

productivity and the efficiency of services provided in different public sectors. Studies assessing the impact of the conditions and organization of work processes on employee mental health are needed.

Does Shiftwork Modify Associations of Age with Injury among Police?

John M. Violanti¹, Anna Mnatsakanova², Desta Fekedulegn², Ja K. Gu², Michael E. Andrew²

1. Department of Epidemiology and Environmental Health, School of Public Health and Health Professions, University at Buffalo, The State University of New York, Buffalo, NY, United States.

2. CDC/NIOSH/HELD, Bioanalytics Branch, Morgantown WV, United States.

Introduction: The average age of police officers is slowly increasing. The association between shift work, injury, and age among police officers has not been adequately explored. In the present study, we assessed these associations. **Methods:** Participants were 430 police officers from the Buffalo Cardio-Metabolic Occupational Police Stress study. Count of on-duty injuries during the 15 years prior to the date of exam were assessed using daily payroll records. Officers were categorized according to the dominant shift ('day (n=188)', 'afternoon (n=142)', or 'night (n=100)') in which they worked the highest percentage of hours. Unadjusted and multivariable-adjusted (sex, race-ethnicity, smoking status, and rank) mean number of injuries per year were estimated across age groups ('20-39', '40-49', '50+') using ANOVA/ANCOVA models. Effect modification was assessed for shiftwork. **Results:** A total of 268 (62.3%) reported injury during the past 15 years. Night shift officers were significantly younger compared to those on days shift (39.3 vs. 46.1 years). In adjusted models, the mean number of injuries per year decreased significantly with increasing age [Mean (SE): 0.19 (0.02), 0.14 (0.01), 0.08 (0.01), p-trend<0.001]. After stratifying by shift, adjusted associations remained significant among officers on day and afternoon shift: the means were highest among younger officers '20-39yrs' compared to older '40-49yrs' and '50+' groups [Means (SE): 0.22(0.03), 0.10(0.01), 0.05(0.02), and 0.20(0.03), 0.15(0.03), 0.06 (0.06), with p-trends: <0.001, and 0.032, respectively]. Associations were not significant among officers working night shifts. **Discussion:** The results from this study indicate negative associations between age and injury and suggest that shiftwork may significantly affect these associations. Small sample sizes may contribute to lack of significance among night shifters. It is important to create a culture in which officers receive information about the importance of good

sleep habits, the hazards of shift work, and fatigue management strategies.

Support: Research supported by CDC/NIOSH

Shift Work Disorder among Norwegian Nurses - A Two Year Follow-Up Study

Siri Waage^{1,2}, Ståle Pallesen³, Anette Harris³, Bente E. Moen¹, Bjørn Bjorvatn^{1,2}

1. Department of Global Public Health and Primary Care, University of Bergen, Bergen, Norway.

2. Norwegian Competence Center for Sleep Disorders, Haukeland University Hospital, Bergen, Norway.

3. Department of Psychosocial Science, University of Bergen, Bergen, Norway.

Introduction: Shift work disorder (SWD) is characterized by excessive sleepiness and complaints of insomnia related to the work schedule. This study aimed to investigate work schedule aspects and associations with having or not having SWD over time. **Methods:** Data were collected among 1480 Norwegian nurses from a longitudinal cohort study, and reports findings based on data from wave 7 (baseline, 2015) and wave 9 (follow-up, 2017). SWD was assessed with 3 questions based on the minimal criteria from the ICSD-3. **Results:** Mean age (at baseline) was 39.4 years (range 28-65), 90.4% females. The overall prevalence of SWD was 33.0% (baseline), and 33.1% (follow-up). We defined four groups based on having or not having SWD; 54.4% (n=653) of the nurses did not report SWD at baseline or at follow-up, 12.9% (n=155) reported SWD at follow-up but not at baseline (developing SWD), 12.4% (n=149) reported SWD at baseline but not at follow-up (losing SWD), and 20.3% (n=244) reported SWD at both assessments. Multinomial regression analysis with no SWD at baseline or follow-up and day work at both baseline and follow-up as reference groups showed that age was significantly associated with developing (OR 1.024, 95%CI 1.00-1.05) and having SWD at both assessments (OR 1.025, 95%CI 1.01-1.05). Start working nights between baseline and follow-up (OR 6.211, 95%CI 2.99-12.87) and working nights at both assessments (OR 5.608, 95%CI 3.66-8.60) were significantly associated with developing SWD. Stop working nights between baseline and follow-up (OR 11.437, 95%CI 6.47-20.22) and working nights at both assessments were significantly associated with losing SWD (OR 3.334, 95%CI 2.01-5.54). Stop working nights between baseline and follow-up (OR 2.640, 95%CI 1.32-5.29) and working night at both assessments (OR 9.013, 95%CI 6.19-13.13) were significantly associated with

XXIV International Symposium on Shiftwork & Working Time - Shiftwork2019

Shiftwork2019 International Scientific Committee

Stephen Popkin
WTS President, USA

Claudia Moreno
WTS Secretary, Brazil

Anna Korompele
Greece

Anastasi Kosmadopoulos
Canada

Heidi Lammers-van der Holst
Netherlands

Samia Mohamed Modawi
Sudan

Kyriaki Papantoniou
Austria

Sampsa Puttonen
Finland

Gregory Roach
Australia

Masaya Takahashi
Japan

Siri Waage
Norway

Imelda Wong
USA

Hans Van Dongen
Chair, USA

Kimberly Honn
Co-Chair, USA

Guest Editors of V12S3 from Sleep Science
Amanda Hudson
Kimberly Honn
Hans Van Dongen

Keynotes

When Can You Start Trusting an Awakening Brain?

John Axelsson^{1,2}

1. Stress Research Institute, Stockholm University, Stockholm, Sweden.
2. Dept. of Clinical Neuroscience, Karolinska Institute, Stockholm, Sweden.

The awakening period is often characterized by grogginess and impaired performance. These effects, referred to as *sleep inertia*, have been reported to last everything from a few minutes up to several hours. It is at present a poor understanding of how fast one can expect an awakening person to make swift and accurate decisions. The presentation will focus on how fast the brain wakes up, and factors affecting the awakening process. The audience can expect a review of the literature, and to see data from a series of recent experimental and field studies that have determined how different cognitive functions return to normal in abruptly awakened individuals. The results are important since on-call duty is common in the modern society, and staff is often expected to make safety critical decisions immediately upon awakening.

Health and Safety Risks Related to Specific Characteristics of Shift Work Scheduling

Anne Helene Garde¹

1. National Research Centre for the Working Environment, Denmark.

It is well documented that shift work particularly when including night shifts is associated with shorter and disturbed sleep, increased fatigue, poorer work performance, and higher work-life interference. Furthermore, many studies suggest that shift workers have increased risk of cardiovascular disease, breast and prostate cancer, diabetes, and gastrointestinal disorders, although the causal relationship between night work and adverse health outcomes remains to be established. Night work can be organised in many ways e.g. as part of a rotating or permanent schedule, few or many consecutive night shifts (speed of rotation) and short or long time between shifts. The choices have consequences