

Journal Scan

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1. *PLoS One. 2013 Aug 15;8(8):e70882.*

Insomnia, excessive sleepiness, excessive fatigue, anxiety, depression and shift work disorder in nurses having less than 11 hours in-between shifts.

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STUDY OBJECTIVE: To assess if less than 11 hours off work between work shifts (quick returns) was related to insomnia, sleepiness, fatigue, anxiety, depression and shift work disorder among nurses.

METHODS: A questionnaire including established instruments measuring insomnia (Bergen Insomnia Scale), sleepiness (Epworth Sleepiness Scale), fatigue (Fatigue Questionnaire), anxiety/depression (Hospital Anxiety and Depression Scale) and shift work disorder was administered. Among the 1990 Norwegian nurses who participated in the study; 264 nurses had no quick returns, 724 had 1-30 quick returns and 892 had more than 30 quick returns during the past year. 110 nurses did not report the number of quick returns during the past year. The prevalence of insomnia, excessive sleepiness, excessive fatigue, anxiety, depression and shift work disorder was calculated within the three groups of nurses. Crude and adjusted logistic regression analyses were performed to assess the relation between quick returns and such complaints.

RESULTS: We found a significant positive association between quick returns and insomnia, excessive

sleepiness, excessive fatigue and shift work disorder. Anxiety and depression were not related to working quick returns.

CONCLUSIONS: There is a health hazard associated with quick returns. Further research should aim to investigate if workplace strategies aimed at reducing the number of quick returns may reduce complaints among workers.

2. *Chronobiol Int. 2013 Oct;30(8):1032-41.*

Dietary patterns, metabolic markers and subjective sleep measures in resident physicians.

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Shiftwork is common in medical training and is necessary for 24-h hospital coverage. Shiftwork poses difficulties not only because of the loss of actual sleep hours but also because it can affect other factors related to lifestyle, such as food intake, physical activity level, and, therefore, metabolic patterns. However, few studies have investigated the nutritional and metabolic profiles of medical personnel receiving training who are participating in shiftwork. The aim of the present study was to identify the possible negative effects of food intake, anthropometric variables, and metabolic and sleep patterns of resident physicians and establish the differences between genders. The study included 72 resident physicians (52 women and 20 men) who underwent the following assessments: nutritional assessment (3-day dietary recall evaluated by the Adapted

Healthy Eating Index), anthropometric variables (height, weight, body mass index, and waist circumference), fasting metabolism (lipids, cortisol, high-sensitivity C-reactive protein [hs-CRP], glucose, and insulin), physical activity level (Baecke questionnaire), sleep quality (Pittsburgh Sleep Quality Index; PSQI), and sleepiness (Epworth Sleepiness Scale; ESS). We observed a high frequency of residents who were overweight or obese (65% for men and 21% for women; $p = 0.004$). Men displayed significantly greater body mass index (BMI) values ($p = 0.002$) and self-reported weight gain after the beginning of residency ($p = 0.008$) than women. Poor diet was observed for both genders, including the low intake of vegetables and fruits and the high intake of sweets, saturated fat, cholesterol, and caffeine. The PSQI global scores indicated significant differences between genders (5.9 vs. 7.5 for women and men, respectively; $p = 0.01$). Women had significantly higher mean high-density lipoprotein cholesterol (HDL-C; $p < 0.005$), hs-CRP ($p = 0.04$), and cortisol ($p = 0.009$) values than men. The elevated prevalence of hypertriglyceridemia and abnormal values of low-density lipoprotein cholesterol (LDL-C; >100 mg/dL) were observed in most individuals. Higher than recommended hs-CRP levels were observed in 66% of the examined resident physicians. Based on current recommendations, a high prevalence of low sleep quality and excessive daytime sleepiness was identified. These observations indicate the need to monitor health status and develop actions to reassess the workload of medical residency and the need for permission to perform extra night shifts for medical residents to avoid worsening health problems in these individuals.

3. *PLoS One*. 2013 Aug 7;8(8):e70228.

Associations between night work and anxiety, depression, insomnia, sleepiness and fatigue in a sample of Norwegian nurses.

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BACKGROUND: Night work has been reported to be associated with various mental disorders and complaints.

We investigated relationships between night work and anxiety, depression, insomnia, sleepiness and fatigue among Norwegian nurses.

METHODS: The study design was cross-sectional, based on validated self-assessment questionnaires. A total of 5400 nurses were invited to participate in a health survey through the Norwegian Nurses' Organization, whereof 2059 agreed to participate (response rate 38.1%). Nurses completed a questionnaire containing items on demographic variables (gender, age, years of experience as a nurse, marital status and children living at home), work schedule, anxiety/depression (Hospital Anxiety and Depression Scale), insomnia (Bergen Insomnia Scale), sleepiness (Epworth Sleepiness Scale) and fatigue (Fatigue Questionnaire). They were also asked to report number of night shifts in the last 12 months (NNL). First, the parameters were compared between nurses i) never working nights, ii) currently working nights, and iii) previously working nights, using binary logistic regression analyses. Subsequently, a cumulative approach was used investigating associations between NNL with the continuous scores on the same dependent variables in hierarchical multiple regression analyses.

RESULTS: Nurses with current night work were more often categorized with insomnia (OR = 1.48, 95% CI = 1.10-1.99) and chronic fatigue (OR = 1.78, 95% CI = 1.02-3.11) than nurses with no night work experience. Previous night work experience was also associated with insomnia (OR = 1.45, 95% CI = 1.04-2.02). NNL was not associated with any parameters in the regression analyses.

CONCLUSION: Nurses with current or previous night work reported more insomnia than nurses without any night work experience, and current night work was also associated with chronic fatigue. Anxiety, depression and sleepiness were not associated with night work, and no cumulative effect of night shifts during the last 12 months was found on any parameters.

4. *Chronobiol Int.* 2013 Oct;30(8):1050-65.

Circadian time organization of professional firemen: desynchronization - tau differing from 24.0 hours - documented by longitudinal self-assessment of 16 variables.

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We investigated the circadian synchronization/desynchronization (by field-study assessment of differences in period, δ , of 16 coexisting and well-documented rhythms) of 30 healthy firemen (FM) exposed to irregular, difficult, and stressful nocturnal work hours who demonstrated excellent clinical tolerance (allochronism). Three groups of FM were studied (A = 12 FM on 24-h duty at the fire station; B = 9 FM on 24-h duty at the emergency call center; C = 9 day-shift administrative FM) of mostly comparable average age, body mass index, career duration, chronotype-morningness/eveningness, and trait of field dependence/independence. The self-assessed 16 circadian rhythms were (i) physiological ones of sleep-wake (sleep log), activity-rest (actography), body temperature (internal transmitter pill probe), right- and left-hand grip strength (hand dynamometer), systolic and diastolic blood pressure (BP) plus heart rate (ambulatory BP monitoring device); (ii) psychological ones (visual analog self-rating scales) of sleepiness, fatigue, fitness for work, and capacity to cope with aggressive social behavior; and (iii) cognitive ones of eye-hand skill and letter cancellation, entailing performance speed (tasks completed/unit time) and accuracy (errors). Data (4-6 time points/24 h; 2 591 480 values in total) were gathered continuously throughout two 8-d spans, one in winter 2010-2011 and one in summer 2011. Each of the resulting 938 unequal-interval time series was analyzed by a special power spectrum analysis to objectively determine the prominent δ . The desynchronization ratio (DR: number of study variables with $\delta = 24.0$ h/number of study variables \times 100) served to ascertain the strength/weakness of each rhythm per individual, group, and

season. The field study confirmed, independent of group and season, coexistence of rather strong and weak circadian oscillators. Interindividual differences in DR were detected between groups and seasons (\pm (2), correlation tests, analysis of variance [ANOVA]). Moreover, in each group, both in winter and summer, a normal distribution was observed in the number of FM with rhythms with $\delta = 24.0$ h, e.g., ranging from 5/16 (large desynchronization) to 16/16 (no desynchronization). Such a normal distribution with intraindividual stability over time (i.e., seasons) is consistent with the hypothesis of an inherited origin of a differential propensity to circadian desynchronization and which is supported by the distribution of δ s in winter and summer following the Dian-Circadian Genetic Model, i.e., with $\delta = 24.0$ h, $\delta = 24.0$ h + $n(0.8$ h), and $\delta = 24.0$ h - $n(0.8$ h).

5. *Coll Antropol.* 2013 Jun;37(2):379-84.

Shift work, quality of life and work ability among Croatian hospital nurses.

