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### MATERNAL SHIFT WORK DURING PREGNANCY AND INFANT NEURODEVELOPMENT PARAMETERS AT EIGHTEEN MONTHS: RESULTS FROM TAIWAN BIRTH COHORT STUDY

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**Introduction** Maternal shift work were found to be associated with altered sex hormone, pre-term delivery and small for gestational age. Previous studies also showed shorter breastfeeding duration among mothers with shift work. However, whether these adverse effects affect future infant neurodevelopment remained uncertain. Therefore, we aimed to find the association between maternal shift work status and children's neurodevelopment parameters.

**Methods** Taiwan Birth Cohort Study (TBCS) was the first nationwide birth cohort study in Taiwan that follows representatively sampled mother-infant pairs in 2005. The development and exposure condition of the participants were assessed by home interview with structured questionnaires upon six and eighteen months old. Propensity score matching was used to generate subpopulation with comparable characteristics. Multivariate logistic and Cox proportional hazard regression model were applied to examine the relative risk (RR) and hazard ratio (HR) between maternal shift work status and caregiver-reported neurodevelopment milestones.

**Results** In this study, 1751 term singletons were included in the propensity score matched cohort. Maternal shift work was associated with delay in care-giver reported gross motor neurodevelopment milestone, such as able to draw arbitrarily (RR=1.39, 95% confidence interval CI: 1.05 to 1.84; hazard ratio (HR)=1.13, 95% confidence interval CI: 1.02 to 1.25), able to drink with both hands (HR=1.11, 95% confidence interval CI: 1.00 to 1.23), and lower score in gross motor domain of TBCS development instrument (RR=1.41, 95% confidence interval CI: 1.01 to 1.96). However, the effects were attenuated after multivariate adjustment.

**Conclusion** This study showed possible associations between maternal shift work and delay in neurodevelopment milestone achievement at eighteen months. Although the associations were attenuated when adjusted for other parameters, further studies may be indicated to ascertain the association and the possible dose-response effect.

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### USING THE NATIONAL HEALTH INTERVIEW SURVEY TO STUDY WORKPLACE PSYCHOSOCIAL EXPOSURES IN THE U.S

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**Introduction** The National Health Interview Survey (NHIS) is an annual, in-person health survey that is the primary source of information on the health of Americans. In 2010 and 2015, the National Institute for Occupational Safety and Health (NIOSH) sponsored sets of work-related questions in the NHIS, called Occupational Health Supplements (OHSs) in order to estimate the prevalence of workplace exposures, including psychosocial exposures, and common work-related health conditions.

**Methods** The 2015 NHIS-OHS included questions about several psychosocial exposures: work-life interference, worry about losing one's job, hostile work environment, job demands, job control, and supervisory support. The data are publicly available, and NIOSH has estimated the prevalence of all of these exposures using statistical procedures that take the complex sample design into account and applying NHIS sample adult record weights to produce nationally representative results.

**Result** The 2015 NHIS-OHS collected data on more than 19 000 employed adults, representing almost 158 million American workers. The overall prevalence of work-life interference was 25.5%, ranging from 23.9% among workers employed in wholesale and retail trade to 31.1% among workers employed in transportation, warehousing and utilities industries. The overall prevalence of worry about losing one's job was 11.0%, ranging from 10.0% among those employed in services industries to 29.0% among those employed in mining. The overall prevalence of a hostile work environment was 6.9%, ranging from 1.5% among those employed in agriculture, forestry, and fishing to 9.9% among those employed in healthcare and social assistance. High job demands were reported by 14.4%, low job control was reported by 13.7%, and low supervisory support was reported by 9.9% of workers.

**Discussion** Many U.S. workers experience workplace psychosocial exposures that may adversely impact their health, and the prevalence of these exposures varies by industry. Workplace or industry-specific interventions, developed with worker participation, may be warranted.

