

## The Joy of Sleep

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### About the Author

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It seems every time I log onto Facebook these days, another resident friend of mine is removing “Sleep” from their interests. Like a dirty habit, they’re washing their hands of it. Most physicians live in a sleep-deprived world, but no one can argue that residents experience the worst of it. The hospital itself is a timeless vortex with no restrictions to the timing of emergency consults and few ways to dodge 4 a.m. ward pages. These sleepless shifts result in what’s colloquially termed “post-call delirium.” We all have stories of nodding off at red lights, driving away from the hospital tongues wagging out the window like post-call puppies, desperately staving off sleep until we precariously arrive home.

But post-call delirium goes beyond mere physical exhaustion. Who hasn’t written an incoherent e-mail and cringed right after hitting the Send button? (Note to self: Never e-mail or phone post-call.) From fighting with a spouse to sobbing like a baby while watching *Dr. Phil*, most of my colleagues experience some form of emotional instability post-call. I, for one, chased a parking control officer three blocks to tear up a ticket that was totally warranted. Some people seem unaffected by the post-call state, yet most of us struggle to cope with otherwise-normal emotional challenges when we’ve been awake for 28 hours. Sleep deprivation results in reduced vigilance, decreased verbal processing, and impaired complex problem solving. But what about its effect on mood and emotional stability? It begs the question – why are we such basket cases post-call?

Seung-Schik et al. used functional magnetic resonance imaging (fMRI) to compare brain responses of sleep-deprived versus well-rested people. Knowing that the amygdala is the emotional centre of the brain, they set out to measure brain reactivity as a marker of emotional response. The authors recently published their findings in *Current Biology*.<sup>1</sup> They divided their subjects into a sleep-deprived group ( $n = 14$ ) and a sleep-control group ( $n = 12$ ). Sleep-deprived subjects stayed awake for an entire day-night-day cycle and were tested after approximately 35 hours of wakefulness, while the sleep-control group slept normally the night prior to testing. During the study, subjects were shown a series of images ranging from “emotionally neutral” to “emotionally aversive.” The investigators used fMRI to quantify and compare amygdala reactivity between the two groups. They found that while both groups showed significant activation in response to increasingly negative images, the sleep-deprived group showed 60% more intense reactivity in their amygdalas. This wasn’t simply an overall generalized increased activity as both groups showed about the same amount of reactivity to neutral images. These data suggest a heightened limbic response of the amygdala to emotionally negative stimuli under

conditions of sleep deprivation. The authors speculate that these findings suggest a causative, rather than an associative, pattern of sleep deprivation and mental illness such as bipolar disorder. It suggests a neural basis to the suboptimal functioning of people who work in sleep-deprived occupations (medical personnel, military, etc.) and could even account for the overall emotional hostility in an increasingly sleep-deprived society.

As early as 1973, researchers surveyed sleep-deprived interns at a major U.S. teaching hospital with regard to their emotional state.<sup>2</sup> These interns felt significantly less social affection, vigour, elation, egotism, and what they described as “surgency” – the ability to feel carefree, talkative, and be lively. When sleep deprived, they felt more sad and fatigued and perceived themselves to have several psychological abnormalities as compared with when they were rested. Furthermore, there was a subjective awareness of feeling like they were being watched, as though the world around them awaited their error and demise.

Despite significant improvements in resident working hours over the years, sleep deprivation continues to take its toll. In a recent study, Papp et al. ran focus groups of medical residents gauging perceptions of sleep deprivation and its impact on interpersonal dynamics.<sup>3</sup> Residents frequently described themselves as less empathetic toward patients, less tolerant of patients’ families, and more rude to nursing staff – in addition to being less able to concentrate, listen, and comprehend while taking histories or making decisions. Many of the residents described their lack of sleep and overall irritability during residency as negatively affecting their relationships with family, spouses, children, and friends.

As resident physicians, we’re expected to be superhuman, to have no (or at the very least, hidden) weaknesses. But it’s important to remember that we’re just folks, like everyone else. We’re vulnerable to physical stress, emotional stress, and to the development of mental illness. The above studies suggest that sleep deprivation impairs us emotionally and may actually contribute to depression and anxiety. We shouldn’t be ashamed of needing sleep, wanting sleep, or coping better at work and in our personal lives when we’ve had enough sleep. As a wise mentor once told me, “We need to recognize the fact that behind this white coat facade, this bravado and self-control, we are as human and as vulnerable as the people we treat.” I couldn’t agree more. It’s naptime.

### References

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