Napping strategies to cope with rotating shift work in nursing

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Background

Shift Work
Changes to sleep timing, duration, and quality

Behavioural Changes
- Food choices and timing
- Exercise behaviours
- Stimulant use
- Sleep aid use
- Disrupted familial/social interactions

Psychophysiological Changes
- Impaired cognitive function
  - Sustained attention
  - Memory
  - Information processing
  - Mood regulation
- Impaired physiological processes e.g. glucose metabolism

Health outcomes
- Gastrointestinal disturbance
- Heart disease
- Obesity
- Type 2 diabetes
- Psychological illness
- Some cancers

WHS outcomes
- Workplace accidents / injury
- Increased risk of critical errors
- Reduced productivity
- Absenteeism
- Driving incidents

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Overall project aims

Australian nurses typically work morning, afternoon, night rotations

• Explore differences in coping and behavioural strategies
• Identify strategies that shift workers use to cope with shift work, pulling together evidence for which are helpful, which are ineffective and which are harmful.
Exploring napping strategies

Aims:
- Identify behavioural strategies at the individual and team levels that workers use to manage the effects of sleep loss and fatigue
- Consider the efficacy of strategies & how individualised recommendations could be presented to shift workers
Methods

• $N=134$ shift-working nurses and midwives from two South Australian hospitals

• Data collection conducted Oct 2015-March 2016

• Mixed-method design
Standard Shiftwork Index (SSI), \( n=130 \) (21-67y; 115F, 15M)

Saliva Samples, \( n=45 \)

Food Frequency Questionnaire (FFQ), \( n=50 \)

Interviews, \( n=22 \)
## Sleep
- Napping during night shift
- Prophylactic napping (pre-night shift)
- Sleeping in on days off
- Sleep aid use
- Modifying sleep environment

## Workplace
- Colleague support
- Double checking work
- Using memory aids
- Keeping busy

## Psychosocial
- Cognitive Reappraisal
- Avoidance
- Expressing Emotions
- Talking to family members
- Avoiding social interaction

## Driving
- Winding down windows for cool air
- Playing loud music
- Chewing on ice chips / drinking water
- Drinking caffeinated beverages
- Pulling over to rest
- Driving cautiously

## Diet
- Promoting alertness (coffee, tea, cola, chocolate)
- Changing timing of eating
- Avoiding/reducing food
- Food as a reward
- Food as a sociocultural factor

## Exercise
- Avoiding exercise / strenuous activities before night shift
- Maintaining good level of physical fitness
Sleep

Napping during night shift

Prophylactic napping (pre-night shift)

Sleeping in on days off

Sleep aid use

Modifying sleep environment

Workplace

Colleague support

Double checking work

Using memory aids

Keeping busy

Schedule flexibility

Psychosocial

Cognitive reappraisal

Avoidance

Expressing emotions

Talking to family members

Avoiding social interaction

Pets for comfort

Driving

Winding down windows for cool air

Playing loud music

Chewing on ice chips / drinking water

Drinking caffeinated beverages

Pulling over to rest

Driving cautiously

Diet

Promoting alertness (coffee, tea, cola, chocolate)

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Food as a reward

Food as a sociocultural factor

Exercise

Avoiding exercise / strenuous activities before night shift

Maintaining good level of physical fitness

Survey

Interview

Survey

Interview

FFQ

Survey

Interview

Survey

Interview

FFQ

Survey

Interview

Survey

Interview
Evidence of efficacy

During the night shift:
- A 30min nap opportunity at 03:30h did not improve performance or mood, but did improve subjective sleepiness (Centofanti, Hilditch, Dorrian & Banks, 2016)

- Sleep inertia evident following a 30min nap opportunity at 03:30h (Hilditch, Centofanti, Dorrian & Banks, 2016)

➢ Most evidence based on well-rested individuals or afternoon nap studies. Would shift workers benefit more from these naps?

Pre-night shift:
- Prophylactic naps in the afternoon provide performance benefits (Brooks & Lack, 2006; Takahashi & Arito, 2000)
Sleep is reduced before & between morning shifts and between & after nights. Days off used for catching up on sleep.

“Shocking, it’s not even like a sleep, it’s a kind of purgatory”
Majority of nurses nap, and 16% report napping during the break on night shift.

“About 4:30 I’ve hit a brick wall so I’ll take my half hour break and I’ll...fall asleep.”
• On-shift napping may be a reactive strategy for those who are unable to obtain sufficient sleep at home.

Do you take naps on a night shift? “...only because I’m not coping.”
Potential benefits of napping on-shift

- Napping restarts the time awake counter, which may be important for night shifts (especially the first)

Lamond & Dawson, 1999; Williamson & Feyer, 2000

“I’ve been driving home, I’ve gone oh my God, I’m so tired, I should pull over and sleep.”

“Sometimes I wouldn’t remember getting home, I wouldn’t know which way I’d driven home.”
Those who reported napping had significantly higher scores compared to non-nappers on sleep flexibility ($p<0.001$).

Are you the sort of person who finds it very easy to sleep at unusual times or in unusual places?

“noise, bells all the codes you hear because they get broadcast very loudly at night it’s a wonder everybody doesn’t wake up when they come over. They’re very, very loud.”
Barriers to prophylactic napping

• There were many households not conducive to sleep

“I live right next to a school, so...I hate sports days. There’s one of the teachers who likes the megaphone...I’ll get woken up, I don’t know, every time the starter gun goes.”

• Participants reported avoiding prophylactic naps due to concerns about subsequent sleep

“I’d just sleep in in the morning and get up and have my normal day and work through the pain. Then I found that I slept properly because if I slept through the day...in preparation for nights then you’d come home the next morning and you wouldn’t be ready for sleep again. So it was easier just to try and sleep in to 11.00am and then get up and go, and that was fine.”
How can we present recommendations to help individuals decide if this strategy might work for them?

- Majority of nurses in this cohort napped
- Several barriers identified (individual/workplace)

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How can we present recommendations to help individuals decide if this strategy might work for them?

Is this possibly a useful strategy for you to cope with night shift?

Are you the sort of person who finds it easy to sleep at unusual times or places?

Is your home environment conducive to sleep during the day?

These strategies may help to reduce time awake at the end of your shift:

- Sleep in the morning before your night shift
- A prophylactic nap before night shift
- Short nap on night shift

Be aware that...

- Depending on the time you get up, you may still accumulate fatigue by the end of your nightshift
- Your performance and safety may be affected by sleep inertia on waking. This may be even worse at 4-6am. Make sure you have a safe place to nap.
Summary

Napping identified as a common strategy used by SA nurses & midwives

Napping may not work for everyone – further research needed to inform individualised recommendations

> Objective measures of sleep / performance in field settings
> Considering combinations of strategies e.g. caffeine naps

Laboratory study investigating the effects of caffeine following a short nap during simulated night shift on performance & subsequent sleep.
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