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This paper is a report of a study of the associations of shift work with work ability and quality of life (QoL) among clinical nurses. A cross-sectional study was conducted in 2007-2008 on 1124 nurses using the Work Ability Index Questionnaire and the Quality of Life Questionnaire (WHOQOL-BREF). Lower education was a predictor for low level of work ability and low physical health domain of QoL. Older age and having no partner were statistically significantly related to lower social interaction. Predictors significantly related to low environment domain of QoL were low education and shift work. Shift workers had higher level of level of work ability, but clinically insignificant. The study provides no evidence of a significant association between shift work and work ability or quality of life. Education has a positive association with nurses' work ability and quality of life.

6. *Stud Health Technol Inform.* 2013;192:152-6.

Detecting periodic limb movements with off-the-shelf accelerometers: a feasibility study.

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Periodic limb movements are short movements of the legs that can lead to low sleep quality in the general population. Currently, the gold standard to measure periodic limb movements for diagnostic purposes is polysomnography. This is an expensive technique that requires specially fitted laboratories and specialized personnel. In this paper we explore the use of commercial, off-the-shelf accelerometers to detect periodic limb movements during sleep and compare the results to the gold standard. We recruited two subjects for one night and measured limb movements with polysomnography and Actigraph GT3X accelerometers. We developed an open source Java application for processing the data. A total of 846 events were recorded. We found a very low similarity between polysomnography and GT3X data, indicating that our accelerometer-based method is not yet feasible for medical diagnosis. Several options for further development are: the exploration of different sensor locations, sensors with higher sampling rates, as well as enhancement of data analysis methods.

7. *COPD.* 2013 Aug;10(4):482-92.

Perceptions and attitudes toward the use of nebulized therapy for COPD: patient and caregiver perspectives.

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Although delivery of medications through nebulization is effective for patients with COPD, nebulization is often perceived negatively. This survey evaluated patient and caregiver attitudes and perceptions related to the use of

nebulization for the management of COPD. A total of 400 patients and a separate population of 400 caregivers were randomly selected and interviewed via telephone. Responses were assessed on the basis of 4 domains: health of patients with COPD, satisfaction with nebulization therapy, benefits and challenges, and the caregiver role. Most patients (58%) self-classified their COPD as "mild to moderate," with shortness of breath upon minimal to moderate exertion; caregivers reported similar findings. The majority of patients and caregivers (89% and 92%, respectively) were "generally satisfied with their (or their friend's or family member's) current nebulized treatment." Based on their personal experiences, 80% of patients and caregivers reported that using a nebulizer was better than using only an inhaler. Patients and caregivers agreed (79% and 85%, respectively) that the benefits of nebulization therapy outweighed the difficulties or inconveniences. Patients believed that their overall quality of life had improved since beginning nebulization (75%) and that nebulization better enabled their caregiver to provide care (77%); caregivers echoed this sentiment. Overall, this survey demonstrated that an overwhelming majority of patients and caregivers were satisfied with nebulization therapy, reporting benefits in symptom relief, ease of use, and improved quality of life.

8. *Chronobiol Int.* 2013 Oct;30(8):1066-71.

Circadian Disruption: comparing humans with mice.

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Disruption of the 24-h light-dark cycle has been implicated as an endocrine disruptor and linked to increased morbidity and mortality in animal studies. Previously reported measurements of circadian disruption in day-shift and rotating-shift nurses were compared with new mouse data where the light-dark patterns simulated shiftwork. Phasor magnitudes, a measure of circadian entrainment, were shown to be similar for humans and for mice when exposed to similar patterns of light and dark. Phasor analyses may be a useful method for quantitatively bridging ecological measurements of circadian disruption in human with parametric studies of health outcomes in a mouse model.

9. *Diabetes Care*. 2013 Oct;36(10):3154-61.

Sleep characteristics, mental health, and diabetes risk: a prospective study of U.S. military service members in the Millennium Cohort Study.

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OBJECTIVE: Research has suggested that a higher risk of type 2 diabetes associated with sleep characteristics exists. However, studies have not thoroughly assessed the potential confounding effects of mental health conditions associated with alterations in sleep.

RESEARCH DESIGN AND METHODS: We prospectively assessed the association between sleep characteristics and self-reported incident diabetes among Millennium Cohort Study participants prospectively followed over a 6-year time period. Surveys are administered approximately every 3 years and collect self-reported data on demographics, height, weight, lifestyle, features of military service, sleep, clinician-diagnosed diabetes, and mental health conditions assessed by the PRIME-MD Patient Health Questionnaire and the PTSD Checklist-Civilian Version. Statistical methods for longitudinal data were used for data analysis.

RESULTS: We studied 47,093 participants (mean 34.9 years of age; mean BMI 26.0 kg/m²; 25.6% female). During 6 years of follow-up, 871 incident diabetes cases occurred (annual incidence 3.6/1,000 person-years). In univariate analyses, incident diabetes was significantly more likely among participants with self-reported trouble sleeping, sleep duration < 6 h, and sleep apnea. Participants reporting incident diabetes were also significantly older, of nonwhite race, of higher BMI, less likely to have been deployed, and more likely to have reported baseline symptoms of panic, anxiety, posttraumatic stress disorder,

and depression. After adjusting for covariates, trouble sleeping (odds ratio 1.21 [95% CI 1.03-1.42]) and sleep apnea (1.78 [1.39-2.28]) were significantly and independently related to incident diabetes.

CONCLUSIONS: Trouble sleeping and sleep apnea predict diabetes risk independent of mental health conditions and other diabetes risk factors.

10. *Pediatr Res*. 2013 Oct;74(4):443-9.

Prevalence and risk factors of being overweight or obese among children and adolescents in northeast China.

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BACKGROUND: We determined the prevalence and risk profiles of being overweight or obese among children and adolescents in rural northeast China.

METHODS: We conducted a cross-sectional study consisting of 4,094 children and adolescents aged 5-18 y. Anthropometric measurements and information on health-related variables were collected by well-trained personnel. Odds ratios (ORs) are presented with 95% confidence intervals (CIs).

RESULTS: The overall prevalence of subjects who were overweight or obese was 21.8% (15.4% overweight and 6.4% obese). Among boys, getting more sleep was found to be a protective factor against being overweight or obese, and a higher monthly family income (2,000-5,000 Chinese yuan (CNY); 1 CNY = 0.163 US dollar) was associated with an increased risk as compared with lower incomes. For girls, not having breakfast every day conferred higher odds of being overweight or obese (OR, 1.45 (95% confidence interval (CI), 1.11-1.91)). When both parents were overweight, this increased the risk of a child being overweight or obese in both boy (overweight father: OR, 1.54 (95% CI, 1.26-1.89); overweight mother: OR, 1.73 (95% CI, 1.35-2.22)) and girl participants (overweight father: OR, 2.01 (95% CI, 1.57-2.57); overweight mother: OR, 1.45 (95% CI, 1.07-1.96)).

CONCLUSION: The prevalence of pediatric obesity in rural China was relatively high. Risk profiles should be fully considered when planning prevention and treatment programs for pediatric obesity.

11. *Chronobiol Int.* 2013 Oct;30(8):951-62.

Effects of filtering visual short wavelengths during nocturnal shiftwork on sleep and performance.

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Circadian phase resetting is sensitive to visual short wavelengths (450–480 nm). Selectively filtering this range of wavelengths may reduce circadian misalignment and sleep impairment during irregular light-dark schedules associated with shiftwork. We examined the effects of filtering short wavelengths (<480 nm) during night shifts on sleep and performance in nine nurses (five females and four males; mean age \pm SD: 31.3 \pm 4.6 yrs). Participants were randomized to receive filtered light (intervention) or standard indoor light (baseline) on night shifts. Nighttime sleep after two night shifts and daytime sleep in between two night shifts was assessed by polysomnography (PSG). In addition, salivary melatonin levels and alertness were assessed every 2 h on the first night shift of each study period and on the middle night of a run of three night shifts in each study period. Sleep and performance under baseline and intervention conditions were compared with daytime performance on the seventh day shift, and nighttime sleep following the seventh daytime shift (comparator). On the baseline night PSG, total sleep time (TST) ($p < 0.01$) and sleep efficiency ($p = 0.01$) were significantly decreased and intervening wake times (wake after sleep onset [WASO]) ($p = 0.04$) were significantly increased in relation to the comparator night sleep. In contrast, under intervention, TST was increased by a mean of 40 min compared with baseline, WASO was reduced and sleep efficiency was increased to levels similar to the comparator night. Daytime sleep was significantly impaired under both baseline and intervention conditions. Salivary melatonin levels were significantly higher on the first ($p < 0.05$)

and middle ($p < 0.01$) night shifts under intervention compared with baseline. Subjective sleepiness increased throughout the night under both conditions ($p < 0.01$). However, reaction time and throughput on vigilance tests were similar to daytime performance under intervention but impaired under baseline on the first night shift. By the middle night shift, the difference in performance was no longer significant between day shift and either of the two night shift conditions, suggesting some adaptation to the night shift had occurred under baseline conditions. These results suggest that both daytime and nighttime sleep are adversely affected in rotating-shift workers and that filtering short wavelengths may be an approach to reduce sleep disruption and improve performance in rotating-shift workers.

