**Title:** Taking a Break: How Rest Breaks Can Reduce Acute Fatigue during the COVID-19 Pandemic

**Purpose:** The overall purpose was to evaluate the effect of rest breaks during work hours on reducing COVID-19 work strain among hospital nurses.

The project was conducted using an observational cross-sectional design among hospital nurses via online survey across the United States. Our specific aims were to:

1) Identify for the first time in a large sample the characteristics (e.g., type, duration, content, and context) of rest breaks taken by nurses during 12-hour shifts.

2) Determine the characteristics of rest breaks that best reduce acute fatigue, and how these differ between nurses who care for patients with COVID-19 and those who do not

**Sample:** A convenience sample of 1283 hospital nurses with 12-hour shift work schedules who provided patient care on an inpatient unit or in the emergency department in the US participated in our study. Data collection was from October 19 to November 18, 2021.

**Setting:** The participants were mainly recruited from 5 state board of nursing listservs and 3 social media outlets. A total of 810 participants answered their state of residence and the distribution of the census regions were as follows: 2.1% NE, 25.8% MW, 53.2% S, 18.9% W.

**Ethical approval:** The study received institutional review board approval from The University of Tennessee at Knoxville and from the University of Wisconsin, Madison and qualified as exempt. No incentives were provided to participate in the study (the original plan of $5 Amazon gift card per participant was changed due to budget constrains).

**Measures:** The Qualtrics $^{XM}$ survey included a set of psychometrically valid scales to measure fatigue types, burnout, and psychological distress, in addition to a detailed section on rest break activities (likelihood, type, frequency, duration, content, and context), psychological detachment, work, health, sleep and demographic characteristics.

- *Characteristics of breaks.* A series of questions were used to measure the characteristics (likelihood, frequency, duration, type, content, and context) and experiences (detachment, relaxation, control) of rest break recovery activities at work. Regarding the recovery experience, 8 items were used to address recovery experiences during a work shift. The four detachment items that are cognitive/mental, emotional and physical in nature and one control item were previously used in research (Sianoja et al., 2016; De Jonge 2020). We added three items that addressed physical and mental relaxation (I feel relaxed after a break, I worry about work during a break, and I take uninterrupted rest breaks). Regarding content, participants were asked dichotomous (yes/no) items and if answered “yes” reported on the frequency and duration of the type of rest breaks. Regarding context, participants rated how often from never to always they had concerns of certain situations prior to their rest breaks.

- *Fatigue and Intershift Recovery.* The Occupational Fatigue Exhaustion Recovery Scale-15 (OFER-15) measured acute fatigue, chronic fatigue, and intershift recovery. The scale had 15 items divided equally into three subscales. Item responses were on a 7-point Likert scale from strongly disagree to strongly agree. According to the scoring manual, positively worded items are reverse coded and items in each subscale are summed and multiplied by 0.33. The scores range from 0-100 where higher values represent more of the construct being measured.

Respondents' scores can be interpreted as low (0–25), low-moderate (26–50), moderate-high (51–75) and high (76–100). The subscales have good internal consistency (Cronbach's alpha = 0.84–0.89) and evidence of construct and factorial validity, including in samples of nurses (Winwood et al., 2005, 2006). The Cronbach's alphas in our sample for the subscales were ≥ 0.82 indicating good reliability.

