Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
**Prenatal Hair Cortisol Concentrations during the COVID-19 Outbreak: Associations with Maternal Psychological Stress and Infant Temperament**

Nina Bruinhof\(^a\), Stefania Vacaru\(^b\), Marion van den Heuvel\(^b\), Carolina de Weerth\(^b\), Roseriet Beijers\(^c\)

\(^a\) Donders Institute, Radboud university medical center
\(^b\) Tilburg University
\(^c\) Radboud University & Radboud university medical center

**Background:** Maternal psychological stress during pregnancy, including stress resulting from disasters and trauma, has been linked to temperamental difficulties in offspring. While heightened cortisol concentrations are often hypothesized as an underlying mechanism, evidence supporting this mechanism is inconsistent. To address these issues, this preregistered study investigated the following associations between: 1) prenatal psychological stress and hair cortisol, as a biomarker for chronic stress, during the COVID-19 outbreak (i.e., as a worldwide psychological stressor), and 2) maternal hair cortisol during the COVID-19 outbreak and later infant temperament. The physiological impact of the crisis might be associated with later infant temperamental negative affectivity and orienting/regulation. Additionally, we explored whether associations were different for low versus high socioeconomic status (SES) and at different stages of pregnancy.

**Method:** Pregnant women (N = 100) filled out online questionnaires during the first COVID-19 lockdown. Maternal hair samples were collected during home visits. When infants were six months old, mothers reported on their infant's temperament.

**Results:** While analyses revealed no associations between prenatal COVID-19 psychological stress and hair cortisol during the COVID-19 outbreak, SES proved to be a moderator in this association. Only pregnant women with higher levels of SES, showed a positive association between work-related and social-related COVID-19 worries and hair cortisol. Finally, prenatal hair cortisol was not associated with later infant temperament negative affectivity and orienting/regulation. Overall, 2-arachidonoyl glycerol (2AG), an endocannabinoid that mediates that relationship. Those findings highlight the need to include personal characteristics assessment when designing tailored interventions to manage stress at work.

**Conclusion:** While the COVID-19 outbreak proved to be a major psychological stressor, the physiological impact of the crisis might be different for pregnant women with higher SES as compared to lower SES.

https://doi.org/10.1016/j.psyneuen.2023.106150

**Overcommitment at work and mental health: the mediation role of Allostatic load**

Juliana Souza-Talarico\(^a\), Daniela Coelho\(^b\)

\(^a\) The University of Iowa College of Nursing
\(^b\) Federal University of Sao Paulo

**Background:** Despite decades of efforts to test interventions to manage stress at work, the prevalence of mental health disorders has increased significantly among workers. The allostatic load (AL) model offers a potential mechanism through which work-related stress impacts workers' mental health. However, the relationship between stress, AL, and mental health disorders does not disentangle critical components that drive stress at work. This study examined the mediation effect of AL in the relationship between work-related stress and mental health among workers.

**Methods:** Two hundred two nursing workers (n = 222; 90.1% female, mean age: 39.5 ± 9.6) were randomly recruited from a University Hospital in Sao Paulo (Brazil), and applied the Effort-Reward Imbalance scale (ERI) that assesses work effort, reward, and overcommitment. Perceived Stress Scale (PSS), Beck Depression Inventory (BDI), and the Self-Report Questionnaire for psychiatric symptoms (SRQ-20) were the mental health indicators. Ten neuroendocrine, metabolic, immunologic, and cardiovascular biomarkers were analyzed, and values were transformed into an AL index using clinical reference cutoffs.

**Results:** ERI scores were not associated with either the scores on mental health indicators or the AL index (p > 0.1). However, overcommitment were associated with higher SRQ-20 scores (r = -0.417, p < 0.001) and that relationship was mediated by higher AL index (total effect:B = -0.482, 95% CI [-0.7195, -0.2463]; p = 0.0001).

**Conclusion:** Overcommitment at work, but not effort-reward imbalance, was associated with psychiatric symptoms, and high AL mediates that relationship. Those findings highlight the need to include personal characteristics assessment when designing tailored interventions to manage stress at work.

https://doi.org/10.1016/j.psyneuen.2023.106151

**Endocannabinoid and neuroendocrine contributions to fear learning in humans**

Hilda Engelbrektsson, Madeleine Jones, Markus Heilig, Leah Mayo

**University of Linköping**

**Background:** Fear learning is an important process that is essential for our survival. Impairments in this implicit form of emotion regulation is associated with several stress-related psychiatric disorders. Here, our goal was to determine the contributions of canonical stress systems, i.e., neuroendocrine and endocannabinoid systems, to fear learning in a population with histories of chronic stress exposure.

**Method:** In a 2 × 2 factorial design, adult participants (n = 100) with or without histories of childhood trauma or substance use disorders completed a laboratory session to assess fear conditioning and extinction. Blood samples were collected to quantify peripheral levels of endocannabinoids and cortisol.

**Results:** Overall, 2-arachidonoyl glycerol (2AG), an endocannabinoid important for the termination of the stress response, was significantly negatively associated with self-reported anxiety and difficulties in emotion regulation, indicating that individuals with lower 2AG levels tend to be more anxious and have greater impairments in emotion regulation.

**Conclusion:** While additional analyses are ongoing, these results provide valuable insight into the neurobiology of fear learning and highlight potential molecular targets that could have therapeutic potential.

https://doi.org/10.1016/j.psyneuen.2023.106152