12. *Chronobiol Int.* 2013 Oct;30(8):963-72.

Circadian adaptation of airline pilots during extended duration operations between the USA and Asia.

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This study tracked circadian adaptation among airline pilots before, during, and after trips where they flew from Seattle (SEA) or Los Angeles (LAX) to Asia (7–9 time zones westward), spent 7–12 d in Asia, and then flew back to the USA. In Asia, pilots' exposures to local time cues and sleep opportunities were constrained by duty (short-haul flights crossing $d \pm 1$ time zone/24 h). Fourteen captains and 16 first officers participated (median age = 56 versus 48 yrs, $p.U < 0.001$). Their sleep was monitored (actigraphy, duty/sleep diaries) from 3 d pre-trip to 5 d post-trip. For every flight, Karolinska Sleepiness and Samn-Perelli Fatigue scales and 5-min psychomotor vigilance task (PVT) tests were completed pre-flight and at top of descent (TOD). Participants had ≥ 3 d free of duty prior to outbound flight(s). From 72–24 h prior to departure (baseline sleep), mean total sleep/24 h (TST) = 7.00 h (SD = 1.18 h) and mean sleep efficiency = 87% (SD = 4.9%). Most pilots (23/30) flew direct to and from Asia, but 7 LAX-based pilots flew via a 1-d layover in Honolulu (HNL). On flights with ≥ 2 pilots, mean total in-flight sleep varied from 0.40 to 2.09

h outbound and from 0.74 to 1.88 h inbound. Duty patterns in Asia were variable, with d² 2 flights/d (mean flight duration = 3.53 h, SD = 0.53 h). TST on days 17 in Asia did not differ from baseline (p.F) = 0.2031). However, mean sleep efficiency was significantly lower than baseline on days 5-7 (p.F) = 0.0041). More pilots were on duty between 20:00 and 24:00 h on days 57 (mean = 21%) than on days 24 (mean = 14%). Sleep propensity distribution phase markers and chi-square periodogram analyses suggest that adaptation to local time was complete by day 4 in Asia. On pre-flight PVT tests in Asia, the slowest 10% of responses improved for flights departing 14:00–19:59 h (p.F) = 0.0484). At TOD, the slowest 10% of responses improved across days for flights arriving 14:00-19:59 h (p.F) = 0.0349) and 20:00-01:59 h (p.F) = 0.0379). Sleepiness and fatigue ratings pre-flight and at TOD did not change across days in Asia. TST on post-trip day 1 was longer than baseline (estimated mean extension = 1.68 h; adjusted p(t) < 0.0001). On all post-trip days, sleep efficiency was comparable to baseline. Sleep propensity distribution phase markers and chi-square periodogram analyses suggest complete readaptation in 12 d. Two opposing influences appeared to affect sleep and PVT performance across days in Asia: progressive circadian adaptation to local time and increasing duty during local night, which displaced sleep from the optimal physiological time. Cumulative sleep restriction across the return flight may explain the large rebound in TST on day 1 post-trip. Thereafter TST, sleep efficiency, and sleep timing suggest that readaptation was complete. Rapid post-trip readaptation may be facilitated by pilots having unconstrained nocturnal sleep opportunities, coupled with stronger patterns of family and social cues than in Asia.

13. *Ergonomics*. 2013;56(8):1216-24.

How do employees prioritise when they schedule their own shifts?

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We investigated how employees prioritised when they scheduled their own shifts and whether priorities depended on age, gender, educational level, cohabitation

and health status. We used cross-sectional questionnaire data from the follow-up survey of an intervention study investigating the effect of self-scheduling (n = 317). Intervention group participants were asked about their priorities when scheduling their own shifts succeeded by 17 items covering family/private life, economy, job content, health and sleep. At least half of the participants reported that they were giving high priority to their family life, having consecutive time off, leisure-time activities, rest between shifts, sleep, regularity of their everyday life, health and that the work schedule balanced. Thus, employees consider both their own and the workplace's needs when they have the opportunity to schedule their own shifts. Age, gender, cohabitation and health status were all significantly associated with at least one of these priorities. **PRACTITIONER SUMMARY:** Intervention studies report limited health effects of self-scheduling. Therefore, we investigated to what extent employees prioritise their health and recuperation when scheduling their own shifts. We found that employees not only consider both their health and family but also the workplace's needs when they schedule their own shifts.

14. *Am Surg*. 2013 Jul;79(7):711-5.

SESC Practice Committee survey: surgical practice in the duty-hour restriction era.

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Debate continues as to the relevance of Accreditation Council for Graduate Medical Education (ACGME) duty-hour restrictions in actual practice and the adequacy of resident training in surgery. A survey of the membership of the Southeastern Surgical Congress using an Internet-based questionnaire was conducted: adherence to duty-hour restrictions, evidence of sleepiness and fatigue, opinions regarding the training, and clinical performance of surgeons who had trained after the institution of duty-hour restrictions in 2003 (termed "recently trained surgeons"). One hundred seventy-seven members respondents out of 1008 (18%). Most (101 of 170 [59%]) worked more than 80 hours in a week and half (86 of 174 [49%]) more than 24 hours

consecutively once or more a month. Falling asleep inappropriately was reported by 6 to 12 per cent. Forty per cent (71 of 176) thought that graduates of residencies today are prepared for clinical practice. Those who had hired a recently trained surgeon believed the latter was sufficiently trained (61 of 123 [50%]) more often than those who had not hired one (10 of 51 [20%]; $P = 0.006$). Those with a new colleague gave first assistant help in 75 per cent (91 of 121) during the first year. Surgeons in practice regularly violate ACGME duty-hour restrictions. Many surgeons have doubts whether new graduates of residency training programs have adequate training to practice surgery. Those who have hired a new surgeon trained under duty-hour restrictions are more likely to be satisfied with the latter's training. Most new trainees receive direct assistance from their practice partners, continuing their training beyond residency.

15. *Respir Care*. 2013 Dec;58(12):2038-44.

Role of a respiratory therapist in improving adherence to positive airway pressure treatment in a pediatric sleep apnea clinic.

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BACKGROUND: Many pediatric patients need positive airway pressure (PAP) for treatment of obstructive sleep-disordered breathing. Adherence to PAP (defined as percent of nights with PAP use of > 4 h) is often poor and not sustained long-term. With any chronic disease, education has been shown to help with patient outcomes. Education of patients and parents regarding PAP can be provided by different healthcare professionals. There is no published literature assessing the role of respiratory therapists (RTs) in improving adherence to PAP in children. We hypothesized that the addition of RT visits to a PAP clinic would improve PAP adherence.

METHODS: RT services for PAP patients were introduced in a multidisciplinary pediatric sleep clinic in May 2006. We identified children who had been followed in clinic, and had adherence download information before and after introduction of RT services. We collected demographic, polysomnography, and CPAP adherence data at clinic visits.

RESULTS: Forty-six subjects met criteria for inclusion. The mean \pm SD age was 14.9 ± 6 y. The mean \pm SD apnea-hypopnea index was 26.7 ± 30 events/h. Other than the addition of the RT intervention, all subjects continued to receive the same clinical services as before. Subjects were divided into 3 groups, based on baseline adherence: 0% use, use for 1-50% of nights, and use for > 50% of nights. There was a statistically significant improvement in PAP adherence in the subjects with baseline use of 0% and 1-50%, but no improvement in those with > 50% use at baseline. There was no significant change in PAP use at subsequent RT visits.

CONCLUSIONS: Utilization at clinic visits of an RT trained in the use of PAP improved adherence in pediatric subjects with obstructive sleep-disordered breathing when their baseline PAP adherence was < 50%.

16. *BMJ Case Rep*. 2013 Jun 11;2013. pii: bcr2013010080.

What kind of diagnosis in a case of mobbing: post-traumatic stress disorder or adjustment disorder?

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Over the last decade a consistent increase in stress-related psychological consequences at the workplace, usually called 'mobbing', has been seen. It claimed physical, psychical and social distress as its victims, leading to an increased incidence of many illnesses, such as psychosomatic disorders (ache, high blood pressure, chronic fatigue and insomnia) and psychiatric disturbances (high level of anxiety, depression and suicidal attempts). It was recently demonstrated that mobbing is significantly widespread among healthcare workers, especially among female nurses. In this report, we illustrate the case of a nurse who, after a brilliant career, underwent mobbing at the workplace, showing depression, anxiety and sleep disorders that required hospitalisation and a substantial intervention.

