IMPACT OF OVERNIGHT DUTY ON BEHAVIOR AND AWAKE ACTIVITY IN HEALTHCARE PROFESSIONALS

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ABSTRACT:
In many countries, healthcare workers make up the single largest proportion of shift workers. To facilitate the provision of 24 hour emergency healthcare services and hospital care for the critically unwell, shift work comprising irregular work hours outside of traditional diurnal work times is widely adopted. These work hours pose a challenge to the healthcare industry as shift work is likely to have major negative implications on patient care and patient safety, in addition to its association with significant economic and productivity costs. Misalignment of the circadian pacemaker with sleep-wake timing is common in shift workers, particularly during nights and results in sleep loss and excessive sleepiness during work shifts.

KEYWORDS: OVERNIGHT SLEEP
INTRODUCTION:
In many countries, healthcare workers make up the single largest proportion of shift workers. To facilitate the provision of 24-hour emergency healthcare services and hospital care for the critically unwell, shift work comprising irregular work hours outside of traditional diurnal work times is widely adopted. These work hours pose a challenge to the healthcare industry as shift work is likely to have major negative implications on patient care and patient safety, in addition to its association with significant economic and productivity costs. Misalignment of the circadian pacemaker with sleep-wake timing is common in shift workers, particularly during nights and results in sleep loss and excessive sleepiness during work shifts. The night shift is often associated with extended episodes of wakefulness, particularly on the first night in a series when an individual may wake at a normal time in the morning, and remain awake during the day prior to starting the first night. Other shift work schedules, which may involve early start or late end times, may also impact sleep duration and increase sleep-wake disturbances. The combined effect of these circadian and sleep-related factors impair alertness and performance while on duty, and often impact on safe driving practices during the commute to and from work.

Two main models exist as to the mechanism of insomnia, (1) cognitive and (2) physiological. The cognitive model suggests rumination and hyperarousal contribute to preventing a person from falling asleep and might lead to an episode of insomnia. The physiological model is based upon three major findings in people with insomnia; firstly, increased urinary cortisol and catecholamines have been found suggesting increased activity of the HPA axis and arousal; second increased global...
cerebral glucose utilization during wakefulness and NREM sleep in people with insomnia; and lastly increased full body metabolism and heart rate in those with insomnia. All these findings taken together suggest a dysregulation of the arousal system, cognitive system, and HPA axis all contributing to insomnia. However, it is unknown if the hyperarousal is a result of, or cause of insomnia. Altered levels of the inhibitory neurotransmitter GABA have been found, but the results have been inconsistent, and the implications of altered levels of such a ubiquitous neurotransmitter are unknown. Studies on whether insomnia is driven by circadian control over sleep or a wake dependent process have shown inconsistent results, but some literature suggests a dysregulation of the circadian rhythm based on core temperature. Increased beta activity and decreased delta wave activity has been observed on electroencephalograms; however, the implication of this is unknown. Around half of post-menopausal women experience sleep disturbances, and generally sleep disturbance is about twice as common in women as men; this appears to be due in part, but not completely, to changes in hormone levels, especially in and post-menopause. Changes in sex hormones in both men and women as they age may account in part for increased prevalence of sleep disorders in older people (1-3).

**DISCUSSION:**
In a study by Dur et al., Night actigraphy demonstrated that on-call work induced a significant reduction in sleep duration that was not recovered during the subsequent two nights. Sleep during the night duty itself was fragmented and of poor quality. Awake activity was significantly impaired on the day after night duty. Although subjectively night sleep quality did not differ between the nights before
and after night duty, all subjective daytime parameters were impaired the day after night duty, and mood, fatigue and concentration remained altered on the second day. Working the day after night duty impaired objective measurements of daytime activity and sleep quality during the subsequent two nights (4).

In a study by Alsulami et al., Of the 702 medical students who responded to their survey (410 females and 292 males), more than 66% suffered from poor sleep quality. Approximately 92.3% of the surveyed students used electronic devices before they fell asleep, and 88.4% used these devices for social networking purposes. Female students were found to suffer more than male students, and they also reported spending more time on social networking sites before sleeping ($p = .006$) (5).

REFERENCES: