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Psychoneuroendocrinology. 2016 Jan;63:68-77. doi: 10.1016/j.psyneuen.2015.09.018. Epub 2015 Sep 21.

Stress exacerbates pain in the everyday lives of women with fibromyalgia syndrome--The role of cortisol and alpha-amylase.

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Abstract

OBJECTIVE: Although fibromyalgia syndrome (FMS) is a chronic condition, its cardinal symptom pain is known to fluctuate over the day. Stress has often been claimed to exacerbate pain; however, there is barely any evidence on whether or not this is true on a day-to-day basis (and, alternatively, on whether pain leads to increased stress levels). Using an ecologically valid measurement design, we tested whether and how stress and pain are intertwined in participants with FMS. We additionally examined the role of the two major stress-responsive systems, the hypothalamic-pituitary-adrenal axis and the autonomic nervous system, as potential mediators of this relationship.

METHODS: An ambulatory assessment study was conducted over the course of 14 days. On each day, 32 females with FMS provided six diary entries on momentary stress and pain levels. Saliva samples were collected at the same time points to determine cortisol and alpha-amylase as indicators of stress-responsive systems.

RESULTS: Higher stress at a given measurement time point was associated with higher reported pain levels at the subsequent time point (UC=1.47, $p<0.001$), but not vice versa (UC<0.01, $p=0.179$). The stress-pain relationship was neither mediated by momentary cortisol nor by alpha-amylase; however, momentary cortisol was independently associated with momentary pain (UC=0.27, $p=0.009$).

CONCLUSION: Stress seems to be a powerful exacerbating factor for pain as experienced by patients with FMS in their everyday lives. Cortisol may be involved in the diurnal fluctuation of pain levels in patients with FMS. Future studies should identify relevant daily stressors in persons with FMS and scrutinize the mechanisms underlying the cortisol-pain relationship.

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KEYWORDS: Alpha-amylase; Ambulatory assessment; Cortisol; Fibromyalgia; Pain; Stress

PMID: 26431802 [PubMed - in process]

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