17. *Trials*. 2013 Jun 11;14:169.

Log in and breathe out: efficacy and cost-effectiveness of an online sleep training for teachers affected by work-related strain-study protocol for a randomized controlled trial.

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BACKGROUND: Insomnia and work-related stress often co-occur. Both are associated with personal distress and diminished general functioning, as well as substantial socio-economic costs due to, for example, reduced productivity at the work place and absenteeism. Insomnia complaints by people experiencing work-related stress are correlated with a deficient cognitive detachment from work. Diffuse boundaries between work and private life can additionally complicate the use of recreational activities that facilitate cognitive detachment. Cognitive behavioral therapy for insomnia is effective but rarely implemented. Internet-based cognitive behavioral therapy for insomnia could potentially reduce this deficit given its demonstrated effectiveness. Less is known, however, about the efficacy of internet-based cognitive behavioral therapy for insomnia in populations affected by high work stress. Thus, the aim of the present study is to evaluate the efficacy and cost-effectiveness of a newly developed, guided online training which is based on Cognitive Behavioral Therapy for insomnia and tailored to teachers affected by occupational stress.

METHODS/DESIGN: In a two-arm randomized controlled trial (N = 128), the effects of a guided online sleep training will be compared to a waitlist-control condition. German teachers with significant clinical insomnia complaints (Insomnia Severity Index ≥ 15) and work-related rumination (Irritation Scale, subscale Cognitive Irritation ≥ 15) will be included in the study. The primary outcome measure will be insomnia severity. Additionally, an economic evaluation from a societal perspective will be conducted. Data from the intention-to-treat sample will be analyzed two and six months after randomization.

DISCUSSION: To the best of our knowledge, this is the first study to evaluate an online sleep training tailored to a specific population with work stress, that is, teachers. If this type of intervention is effective, it could reduce the paucity of cognitive behavioral therapy for insomnia and augment the support for teachers in coping with their insomnia problems.

TRIAL REGISTRATION: German Clinical Trial Register (DRKS): DRKS00004700.

18. *J Biol Rhythms*. 2013 Jun;28(3):227-36.

Diurnal 24-hour rhythm in ambulatory heart rate variability during the day shift in rotating shift workers.

Yoshizaki T, Kawano Y, Tada Y, Hida A, Midorikawa T, Hasegawa K, Mitani T, Komatsu T, Togo F.

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Circadian variation in cardiac autonomic nervous system activity and behavior during the day shifts of shift workers has not hitherto been clarified. This study examined diurnal 24-h variation in heart rate variability (HRV), sleep-wake cycle, physical activity, and food intake during the day shift in rotating shift workers. The subjects were female nurses and caregivers working at a health care facility (14 day workers and 13 rotating shift workers). Each subject was asked to undergo 24-h electrocardiograph and step count recordings. Coarse graining spectral analysis was used for approximately 10-min segments of HRV (600 beats) to derive the total power (TOT: >0.04 Hz), integrated power in the low-frequency (LF: 0.04-0.15 Hz) and high-frequency (HF: >0.15 Hz) ranges, the ratio of HF power to TOT (HF nu), and the ratio of LF power to HF power (LF/HF). Double cosinor analysis was used to obtain 24-h and 12-h period variations in variables of HRV and physical activity. While no difference was found in the acrophases of either period for step counts or in the 12-h period of HRV variables between the groups, the acrophases of the 24-h period for HRV variables were delayed by 1.3 to 5.5 h in rotating shift workers, and their differences in HF power, HF nu, and LF/HF reached a significant level ($p < 0.05$). On the days of the experiment, retiring time, waking up time, total time in bed, sleep efficiency,

and mealtimes and energy intake for each diet did not differ between the groups. These results suggest that there is a possibility of an abnormal phase angle between circadian variation in cardiac autonomic nervous system activity and the sleep-wake cycle during the day shift in shift workers.

19. *J Palliat Med.* 2013 Jul;16(7):768-73.

Progression of delirium in advanced illness: a multivariate model of caregiver and clinician perspectives.

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BACKGROUND: Delirium is one of the most distressing and difficult to manage problems in advanced illness. Family caregivers have a unique view of the progression of delirium.

OBJECTIVE: This study examined precursors to delirium from the perspective of family caregivers.

DESIGN: This study utilized a two-stage concept mapping design that began with semistructured interviews with caregivers of patients suffering with delirium. The interview data was sorted and rated by clinicians prior to quantitative data analysis via multidimensional scaling (MDS) and cluster analysis.

SUBJECTS/SETTINGS: The subjects were 20 family caregivers of patients with a diagnosis of delirium in a hospice inpatient unit.

RESULTS: The main outcome of the study was a multidimensional model of precursors of delirium that included 99 specific items. The model included ten clusters within three general domains: Cognition, Distress, and Rest/Sleep. An exploratory analysis suggested that Rest and Sleep issues were evident to caregivers much earlier than other kinds of problems (mean=17.56 weeks prior to hospice admission, 95% CI=9.2-25.0 weeks).

CONCLUSIONS: This study provides detailed insights from family caregivers about the progression of delirium. The caregiver observations were clustered by multivariate analysis to provide a map of symptom domains. The principal finding of this study is that sleep disturbance was identified by almost all family caregivers much earlier than other more commonly recognized symptoms

associated with delirium. The study highlights the importance of sleep fragmentation in the temporal progression of delirium and points toward opportunities for improved measurement, prevention, and treatment.

20. *Australas Psychiatry.* 2013 Aug;21(4):326-8.

The mental health consequences of student "Holocaust memorial journeys".

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OBJECTIVE: Our aim was to study the mental health consequences of Israeli adolescents' 8-day "Holocaust memorial journey" to Poland.

METHOD: A survey to ascertain the experience of Israeli child and adolescent psychiatrists and residents in the specialty was conducted. Participants were asked about referrals regarding the memorial journey, and to compare these cases with referrals for other potentially traumatic events, including school "sleep-out" trips.

RESULTS: Fifty child and adolescent psychiatrists and residents participated. According to their collective experience, the adolescents' memorial journey triggered a variety of mental health problems, including psychosis, but only one case of post-traumatic stress disorder (PTSD). Judging by the number of referrals, there was a higher rate of mental health problems following the memorial journey than after the annual sleep-out school trip.

CONCLUSIONS: Although it may seldom lead to PTSD, the Holocaust memorial journey can be a major stressor for some participating teenagers. Evaluating "high risk" adolescents prior to their planned exposure to likely stressors and conducting large, prospective studies that examine the impact of pre-planned stressors on the lives of adolescents are warranted. Providing support to all adolescents before, during and after exposure to anticipated stressors is important.

21. *J Nurs Adm.* 2013 Jun;43(6):342-7.

How do clinicians assess, communicate about, and manage patient sleep in the hospital?

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OBJECTIVE: The objective of this study was to characterize how clinicians assess, communicate about, and manage patient sleep, with the focus on identifying existing barriers and facilitators to sleep promotion in clinical practice.

BACKGROUND: Sleep is a critical need for improving for hospitalized patients.

METHODS: Content analysis was used to interpret descriptive data from 4 group interviews with a total of 62 clinicians.

RESULTS: Clinicians reported they did not formally assess for patient sleep, which led to largely unmanaged sleep disruption during hospitalization. Major barriers to effective sleep management were limited understanding of the importance of sleep, lack of a standardized tool for assessment, and inadequate communication. Facilitators included collaborative communication with patients and the healthcare team and customized patient-centered interventions.

CONCLUSIONS: It is critical to inform clinicians on the importance of sleep, to standardize sleep assessment, and to facilitate collaboration among caregivers to promote sleep for hospitalized patients.

22. *Int J Adolesc Med Health.* 2013;25(4):345-51.

Developmental issues of university students in Hong Kong.

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Four domains of developmental issues of university students in Hong Kong are examined in this paper. First, behavioral and lifestyle problems of university students are identified, including alcohol consumption, Internet

addiction, cyber-pornography, irregular sleep patterns, and interpersonal violence. Second, the mental health problems of university students, including suicidal ideation, depression and anxiety problems, are outlined. Third, issues on self-determination (including establishment of personal goals), self-confidence, and materialism of the students are reviewed. Fourth, issues related to students' connection to the society, including egocentrism and civic engagement, are discussed. The views of employers about university graduates in Hong Kong are also examined. With the emergence of developmental issues among Hong Kong university students, it is argued that promoting the psychosocial competencies of university students via positive youth development programs is an important strategy in addressing such issues.

