>3</sup>

The study conducted by Lili Zhang et al used the Diagnostic and Statistical Manual of Mental Disorders 5th to diagnose patients with major depressive disorder, the Life Events Scale (LES) to evaluate chronic negative stress from patients and collected fMRI data to look at hippocampal volume.<sup>1</sup> All the instruments used are in accordance with the objectives to be achieved, but we would like to recommend one tool, namely magnetization-prepared rapid gradient echo (MPRAGE) for structural analysis of the brain, which can help researchers to estimate total intracranial volume as a covariate in order to determine whether There are differences in volume in the hippocampal subfields so that it can differentiate between post-traumatic stress disorder (PTSD) and major depressive disorder (MDD) patients. In addition, we also recommend that additional information regarding the duration of symptoms, psychopharmacological treatment and previous psychotherapy be provided by the patients themselves.<sup>3</sup>

In this research, Lili Zhang et al found that depressed patients who experienced chronic negative stress had increased hippocampal volume, while functional connectivity decreased. The opposite is found in patients who do not experience chronic negative stress.<sup>1</sup> However, it should be noted that the pattern of hippocampal volume in stress, PTSD and MDD may indicate that the hippocampus may represent a different phenotype than traditional diagnostic strategies so it is important to know the patient's history such as treatment. During treatment, duration of illness and drug interventions to reflect the pathophysiology and mechanisms of all psychiatric disorders.<sup>4</sup>

In conclusion, we agree that depression who experience chronic negative stress may experience disruption of hippocampal structure and functional connectivity,<sup>1</sup> but the diagnosis by medical personnel is highly dependent on patient report and the integration of neuroimaging data, therefore we recommend routine inpatient MRI scans, and some data related to patient health control can be added to research data in order to increase our understanding of mental disorders related to Chronic Negative Stress as well as long-term treatment of Patients with Depressive Disorder patients.<sup>3</sup>

## Disclosure

All authors report no conflicts of interest in this communication.

## References

1. Zhang L, Zhang Y, Guo W, et al. An effect of chronic negative stress on hippocampal structures and functional connectivity in patients with depressive disorder. *Neuropsychiatr Dis Treat*. 2024;20:1011–1024. doi:10.2147/NDT.S460429
2. Nolan M, Roman E, Nasa A, et al. Hippocampal and amygdalar volume changes in major depressive disorder: a targeted review and focus on stress. *Chronic Stress*. 2020;4:247054702094455. doi:10.1177/2470547020944553
3. Knaust T, Siebler MBD, Tarnogorski D, et al. Cross-sectional field study comparing hippocampal subfields in patients with post-traumatic stress disorder, major depressive disorder, post-traumatic stress disorder with comorbid major depressive disorder, and adjustment disorder using routine clinical. *Front Psychol*. 2023;14:1–13. doi:10.3389/fpsyg.2023.1123079
4. Cao P, Chen C, Si Q, et al. Volumes of hippocampal subfields suggest a continuum between schizophrenia, major depressive disorder and bipolar disorder. *Front Psychiatry*. 2023;14. doi:10.3389/fpsyg.2023.1191170

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