- *Psychological distress.* The Patient Health Questionnaire-4 (PHQ-4) screened for depressive (2 items) and anxiety (2 items) symptoms. Responses were on a 4-point Likert scale from "not at all" to "nearly every day". According to the scoring manual, the 4 items are summed and a total score of 0-2, 3-5, 6-8 and 9-12 indicates normal, mild, moderate or severe form of psychological distress. The PHQ-4 has good psychometric properties: construct and criterion validity, and a Cronbach's alpha greater than 0.75 (Kroenke et al., 2009; Löwe et al., 2010). The Cronbach's alpha in our sample was 0.87 indicating good reliability.
- *Burnout.* The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) consisted of 22 items divided into three subscales of emotional exhaustion, depersonalization and personal accomplishment (Maslach & Jackson, 1981). Item responses were from 0 (never) to (6) every day. According to the scoring manual, higher summative scores indicate more of the measured construct. Scores are interpreted on a continuum based on the recommendation of the developers of the scale because of no criterion-related diagnostic validity (Maslach et al., 2016). Since its development in 1981, the MBI-HSS has a long history of reliability and validity testing in human services workers (Schaufeli et al., 1996) and in nurses from Europe and the United States (Poghosyan et al., 2009). The Cronbach's alphas in our sample for the subscales were ≥ 0.77 indicating good reliability.
- *COVID-19 questions.* Two dichotomous (yes/no) questions asked participants about providing care for suspected and known patients with COVID-19 (Sagherian et al., 2020). A follow-up question adapted from Firew et al.'s (2020) COVID-19 study asked participants about the number of patients with COVID-19 they cared for over the past six months. Two additional follow-up questions asked participants about how likely they felt tired after providing patient care during the COVID-19 pandemic. The item responses are on 5-point rating scale from not at all tired to very tired.
- *Hospital characteristics.* Participants were asked two questions at the hospital level (the type of the hospital they work and if the hospital is designated as Magnet).
- *Nurse characteristics.* The survey collected data on the nurses' demographic characteristics (i.e., age, race, gender, education, marital status, dependents), work characteristics (i.e., shift type, work status, years of experience, hours of work per week, second job, unit of practice, workload level), health (subjective health, morbidity, physical activity) and sleep quantity and sleepiness levels.

**Data analysis:** Descriptive statistics such as means, standard deviations, frequencies and percentages was used to describe characteristics of breaks. Bivariate statistics such as chi-square, t-tests, and ANOVA (as appropriate), along with multivariable OLS regression were used to explore the association between characteristics of breaks and nurses' reports of their ability to relax or psychologically detach from work during the breaks, and acute fatigue.

**Summary of findings:**

*Aim 1: Identify for the first time in a large sample the characteristics (e.g., type, duration, content, and context) of rest breaks taken by nurses during 12-hour shifts.*

Most nurses generally reported never or rarely taking rest breaks. Nurses mainly took one break during a typical 12-hour shift. Popular break activities were eating a meal, having a snack, and

browsing the internet. Situations such as patient acuity, nursing tasks left, and staffing shortage heavily impacted their decision to take breaks (see Tables).

*Aim 2: Determine the characteristics of breaks that best reduce acute fatigue, and how these differ between nurses who cared for patients with COVID-19 and those who did not.*

The analytic sample for aim 2 had 723 nurses. In the final adjusted model, none of the rest break characteristics such as the regularity, frequency, type of rest break activity (nutritious, social, relaxation, cognitive) and psychological detachment from work were related to recovery from acute fatigue. This final model was adjusted for demographic (age, gender), health (health status, chronic fatigue, psychological distress, sleep hours) and work (personal accomplishment, worked hours per week, shift type, workload, COVID-19 patient care in the last shift) characteristics. We found similar nonsignificant results in the group that cared for patients with COVID-19 except for relaxation activities (2 or more activities). In the group that did not care for patients with COVID-19, nurses who took regular rest breaks, practiced social break activities, and had increased psychological detachment from work significantly reported lower acute fatigue (see Tables).

**Conclusion:** Psychological detachment from work, certain rest break activities and taking rest breaks more regularly lowered acute fatigue in nurses who cared for patients other than for COVID-19 on their last worked shift.

**Implications:** The study evaluated the effect of rest breaks and recovery-at-work experiences on reducing acute fatigue among hospital nurses. It advanced the fatigue-within shift recovery research in nurses with 12-hour shift work schedules. The comprehensive assessment of rest break practices highlighted the need on nursing units to reinforce rest break policies, address contextual barriers, and encourage various types of rest break activities. Our long term goal is to design a fatigue recovery-at-work intervention and test its feasibility and effectiveness among hospital nurses under different workload conditions in the workplace.

**Future steps:** To test for potential mediation of the association between rest break characteristics and acute fatigue by self-reported ability to detach psychologically from work. Moreover, we will examine the mediation models if differences exist among nurses with high and manageable nursing workloads.

**Tables:** See attached

**References:**

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