23. *Am J Epidemiol.* 2013 May 15;177(10):1097-105.

Prospective study of restless legs syndrome and risk of erectile dysfunction.

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In our previous cross-sectional study, we found that restless legs syndrome (RLS) was associated with erectile dysfunction (ED). Thus, we conducted a prospective study to examine whether RLS was associated with a higher risk of developing ED based on 6 years of follow-up among 10,394 men (mean age = 63.4 years) in the Health Professionals Follow-up Study. RLS was assessed in 2002 using a set of standardized questions recommended by the International RLS Study Group. Erectile function was assessed by means of questionnaires in 2000, 2004, and 2008. We identified 1,633 incident ED cases. Men with RLS were more likely to develop ED (relative risk = 1.38, 95% confidence interval: 1.14, 1.68; P = 0.001) than were those without the syndrome, after adjustment for potential confounders, such as age, body mass index, smoking, physical activity, other sleep disorders, and snoring status. A higher frequency of RLS symptoms was also associated with an increased risk of ED (P(trend) = 0.001). In conclusion, men with RLS

had a higher risk of ED, and the magnitude of the risk increased with a higher frequency of RLS symptoms. Combinations of other sleep disorders with RLS further increased the risk of ED.

24. *Int J Gen Med.* 2013 Apr 11;6:227-31.

Relationship between napping during night shift work and household obligations of female nursing personnel.

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Night shift employment involves displacing sleep to the daytime. For female workers, the opportunity for daytime sleep is influenced by routine housework demands, which aggravates sleep deprivation. Allowing naps to be taken during the night shift of work is a frequent practice at some hospitals and can help reduce the effects of sleep deprivation. We hypothesize that an association between domestic work and the length of naps during night work exists for nursing professionals. To test this hypothesis, two cross-sectional studies were conducted in two different hospitals. In Study 1, female workers answered questionnaires regarding sleeping habits, professional work, and housework demands. In Study 2, data regarding napping during shifts was obtained by actigraphy, a noninvasive method of monitoring the human sleep-wake cycle. The demand for the performance of housework was measured by (i) domestic work hours (total time spent performing domestic work per week), and (ii) domestic workload, which considers the degree of sharing domestic tasks and the number of people living at home. The populations from the two studies were subdivided into groups, based on the duration of napping at work. Data on naps were analyzed according to domestic demands, using the Mann-Whitney and Chi-squared tests. Among the two study populations (Studies 1 and 2), those in Study 2 were older, had shorter professional weekly work hours, worked more night shifts, and dedicated more time to housework. Significant associations were only found in

Study 2, where greater time napping at work was associated with both greater time spent doing housework and greater domestic workload. The known benefits of napping during night shifts seem to be especially relevant for female workers who are more sleep-deprived from working more night shifts and who have higher demands for housework.

25. *Am J Hypertens.* 2013 Jul;26(7):903-11.

Sleep duration and risk for hypertension in women: results from the nurses' health study.

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BACKGROUND: Acute sleep restriction has been shown to increase blood pressure and sympathetic nervous system activity.

METHODS: We investigated the relationships between sleep duration and hypertension among women whose sleep durations were self-reported in 1986 (n = 82,130) and 2000 (n = 71,658) in the Nurses' Health Study I (NHS-I) and in 2001 (n = 84,674) in the Nurses' Health Study II (NHS-II).

RESULTS: After controlling for multiple risk factors in logistic regression models, the prevalence of hypertension was significantly higher among women in all 3 groups who slept <5 hours (odds ratio = 1.19, 95% confidence interval [CI] = 1.14-1.25) per night compared with 7 hours. In prospective analyses using Cox regression shorter sleep duration of <5 hours per night was significantly associated with a higher incidence of hypertension only in younger women (hazard ratio [HR] = 1.20, 95% CI = 1.09-1.31 for those aged <50 years; HR = 1.11, 95% CI = 1.00-1.23 for those aged 50-59 years). In both prevalent and incident analyses, results were consistent with obesity acting as a partial mediator. Results were not consistent with diabetes or hypercholesterolemia acting as mediators or with shift work, snoring, menopause, or postmenopausal hormone therapy acting as effect modifiers.

CONCLUSIONS: Sufficient sleep could represent a lifestyle practice worthy of investigation as an approach to reduce hypertension incidence and prevalence.

26. *Cancer Epidemiol Biomarkers Prev.* 2013 Jun;22(6):1079-87.

Night shift work and levels of 6-sulfatoxymelatonin and cortisol in men.

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BACKGROUND: Night shift work is associated with cancer among men, but the biologic mechanism is unclear. We investigated whether male night shift workers showed changes in levels of melatonin and cortisol, potential biomarkers of cancer risk.

METHODS: Urine was collected from 185 night shift and 158 day shift-working male healthcare providers, aged 22 to 55 years, throughout work and sleep periods, and assayed for 6-sulfatoxymelatonin and cortisol. Morning serum was collected within 90 minutes of completing the night and assayed for cortisol.

RESULTS: Night shift workers had significantly lower 6-sulfatoxymelatonin levels during daytime sleep, nighttime work, and nighttime sleep on off-nights (57%, 62%, and 40% lower, respectively), relative to the day shift workers during nighttime sleep ($P < 0.0001$); urinary cortisol in night shift workers was 16% higher during daytime sleep and 13% lower during nighttime sleep on off-nights ($P < 0.05$). Morning serum cortisol post-work and post-sleep in night shift workers were 24% and 43% lower, respectively, than post-sleep levels among day shift workers ($P < 0.0001$). Within-subject comparisons among the night shift workers revealed significantly lower melatonin levels and significantly higher urinary cortisol levels during daytime sleep and nighttime work, relative to nighttime sleep ($P < 0.01$); morning serum cortisol levels post-work were lower than those post-sleep.

CONCLUSIONS: Night shift workers have substantially lower 6-sulfatoxymelatonin during night work and daytime sleep, and levels remain low when night shift workers sleep at night. Chronic reduction in melatonin

among night shift workers may be an important carcinogenic mechanism. Cortisol secretion patterns may be impacted by night shift work, which could affect cancer risk.

IMPACT: Shift work could be an important risk factor for many types of cancer.

27. *JAMA Intern Med.* 2013 Apr 22;173(8):649-55.

Effect of the 2011 vs 2003 duty hour regulation-compliant models on sleep duration, trainee education, and continuity of patient care among internal medicine house staff: a randomized trial.

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IMPORTANCE: On July 1, 2011, the Accreditation Council for Graduate Medical Education implemented further restrictions of its 2003 regulations on duty hours and supervision. It remains unclear if the 2003 regulations improved trainee well-being or patient safety.

OBJECTIVE: To determine the effects of the 2011 Accreditation Council for Graduate Medical Education duty hour regulations compared with the 2003 regulations concerning sleep duration, trainee education, continuity of patient care, and perceived quality of care among internal medicine trainees.

DESIGN AND SETTING: Crossover study design in an academic research setting.

PARTICIPANTS: Medical house staff.

INTERVENTION: General medical teams were randomly assigned using a sealed-envelope draw to an experimental model or a control model.

MAIN OUTCOME MEASURES: We randomly assigned 4 medical house staff teams (43 interns) using a 3-month crossover design to a 2003-compliant model of every fourth night overnight call (control) with 30-hour duty limits or to one of two 2011-compliant models

of every fifth night overnight call (Q5) or a night float schedule (NF), both with 16-hour duty limits. We measured sleep duration using actigraphy and used admission volumes, educational opportunities, the number of handoffs, and satisfaction surveys to assess trainee education, continuity of patient care, and perceived quality of care. **RESULTS** The study included 560 control, 420 Q5, and 140 NF days that interns worked and 834 hospital admissions. Compared with controls, interns on NF slept longer during the on call period (mean, 5.1 vs 8.3 hours; $P = .003$), and interns on Q5 slept longer during the postcall period (mean, 7.5 vs 10.2 hours; $P = .05$). However, both the Q5 and NF models increased handoffs, decreased availability for teaching conferences, and reduced intern presence during daytime work hours. Residents and nurses in both experimental models perceived reduced quality of care, so much so with NF that it was terminated early.

CONCLUSIONS AND RELEVANCE: Compared with a 2003-compliant model, two 2011 duty hour regulation-compliant models were associated with increased sleep duration during the on-call period and with deteriorations in educational opportunities, continuity of patient care, and perceived quality of care.

27. *JAMA Intern Med.* 2013 Apr 22;173(8):657-62;

Effects of the 2011 duty hour reforms on interns and their patients: a prospective longitudinal cohort study.

