



Differences in Exercise Patterns among Day and Night Shift Nurses During COVID-19 Surges

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Background

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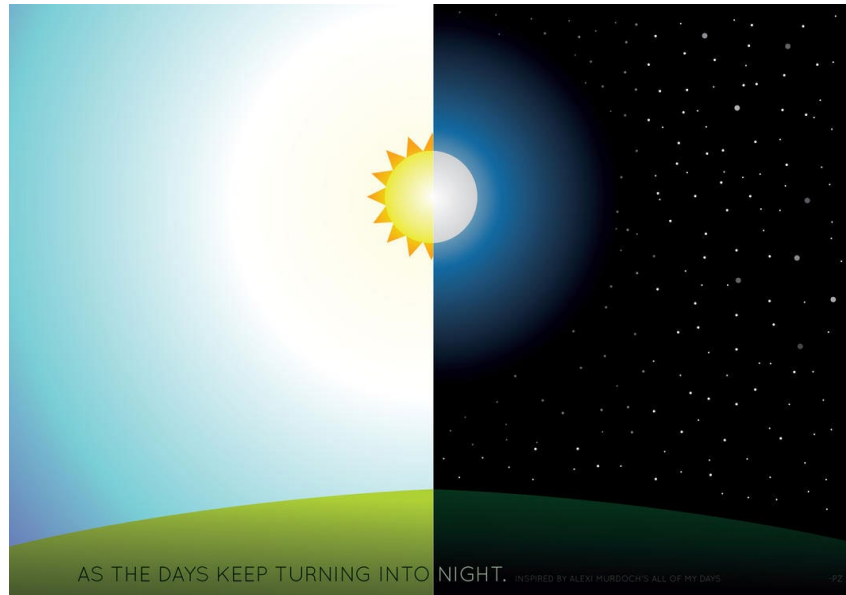
- RN's reported increasing stress during COVID-19
- Walking 7000-10,000 steps/day has shown benefits for managing overall stress
- Research suggests activity levels decreased and time sitting increased in the first year of the COVID-19 pandemic compared to the prior year.
- The American College of Sports Medicine's (ACSM) states that 2.5 to 5 hours of moderate to intense activity weekly provides substantial health benefits for adults



Purpose

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Describe activity levels and determine differences among acute-care RN's working day and night shifts during the COVID-19 pandemic



Methods

Study Type

- A descriptive, observational study
- Study period from October 2020 – September 2021
- Hospital-based registered nurses (RN) recruited from 3 states and 10 hospitals



Participants

- **Full-time, 12-hour day or night shift with no chronic illness**
 - 0.9 FTE, not breastfeeding or pregnant
- **Nurses completed a baseline survey, then monitored health habits for one week**



Objective and Self-reported Activity Levels



Seven-day assessment of number of steps walked using wearable pedometers

Table I Test-calculation short-form International Physical Activity Questionnaire in metabolic equivalent of tasks (METs)¹⁵

Activity	Calculation
Walking	3.3 METs × minutes × number of days
Moderate PA	4 METs × minutes × number of days
Vigorous PA	8 METs × minutes × number of days
Total PA	Sum of walking + moderate + vigorous MET-minute/walk scores

Abbreviation: PA, physical activity.

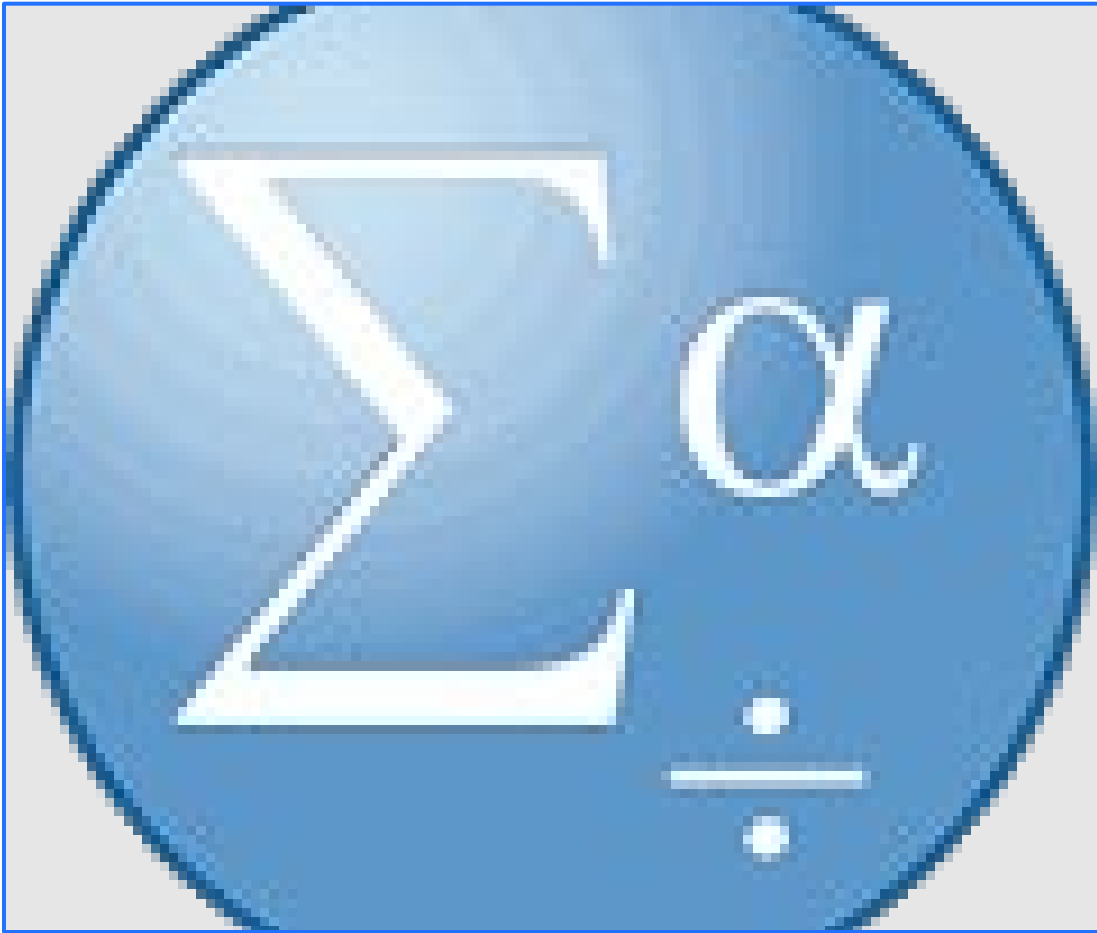
One-time assessment of self-reported activity levels using the IPAQ short form

