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Pre- and post-night shift mental performance of registrars in a department of anaesthesiology

Hilda Tsungayi Masvikwa

Abstract

Background

Anaesthetists are required to preserve accuracy and fast decision making skills even when sleep-deprived. Studies have shown that mental performance is negatively affected by sleep deprivation and results in more fatigue-related errors. In South Africa, there is limited research on the impact of fatigue and its association with a decline in mental performance among anaesthetists. This study investigated, using neurocognitive tests, the effect of sleep deprivation on the mental performance of anaesthetists in the Department of Anaesthesiology at the University of the Witwatersrand (Wits).

Methods

A prospective, contextual and comparative research design using convenience sampling was followed. The post-night shift scores of 50 anaesthesia registrars were assessed using three neurocognitive tests and compared with their pre-night shift scores from August to October of 2019. The neurocognitive tests used were the Stroop Colour and Word Test, the Trail Making Test and the Continuous Performance Test. The individual circadian body clock of registrars was described using the Morningness-Eveningness Questionnaire.

Results

Registrars had decreased attention and committed more errors of commission during the Continuous Performance Test ($p=0.04$). However, their short term memory was preserved as they had shorter completion times post-night shift in the Stroop Colour and Word Test and Trail Making Test. The intermediate body clock type (50%) was the most common, followed by morning type (40%), and evening type (10%). The only significant variance in mental performance between the body clock types was found in the evening group, who made more errors in the Continuous Performance Test.

Conclusion

Mental performance is affected by sleep deprivation and possibly individual circadian rhythms. Post-night shift, Wits anaesthesia registrars were able to preserve speed and memory recall but committed more attentional errors. The evening body clock type group made more attentional errors than the morning and intermediate groups during the Continuous Performance Test.