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IMPORTANCE: In 2003, the first phase of duty hour requirements for US residency programs recommended by the Accreditation Council for Graduate Medical Education (ACGME) was implemented. Evidence suggests that this first phase of duty hour requirements resulted in a modest improvement in resident well-being and patient safety. To build on these initial changes, the ACGME recommended a new set of duty hour requirements that took effect in July 2011.

OBJECTIVE: To determine the effects of the 2011 duty

hour reforms on first-year residents (interns) and their patients.

DESIGN: As part of the Intern Health Study, we conducted a longitudinal cohort study comparing interns serving before (2009 and 2010) and interns serving after (2011) the implementation of the new duty hour requirements.

SETTING: Fifty-one residency programs at 14 university and community-based GME institutions.

PARTICIPANTS: A total of 2323 medical interns.

MAIN OUTCOME MEASURES: Self-reported duty hours, hours of sleep, depressive symptoms, well-being, and medical errors at 3, 6, 9, and 12 months of the internship year.

RESULTS: Fifty-eight percent of invited interns chose to participate in the study. Reported duty hours decreased from an average of 67.0 hours per week before the new rules to 64.3 hours per week after the new rules were instituted ($P < .001$). Despite the decrease in duty hours, there were no significant changes in hours slept (6.8 vs 7.0; $P = .17$), depressive symptoms (5.8 vs 5.7; $P = .55$) or well-being score (48.5 vs 48.4; $P = .86$) reported by interns. With the new duty hour rules, the percentage of interns who reported concern about making a serious medical error increased from 19.9% to 23.3% ($P = .007$).

CONCLUSIONS AND RELEVANCE: Although interns report working fewer hours under the new duty hour restrictions, this decrease has not been accompanied by an increase in hours of sleep or an improvement in depressive symptoms or well-being but has been accompanied by an unanticipated increase in self-reported medical errors.

28. *Scand J Public Health.* 2013 Jul;41(5):516-23.

Joint associations of sleep duration and insomnia symptoms with subsequent sickness absence: the Helsinki Health Study.

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AIMS: We aimed to examine the joint associations of sleep duration and insomnia symptoms with subsequent sickness absence of various lengths while considering

several covariates.

METHODS: Baseline surveys among 40-60-year-old employees of the City of Helsinki, Finland, (N = 6535) were prospectively linked with employer's personnel register data comprising short self-certified (1-3 days), medically-certified intermediate (4-14 days) and long (15 days or more) sickness absence spells. Average follow-up time was 4.1 years. Sleep duration, insomnia symptoms, sociodemographics, working conditions, health behaviours and health were self-reported in the surveys. Poisson regression analysis was used.

RESULTS: Insomnia symptoms were associated with sickness absence at all levels of sleep duration. Adjusting for gender and age, U-shaped associations regarding sleep hours were found. Thus, those reporting short or long sleep and reporting insomnia symptoms had a higher risk for medically-certified intermediate and long sickness absence as compared to those reporting 7 hours of sleep without insomnia symptoms. Also, those reporting 6, 7, and 8 hours of sleep had a higher risk for such sickness absence, if they reported insomnia. Weak associations were also found for self-certified sickness absence, and for those reporting short and long sleep without insomnia. Adjustments attenuated the associations, but they mainly remained.

CONCLUSIONS: These results suggest primacy of the effects of insomnia symptoms over sleep duration on sickness absence. Although insomnia dominated the joint association, U-shaped associations suggest that both sleep duration and insomnia symptoms need to be considered to promote work ability.

29. *J Biol Regul Homeost Agents*. 2013 Jan-Mar;27(1):267-74.

Influence of night-shift and napping at work on urinary melatonin, 17- β -estradiol and clock gene expression in pre-menopausal nurses.

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Night-workers experience disruption of the sleep-wake cycle and light at night which may increase breast cancer risk by suppressing the nocturnal melatonin surge,

resulting in higher levels of circulating estrogens. Night-work may also deregulate peripheral clock genes which have been found to be altered in breast cancer. This study investigated urinary 6-sulfatoxymelatonin (aMT6s), serum 17-beta-estradiol levels in premenopausal shift nurses at the end of the night-shift compared to a control group of daytime nurses. Peripheral clock gene expression in lymphocytes were also investigated. All participants were sampled in the follicular phase of the menstrual cycle. The effect of nurses' ability to take a short nap during the night-shift was also explored. The shift-work group had significantly lower aMT6s levels than daytime nurses independently of a nap. Night-shift napping significantly influences 17-beta-estradiol levels resulting in higher outcomes in nurses who do not take a nap compared to napping group and daytime workers. Peripheral clock genes expression investigated was not significantly different among the groups. Our findings suggest that shift nurses experience changes in aMT6s levels after a night-shift. Napping habits influence 17-beta-estradiol levels at the end of a night-shift. These findings might be related to the increased cancer risk reported in night-shift workers and suggest that a short nap during night-shifts may exert a positive effect.

30. *J Korean Med Sci*. 2013 Mar;28(3):431-7.

Impact of shiftwork on irritable bowel syndrome and functional dyspepsia.

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Disturbances in biological rhythms could lead to unfavorable health impact. This study aimed to evaluate the prevalence of functional dyspepsia (FD) and irritable bowel syndrome (IBS) in rotating shift workers, and to determine the factors that have significant association with the prevalence of FD and IBS. The research had been carried out among nurses and nursing assistants working at Ewha Womans University Mokdong Hospital between December 2010 and February 2011. The subjects completed self-reported questionnaires, including the quality of the sleep and the level of stress. The prevalence of FD and IBS defined by ROME III criteria, and factors associated the disorders in rotating shift workers were compared with those of day workers. A

total of 207 subjects were included in the study with 147 rotating shift workers (71.0%), and 60 (29.0%) day workers. The prevalence of IBS in rotating shift workers was higher than that in day workers (32.7% vs 16.7%, $P = 0.026$). However, no significant difference in the prevalence of FD was observed between the two groups (19.7% vs 20.0%, $P = 0.964$). In the multivariate analysis, the risk factors for IBS were rotating shift work (OR, 2.36; 95% CI, 1.01-5.47) and poor sleep quality (OR, 4.13; 95% CI, 1.82-9.40), and the risk factors for FD were poor sleep quality (OR, 2.31; 95% CI, 1.01-5.28), and severe stress (OR, 2.19; 95% CI, 1.06-4.76). A higher prevalence of IBS among rotating shift workers could be directly associated with the circadian rhythm disturbance. The circadian rhythm disturbance may be related with the pathogenesis of IBS.

31. *Neonatal Netw.* 2013 Mar-Apr;32(2):110-6.

Neonatal nurses' and therapists' perceptions of positioning for preterm infants in the neonatal intensive care unit.

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PURPOSE: Determine perceptions about positioning for preterm infants in the neonatal intensive care unit (NICU).

DESIGN: Twenty-item survey.

SAMPLE: Neonatal nurses ($n = 68$) and speech, physical, and occupational therapists ($n = 8$).

MAIN OUTCOME VARIABLE: Perceptions about positioning were obtained, and differences in perceptions between nurses and therapists were explored.

RESULTS: Ninety-nine percent of respondents agreed that positioning is important for the well-being of the infant. Sixty-two percent of nurses and 86 percent of therapists identified the Dandle ROO as the ideal method of neonatal positioning. Forty-four percent of nurses and 57 percent of therapists reported that the Dandle ROO is the easiest positioning method to use in the NICU.

Some perceptions differed: Therapists were more likely to report that the SleepSack does not hold the infant in good alignment. Nurses were more likely to report that the infant does not sleep well in traditional positioning.

32. *J Environ Public Health.* 2013;2013:639184.

The relationship between thermal comfort and light intensity with sleep quality and eye tiredness in shift work nurses.

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Environmental conditions such as lighting and thermal comfort are influencing factors on sleep quality and visual tiredness. The purpose of this study was the determination of the relationship between thermal comfort and light intensity with the sleep quality and eye fatigue in shift nurses.

METHOD: This cross-sectional research was conducted on 82 shift-work personnel of 18 nursing workstations in Isfahan Al-Zahra Hospital, Iran, in 2012. Heat stress monitoring (WBGT) and photometer (Hagner Model) were used for measuring the thermal conditions and illumination intensity, respectively. To measure the sleep quality, visual tiredness, and thermal comfort, Pittsburg sleep quality index, eye fatigue questionnaire, and thermal comfort questionnaire were used, respectively. The data were analyzed with descriptive statistics, Student's t-test, and Pearson correlation.

RESULTS: Correlation between thermal comfort which was perceived from the self-reporting of people with eye tiredness was -0.38 ($P = 0.002$). Pearson correlation between thermal comfort and sleep quality showed a positive and direct relationship ($r = 0.241$, $P = 0.33$) but the correlation between thermal comfort, which was perceived from the self-reporting of shift nurses, and WBGT index was a weak relationship ($r = 0.019$).

