


Chapter 32.

SLEEP DEFICIT, and MENTAL FATIGUE.

INDEX.

(This book's full chapter has 26 pages and 64 references)

1. Introduction
2. Sleep deficit.
3. Power naps.
4. Definition of mental fatigue.
5. The effect of sleep deprivation on cognition.
6. Differing cognitive effects of different types of altered sleep.
7. Medical resident stress responses to sleep deprivation.
8. The role of glial cells in the central nervous system and mental fatigue.
9. Does Amyloid and Tau affect acute mental fatigue?
10. Alcohol-induced impairment of work performance (alcohol mental fatigue).
11. Medication treatment for mental fatigue.
12. Institutional management of anesthesiologist sleep deficits and fatigue.
13. Conclusion.


1. INTRODUCTION¹.

It is not uncommon for an anesthesiologist to work continuously for 24 hours or multiple serial days of 12+ hours shifts each day. At an understaffed Midwest American university, this book author frequently worked 100-hour weeks in total with his clinical work, administrative duties, and lecture preparations. For Anesthesiologists to experience mental fatigue at work is a periodic event, if not frequent. Fatigued anesthesiologists often prick themselves with blood-contaminated needles and sometimes have motor vehicle accidents driving home after working a night shift. All critical industries, like commercial aviation, have strict policies and regulations preventing mental fatigue in critical workers or pilots. Medicine has done nothing to regulate and control fatigue in qualified anesthesiologists. Mostly, only nominal actions are taken, and professional bodies issue period safety recommendation documents.

Financial investors in corporate-owned medical care, larger universities, and institutions exploit physicians' willingness to do whatever it takes to help patients. The medical profession has tolerated and "normalized" excessively long work hours. It is **FORCED ALTRUISM²**.

A 2023 scoping review of 30 studies reported an average of 60% of anesthesiologists experience *daytime sleepiness*, and 73% admitted *mental fatigue* impaired their cognitive function³. More important than the negative effects of sleep deficits and resulting mental fatigue upon anesthesiologists, causing their weakening of technical skills, increased medication errors, loss of sustained attention to patient vital signs and status, corruption of personal health, and increase of anesthesiologist poor emotional health is the increase in harm experienced by anesthesia patients. The best fixes for the problem are resisted by all persons invested or involved in patient anesthesia care beyond anesthesiologists themselves.

When superimposed upon distraction and the need to multitask during patient anesthesia care, mental fatigue increases the likelihood of making an anesthesia drug error. Physician mental fatigue is considered a major contributing factor for all medical errors, but foremost, Anesthesia Medication Administration Process (AMAP) drug errors.

When cognitive fatigue prevails, subjects lose cognitive control and are more prone to making impulsive decisions and errors, particularly with automated tasks. Active tasks requiring active thinking and conscious control feel very effortful when fatigued, and there is a trend toward being more impulsive in decision-making and becoming prone to errors.

It is universally recognized that anesthesiologists are among the professionals who experience fatigue most at work due to long working hours and high job demands⁴. Anesthesiologists are expected to be knowledgeable and able to astutely respond to clinical challenges while maintaining prolonged, never-failing vigilance. A sleep provider (anesthesiologist) must never have a sleep deficit themselves. Anesthesiologists are also the foremost medical specialists of all healthcare workers who experience fatigue due to work circumstances⁵.

In an editorial, Dr Roger Moore of the World Federation of Anesthesiologists (WFSA) wrote about anesthesiologist fatigue⁶. He stated that although countries like Australia, New Zealand, Britain, and the USA have created regulations on the maximum hours *medical trainees* may work, they have no regulations on the maximum number of hours a qualified anesthesiologist may work in a day or a week. They highlighted that fatigue is a major cause of anesthesia errors. Anesthesia is very vulnerable to fatigue-induced errors because “Anesthesia is described as *hours of boredom and minutes of terror.*” Things can go very wrong very fast.

In 2018, Australia and New Zealand reported in a survey that their anesthesiologists worked 51 hours per week, compared to USA anesthesiologists, who worked 64 hours clinically per week⁷. Seventy-two percent of the Australian and New Zealand survey respondents reported shifts exceeding 16 hours at least once yearly.

In 2019, McClelland published a survey study of Irish and British anesthesiologists' experiences of work-associated fatigue. The study idea was triggered by the tragic death of an anesthesia trainee who, after a series of night shifts, fatally crashed their vehicle while driving home fatigued⁸. Ninety-one percent of respondents reported experiencing work-related fatigue. It was considered “normal” to work a full clinical day after night-on-call duties. The principal causes of work-related fatigue were (1) excessive workloads, (2) understaffing, and (3) lack of access to breaks. Guidelines specifying a 20-minute break every 6 hours and 2 to 10-minute breaks every 1 to 2 hours were not met. There was also a widespread lack of rest facilities at night and break facilities to sit and address nutrition and hydration needs. It was also not a standard to have an extra “supporting anesthesiologist” in large operating facilities during elective surgery days.

The Farquhar Editorial 2019 on anesthesiologist fatigue argued that it is not heroic for anesthesiologists to work when fatigued but *irresponsible*⁹. It used the NASA Space Shuttle Challenger disaster as an analogy, where after launch, the spaceship exploded, killing 7 astronauts. The temperatures were below freezing at the time of launch, and there was recognized concern for spaceship rubber components failing. A panel of experts convened telephonically, all being sleep disturbed and under demands not to cancel the launch and to meet the launch target date. The strong social and political pressures placed upon the space engineers skewed their fatigued judgment, and 7 persons died.

(This book's full chapter has 26 pages and 64 references)