

New research looks into whether or not using light boxes can help shift internal clocks.

Reducing fatigue from rotating shift work

By Marnie Douglas

Shift work is part of the job for health care workers, a necessity to provide around-the-clock continuous care for patients. But new research, supported by a WorkSafeBC Innovation at Work grant, is shining a light on methods to reduce fatigue and improve sleep for people with rotating shift work.

Jay Olson was studying psychology at Simon Fraser University when he took a class in circadian rhythms and sleep. His mother was a nurse and he remembers how drowsy she'd be after working night shifts.

"It was hard to see her so tired. She'd make little mistakes around the house, would forget things. I took the class and became intrigued," he says.

Fast-forward several years and Olson is now completing his PhD at McGill University. His recent research around nurses doing shift work has shown that light exposure can help reduce fatigue and improve sleep.

Working night shifts is like jet lag

He explains that when people work night shifts, the body reacts like that of travellers with jet lag — trouble falling asleep, feeling tired or disoriented, and generally being unable to function normally during the daytime are common symptoms. There were studies that showed specific light exposure could reduce the effects of jet lag and some research had been done on permanent shift workers (those who work a regular night shift) with similar results. But there wasn't much done around rapidly rotating shift workers.

Olson says working such schedules has been associated with greater fatigue, reduced work performance, and poorer sleep relative to working permanent night shifts.

"I was curious to see if the same principles would work," says Olson. "If the rapidly rotating shift workers, or nurses in this case, were to get light exposure before their night shift, could it help shift their body clock? And would avoiding bright light after their shift also help?"

Olson developed a practical routine based on circadian and sleep hygiene principles and tested it on a group of 33 nurses whose work week included two to four consecutive night shifts and two day shifts.

Can bright light before a night shift help you sleep better?

The study involved 40 minutes of bright light exposure from a portable light box before night shifts, light avoidance by using sunglasses after the shift, and suggested ideal times to sleep and nap.

“We aimed to balance feasibility and effectiveness using strategies that do not require changes in the workplace or changes during work hours. To test this intervention, we focused on nurses because they commonly work rotating shift schedules yet receive little training to reduce the associated negative effects,” says Olson.

“Basically, we said before your night shift, get bright light; after your night shift, avoid light; and, before the set of shifts, sleep in, avoid light in the morning, and nap late.”

The results were encouraging.

“We found that the nurses were less fatigued, they made fewer errors at work, slept better, and had improved mood,” he says. “All of the changes were in the direction that we’d hoped.”

Although he is excited about the results, Olson says he and his team are doing a follow-up study to further refine the findings. The initial study was relatively short — roughly one week for the control period and one week for the intervention — meaning he could not

assess the long-term impact of the interventions. Plus, the lack of a separate control group means he couldn’t assess which components were most effective.

But overall, he’s pleased the results show the feasibility and potential effectiveness of light-based therapy for nurses who work rotating shifts. A major benefit is its low cost — beyond the light box, the intervention uses inexpensive materials, such as sunglasses, that most shift workers already own.

“This is a potential solution that focuses on workers and requires no administrative buy-in. Overall, our results support the potential of circadian-based interventions to minimize the health and safety impacts associated with working rapidly rotating shifts,” he adds.

WorkSafeBC is keeping an eye on the results and ongoing research.

“This type of project, which translates research knowledge into workplace application, is the purpose of the Innovation at Work grant competition,” says Deepani Weerapura, senior manager of Research Services at WorkSafeBC.

For more information

The WorkSafeBC Innovation at Work grant supports small-scale research projects that lead to the development of practical solutions to address workplace health and safety issues. Find out more about this and other research opportunities at worksafebc.com/researchservices. You can also read Jay Olson’s published study in *Chronobiology International*. 🌞



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