CONCLUSION: Based on the obtained findings, it can be concluded that a defect in environmental conditions such as thermal conditions and light intensity and also lack of appropriate managerial plan for night shift-work

nurses are destructive and negative factors for the physical and mental health of this group of practitioners.

33. *Pediatrics*. 2013 Apr;131(4):e1264-70.

Integrating “Back to Sleep” recommendations into neonatal ICU practice.

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BACKGROUND AND OBJECTIVES: The American Academy of Pediatrics stresses that NICUs should endorse and model the sudden infant deaths syndrome risk-reduction recommendations significantly before anticipated discharge of the infant. Medical personnel are critical role models for parents, and the way they position infants in the hospital strongly influences parental practices at home. The aims of this project were to increase the percentage of infants following safe sleep practices in the NICU before discharge and to determine if improving compliance with these practices would influence parent behavior at home.

METHODS: An algorithm detailing when to start safe sleep practices, a “Back to Sleep” crib card, educational programs for nurses and parents, a crib audit tool, and postdischarge telephone reminders were developed as quality improvement intervention strategies.

RESULTS: NICU compliance with supine positioning increased from 39% to 83% ($P < .001$), provision of a firm sleeping surface increased from 5% to 96% ($P < .001$), and the removal of soft objects from the bed improved from 45% to 75% ($P = .001$). Through the use of a postdischarge telephone survey, parental compliance with safe sleep practices was noted to improve from 23% to 82% ($P < .001$).

CONCLUSIONS: Multifactorial interventions improved compliance with safe sleep practices in the NICU and at home.

34. *Oncol Nurs Forum*. 2013 Mar;40(2):171-9.

Sleep characteristics of family caregivers of individuals with a primary malignant brain tumor.

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PURPOSE/OBJECTIVES: To describe the sleep characteristics of family caregivers of individuals with a primary malignant brain tumor (PMBT).

DESIGN: Cross-sectional, correlational design using baseline data from a longitudinal study.

SETTING: Neuro-oncology and neurosurgery clinics at an urban tertiary medical center in the United States.

SAMPLE: 133 family caregivers recruited one to two months following diagnosis of family member's PMBT.

METHODS: Subjective and objective measures of sleep were obtained via self-report and the use of accelerometers (three nights).

MAIN RESEARCH VARIABLES: Sleep characteristics including sleep latency, total sleep time, wake after sleep onset, number of naps, number of arousals, sleep-wake cycle, and sleep quality.

FINDINGS: Sleep latency in caregivers was, on average, 35 minutes ($SD = 34.5$)-more than twice as long as the norm of 15 minutes ($t[113] = 6.18, p < 0.01$). Caregivers averaged a total sleep time of 5 hours and 57 minutes ($SD = 84.6$), significantly less than the recommended 7 hours ($t[113] = -8, p < 0.01$), and were awake in the night 15% of the time, significantly more than the norm of 10% ($t[111] = 5.84, p < 0.01$). Caregivers aroused an average of 8.3 times during nocturnal sleep ($SD = 3.5, range = 2-21$), with about 32% reporting poor or very poor sleep quality.

CONCLUSIONS: Caregivers experienced sleep impairments that placed them at risk for poor mental and physical health, and may compromise their ability to continue in the caregiving role.

IMPLICATIONS FOR NURSING: Nurses need to assess sleep in caregivers of individuals with PMBT and implement interventions to improve sleep.

KNOWLEDGE TRANSLATION: Sleep deprivation is common in family caregivers during the early stages of care for individuals with a PMBT. A single-item sleep quality question could be an easy but valuable tool in assessing sleep disturbances in family caregivers of individuals with a PMBT. The health trajectory of family caregivers warrants further longitudinal study, in addition to the examination of the bidirectional relationship of health status of care recipients and their family caregiver.

35. *Chronobiol Int.* 2013 May;30(4):628-36.

Factors associated with shift work disorder in nurses working with rapid-rotation schedules in Japan: the nurses' sleep health project.

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Workers who meet the criteria for shift work disorder (SWD) have elevated levels of risk for various health and behavioral problems. However, the impact of having SWD on shiftworkers engaged in rapid-rotation schedules is unknown. Moreover, the risk factors for the occurrence of SWD remain unclear. To clarify these issues, we conducted a questionnaire-based, cross-sectional survey on a sample of shiftworking nurses. Responses were obtained from 1202 nurses working at university hospitals in Tokyo, Japan, including 727 two-shift workers and 315 three-shift workers. The questionnaire included items relevant to age, gender, family structure, work environment, health-related quality of life (QOL), diurnal type, depressive symptoms, and SWD. Participants who reported insomnia and/or excessive sleepiness for at least 1 mo that was subjectively relevant to their shiftwork schedules were categorized as having SWD. The prevalence of SWD in the sampled shiftworking nurses was 24.4%; shiftworking nurses with SWD showed lower health-related QOL and more severe depressive symptoms, with greater rates of both actual accidents/errors and near misses, than those without SWD. The results of logistic regression analyses showed that more time spent working at night, frequent missing of nap opportunities during night work, and having an

eveningness-oriented chronotype were significantly associated with SWD. The present study indicated that SWD might be associated with reduced health-related QOL and decreased work performance in shiftworking nurses on rapid-rotation schedules. The results also suggested that missing napping opportunities during night work, long nighttime working hours, and the delay of circadian rhythms are associated with the occurrence of SWD among shiftworking nurses on rapid-rotation schedules.

36. *Support Care Cancer.* 2013 Aug;21(8):2091-6.

Factors that affect sleep quality: perceptions made by patients in the intensive care unit after thoracic surgery.

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OBJECTIVE: This study identifies factors affecting sleep patterns among thoracic surgery patients in the intensive care unit (ICU) and compares the perceptions of sleep-disturbing factors between nurses and patients.

METHODS: One hundred and fifty-two patients and 40 nurses were surveyed using the Pittsburgh Sleep Quality Index (PSQI) and self-designed questionnaires (for patients and nurses). All statistical analyses were carried out by SPSS, and the following statistical methods were used to evaluate the data: chi-squared test and logistic regression.

RESULTS: Of 152 patients, 46.1 % reported poor sleep quality during their hospitalization; their PSQI total score was 6.95 ± 3.713 . Of these, 69.1 % indicated that their sleep quality was poorer than before; 50.0 % of them changed their sleep patterns. Significant discrepancies exist between nurses and patients in the perceptions of sleep-disturbing factors of patients.

CONCLUSION: Thoracic surgical patients' perceptions of their sleep in the ICU indicate poor sleep quality, which is decided by a variety of disturbing factors. Perceptions of these factors varied greatly between surveyed patients and nurses.

37. *Arch Iran Med.* 2013 Feb;16(2):100-3.

Sleep quality among health care workers.

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BACKGROUND: Sleep problems are common complaints in health care workers that can affect quality of life and productivity, both in patients and healthy individuals. This study evaluates the prevalence of low sleep quality in health care workers with no health issues or complaints of sleep problems.

METHODS: In this cross-sectional study was conducted on healthy employees of a health care organization in Tehran. The presence of physical and mental health issues and satisfaction from their sleep quality was assessed by means of a self-administered questionnaire. Sleep quality was evaluated by the Persian version of the Pittsburgh Sleep Quality Index (PSQI). PSQI scores of 5 or less were considered as good sleep quality.

RESULTS: From 925 participants, 56.9% were good sleepers. There was a significant association between poor sleep quality and female sex, divorced, shift-working, and age; it was not associated with education level. Self-rated health (SRH) had a significant positive correlation with sleep quality.

CONCLUSION: Poor sleep quality is common in our study population and associated with a lower SRH. The high prevalence of poor sleep quality in a group of healthy non-complaining employees can be an important early sign of underlying physical or mental health issues. Providing screening and monitoring programs to detect the underlying health conditions and their consequent treatment can promote health and productivity of employees and improve society's health, both directly and indirectly.

38. *Swiss Med Wkly.* 2013 Jan 17;143:w13745.

Perceptions of German GPs on benefits and risks of benzodiazepines and Z-drugs.

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QUESTIONS UNDER STUDY: In many countries newer non-benzodiazepines, zolpidem and zopiclone ("Z drugs"), are prescribed instead of benzodiazepine hypnotics. This is not supported by current evidence and guidelines. The aim of this study was to compare the perceptions of GPs on the benefits and harms of benzodiazepines and Z-drugs.