Daily Diaries Collected for 7 Days



- Shift condition (“on” versus “off”)
- Number of steps walked from midnight to midnight
- 7-day period including three, 12-hour shifts and 4 days off work

Data Analysis



- Descriptive statistics to describe sample
- Bivariate statistics (t-tests and chi-square) to compare between day and night shift nurses
- All tests conducted in SPSS with p-value set at 0.05

Results

Participation Rates

- 57 RNs provided exercise data via REDCAP surveys over 7-days including 3, 12-hour shifts
- 49/57 participants wore pedometers to measure and record weekly step count for 7 consecutive days,
- 53/57 participants completed the International Physical Activity Questionnaire (IPAQ) self-report instrument, reflecting overall physical activity
- 57/57 reported if their exercise habits had worsened, stayed the same, or improved since the onset of COVID-19



Characteristic	Day Shift (n=33)	Night Shift (n=21)	
	n (%)	n (%)	p
Gender (Male)	6 (18)	3 (14)	0.43
Age (21-30)	7 (21)	6 (33)	0.05
Exercise habits worse-COVID (yes)	14 (41.1%)	13 (56.5%)	0.16
Met physical activity guidelines (yes)	20 (60.6)	12 (60)	>0.05
	Mean (SD)	Mean (SD)	p
BMI	25.4 (7.4)	26.4 (6.7)	>0.05
Waist Circumference (inches)	33.7 (4.9)	33.2 (4.9)	>0.05
Average Weekly Steps	61,594 (4519)	49746 (3884)	0.16
<i>Missing</i>	<i>N=1</i>	<i>N=4</i>	

Shift Comparisons

Few demographics differences noted

- Night shift nurses proportionally younger
- No other differences noted
- Day shift nurses non-significantly walked more per 7-day period than night shift nurses
- Per self-reported activity guide, no differences in adherence
- 40% of nurses across the sample did not meet American College of Sports Medicine physical activity guidelines (ACSM)

Shift Comparisons

On-shift differences emerged

- Night shift nurses walked on average less steps during on-shift days compared to night shift nurses
- Both nurses walked significantly less steps when off-shift on average, though the steps were not different when off-shift between groups

<i>Groups</i>	<i>Count</i>	<i>Average</i>	<i>Variance</i>		
night_on	75	9701.4	37102022		
night_off	91	6655.7	17477652		
day_off	128	6828.8	21133873		
day_on	95	11296.5	23200099		
ANOVA					
<i>Source of Variation</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.52E+09	505494296	21.2	1E-12	2.62
Within Groups	9.18E+09	23852855			

Discussion

Nurses may need exercise support

- Nurses reached the lower but not upper limit for daily average steps
 - What role did COVID play?
- Nearly 40% of our sample did not reach ACSM's recommendations for weekly time spent in moderate to vigorous activity
 - Are nurses familiar with these guidelines?
- Night shift nurses trended toward worse exercise habits and walked significantly less than day shift when working
 - Potential bias with our pedometers recording steps from midnight to midnight
- Future research is needed!



Nursing Implications

Implications for Nursing Practice

- Healthy nurses support healthy patients
 - Nurses cannot care for others when sick
- Regular exercise protects against illness
- Both day and night shift nurses may need help to engage in regular exercise
 - Strategies should be tailored for night shift nurses



Questions?

Take Time to Take Care of You!



Selected References

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