METHODS: A questionnaire was mailed to a random sample of 1,350 German GPs between May and June 2012. GPs were asked to rate their perceptions on a five-point Likert scale for 12 items asked for both benzodiazepines and Z-drugs. Wilcoxon signed rank test for paired observations was used for comparison between groups. Due to multiple testing, only p values ≤ 0.01 were considered statistically significant.

RESULTS: A total of 458 questionnaires were returned (response 33.9%). The mean age of participants was 53.3 years (59.4% males). GPs perceived that Z-drugs were significantly more effective in terms of reduced night-time waking, feelings of being rested on waking and improved daytime functioning than benzodiazepines ($p < 0.0001$ for all comparisons), but not in terms of reduced time to get to sleep and increased total sleep time. All studied side effects were believed to be less often for patients receiving Z-drugs ($p < 0.0001$ for all comparisons). A total of 73.4% and 80.4% answered that tolerance or withdrawal effects on stopping occur often or very often/always for benzodiazepines, whereas these values were only 30.6% and 28.7% for Z-drugs.

CONCLUSIONS: German GPs perceived that Z-drugs were more effective and safer compared to benzodiazepines, which is not supported by current evidence. The results are quite comparable to a British survey conducted seven years before.

39. *Occup Environ Med.* 2013 Apr;70(4):238-45.

Shift-related sleep problems vary according to work schedule.

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OBJECTIVES: Shift-related sleep and sleepiness problems may be due to characteristics of both shifts (ie, day, evening and night shifts) and work schedules (ie, permanent vs rotational schedules). The Bergen Shift Work Sleep Questionnaire (BSWSQ) was used to investigate associations between shift-related sleep problems and work schedules.

METHODS: 1586 nurses completed the BSWSQ. Participants who, in relation to a shift, 'often' or 'always' experienced both a sleep problem and a tiredness/sleepiness problem were defined as having shift-related insomnia (separate for day, evening and night shifts and rest-days). Logistic regression analyses were conducted for day, evening, night, and rest-day insomnia with participants on both permanent and rotational schedules.

RESULTS: Shift-related insomnia differed between the work schedules. The evening shift insomnia was more prevalent in the two-shift rotation schedule than the three-shift rotation schedule (29.8% and 19.8%, respectively). Night shift insomnia showed higher frequencies among three-shift rotation workers compared with permanent night workers (67.7% and 41.7%, respectively). Rest-day insomnia was more prevalent among permanent night workers compared with two- and three-shift rotations (11.4% compared with 4.2% and 3.6%, respectively).

CONCLUSIONS: The prevalences of shift-related insomnia differed between the work schedules with higher frequencies for three-shift rotations and night shifts. However, sleep problems were present in all shifts and schedules. This suggests that both shifts and work schedules should be considered in the study of shift work-related sleep problems.

40. *Psychosom Med.* 2013 Feb;75(2):196-201.

The impact of sleep complaints on physical health and immune outcomes in rescue workers: a 1-year prospective study.

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OBJECTIVE: The present study evaluated the extent to which sleep assessed soon after a trauma predicted subsequent physical health and immune functioning in rescue workers.

METHODS: Participants included 159 men and women who performed rescue and clean-up operations at the site of a major airplane crash. One hundred twenty-eight participants were retained for a 1-year follow-up. Self-report measures of sleep quality and psychological distress were obtained within 2 months of the crash, and a physical health questionnaire was completed at 1-year follow-up. Natural killer cell number and cytotoxicity were assessed using blood samples collected from a subset of participants (n=51) at 1-year follow-up.

RESULTS: After adjustment for sex, age, body mass index, and initial distress, initial sleep quality complaints were associated with more physical symptoms ($\hat{\alpha}=.32$; $p<.001$), poorer perceived health ($\hat{\alpha}=-.27$; $p=.009$), and increased healthcare utilization ($\hat{\alpha}=.31$; $p=.003$) on follow-up. In contrast, initial sleep quality was not associated with natural killer cell number ($r=0.10$; $p=.55$) or activity ($r=0.02$; $p=.90$). Change in sleep quality during the year after the crash was not a significant predictor of health or immune outcomes.

CONCLUSIONS: These data suggest that poor sleep quality in the aftermath of trauma signals an increased risk for future adverse physical health outcomes and underscore the importance of addressing sleep complaints soon after trauma to mitigate negative impact on physical health.

41. *Occup Environ Med.* 2013 Apr;70(4):246-51.

Psychosocial factors and well-being among Finnish GPs and specialists: a 10-year follow-up.

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BACKGROUND: Identifying factors that determine well-being among physicians may help to improve the functioning of hospitals and healthcare centres. We examined associations of psychosocial factors with psychological distress and sleep problems in Finnish general practitioners (GPs) and specialists.

METHODS: In this prospective cohort study, data from repeated measures over 10 years, related to 886 physicians followed-up from 2000 to 2010 (the Finnish Public Sector Cohort Study). Psychological distress was assessed repeatedly using the 12-item General Health Questionnaire, and sleeping problems using the Jenkins scale in three or in four surveys. Psychosocial factors and potential confounders were measured in four surveys over the same period.

RESULTS: High job demands were associated with psychological distress in GPs but not in specialists (p for interaction 0.005). This association was slightly stronger in the within-individual analysis than in the ordinary (total effects) regression, suggesting that the association was not confounded by stable differences between individuals. There was suggestive evidence for a stronger association between effort/reward imbalance and psychological distress in GPs compared with specialists (p for interaction 0.06). High demands and effort-reward-imbalance were associated with elevated sleeping problems in both groups, whereas high job control was associated with lower psychological distress but not sleeping problems.

CONCLUSIONS: These findings suggest that work-related psychosocial factors are partly responsible for the rise of health problems in physicians, such as psychological distress and sleeping problems. Increasing job demands may be a health risk, especially in GPs.

42. *Dynamics.* 2013 Winter;24(4):30-5.

Napping during breaks on night shift: critical care nurse managers' perceptions.

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BACKGROUND: Fatigue associated with shiftwork can threaten the safety and health of nurses and the patients in their care. Napping during night shift breaks has been shown to be an effective strategy to decrease fatigue and enhance performance in a variety of work environments, but appears to have mixed support within health care.

PURPOSE: The purpose of this study was to explore critical care unit managers' perceptions of and experiences with their nursing staff's napping practices on night shift, including their perceptions of the benefits and barriers to napping/not napping in terms of patient safety and nurses' personal health and safety.

METHODS: A survey design was used. Forty-seven Canadian critical care unit managers who were members of the Canadian Association of Critical Care Nurses responded to the web-based survey. Data analysis involved calculation of frequencies and percentages for demographic data, use of the Friedman rank test for comparison of managers' perceptions, and content analysis for responses to open-ended questions.

RESULTS: The findings of this study offer valuable insights into the complexities and conflicts perceived by managers with respect to napping on night shift breaks by nursing staff. Staff and patient health and safety issues, work and break expectations and experiences, and strengths and deficits related to organizational napping resources and policy are considerations that will be instrumental in the development of effective napping strategies and guidelines.

43. *Br J Anaesth.* 2013 Apr;110(4):629-36.

Proportion of surgical patients with undiagnosed obstructive sleep apnoea.

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BACKGROUND: Obstructive sleep apnoea (OSA) affects ~9-24% of the general population, and 90% remain undiagnosed. Those patients with undiagnosed moderate-to-severe OSA may be associated with an increased risk of perioperative complications. Our objective was to evaluate the proportion of surgical patients with undiagnosed moderate-to-severe OSA.

METHODS: After research ethics board approval, patients visiting preoperative clinics were recruited over 4 yr and screened with the STOP-BANG questionnaire. The 1085 patients, who consented, subsequently underwent polysomnography (PSG) (laboratory or

portable) before operation. Chart review was conducted in this historical cohort to ascertain the clinical diagnosis of OSA by surgeons and anaesthetists, blinded to the PSG results. The PSG study-identified OSA patients were further classified based on severity using the apnoea-hypopnoea index (AHI) cut-offs.

RESULTS: Of 819 patients, 111 patients had pre-existing OSA and 58% (64/111) were not diagnosed by the surgeons and 15% (17/111) were not diagnosed by the anaesthetists. Among the 708 study patients, PSG showed that 233 (31%) had no OSA, 218 (31%) patients had mild OSA (AHI: 5-15); 148 (21%) had moderate OSA (AHI: 15-30), and 119 (17%) had severe OSA (AHI>30). Before operation, of the 267 patients with moderate-to-severe OSA, 92% (n=245) and 60% (n=159) were not diagnosed by the surgeons and the anaesthetists, respectively.

CONCLUSIONS: We found that anaesthetists and surgeons failed to identify a significant number of patients with pre-existing OSA and symptomatic undiagnosed OSA, before operation. This study may provide an impetus for more diligent case finding of OSA before operation.