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### RAISING THE BAR: WATER, SANITATION & HYGIENE AT WORKPLACE

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**Introduction** UN's Sustainable Development Goals (SDG) 6.1 and 6.2 aim to achieve universal access to water, sanitation and hygiene (WASH) by 2030. Today, as estimated, over 1.8 billion people are still without access to safe drinking water and 4.1 billion lack access to adequate sanitation. There is a compelling and clear economic case for businesses to demonstrate leadership by addressing this situation. Many businesses have operations, employees, contractors and customers in countries lacking access to WASH provisions. Economic, social and environmental impacts can cause illness or fatalities, impair productivity, and restrict markets for some products and services. Aditya Birla group (ABG) – a 41 billion USD multinational conglomerate, recognise this and is committed to play its role by signing World Business Council for Sustainable Development (WBCSD) WASH Pledge.

**Methods** WASH Self-Assessment Questionnaire (SAQs) from WBCSD were framed in specific sustainability software and launched in 2015 to understand the current level of WASH provisions available at premises under direct company control against the international standards. Awareness on required aspects of WASH provisions were provided based on gaps identified and best practices within the groups were shared. Periodic update on status were made available to decision makers along with Key focus areas. The scores were reviewed in business review meeting.

**Result** Over 180 group locations in different geographies completed self-assessment questionnaires (SAQs). Gaps were identified and improvement plans were executed at locations. This has resulted into overall improvement of WASH scores across the group from approx. 75% to >90%.

**Discussion** A focused approach of self-assessment questionnaire along with gap identification and action plans in a web based software has been found very useful to monitor and support development of WASH status across the organisation. This initiative has also resulted in increased awareness among workforce, peers and other stakeholders regarding WASH.

### 309 WORK-RELATED ILL-HEALTH: REPUBLIC OF IRELAND, NORTHERN IRELAND, GREAT BRITAIN 2005–2016

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**Background** Data on work-related ill-health (WRIH) in the Republic of Ireland (ROI) are inconsistent, with no mandatory requirement for employers to report occupational diseases/illness unless liable for compensation.

**Aims** To compare the incidence of WRIH in ROI, Northern Ireland (NI) and Great Britain (GB).

**Methods** Analysis of voluntary reported, medically verified data submitted to The Health and Occupation Research (THOR) network in ROI, 2005–2016. ROI-THOR comprises 4 schemes (74 physicians) enabling chest physicians (ROI-SWORD), dermatologists (ROI-EPIDERM), occupational physicians (ROI-OPRA) and general practitioners (THOR-GP-ROI) to report. Data were compared with the corresponding UK THOR schemes.

**Results** 2148 case reports (dermatologists: 453, chest physicians: 164, OPs: 1514, GPs: 17) were reported to ROI-THOR. Contact dermatitis was the most frequently reported skin disease in all three areas (ROI, 96%; NI, 48%, GB, 76%). Asthma was the most frequently reported respiratory disease in the ROI (36%), whilst for GB and NI it was benign pleural disease (42% and 36%, respectively). OPs and GPs in the ROI reported mental ill-health (53%, 35%) and musculoskeletal disorders (34%, 24%) most frequently; a similar pattern was observed in NI and GB. ROI skin and respiratory incidence rates (based on reports from dermatologists and chest physicians) were generally similar, or slightly lower compared to NI and GB.

**Conclusions** Overall, THOR-ROI continues to provide the best overall source of data relating to medically attributed occupational disease incidence in the ROI. Comparisons with UK data suggest specialists in the ROI see proportionately less long latency skin (e.g. neoplasia) and respiratory (e.g. mesothelioma; lung cancer) diagnoses compared to the UK. Other observed differences included a much larger proportion of OP ROI cases originating from the health and social care sector compared to GB and NI reports.

### 358 RETURN TO WORK AND WORK PARTICIPATION AFTER CHANGES IN OCCUPATIONAL HEALTH SERVICE AND HEALTH INSURANCE ACT. NATIONWIDE FINNISH REGISTER STUDIES

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**Introduction** In many countries the social security legislation has been changed to support staying at work and return to work (RTW) from sickness absence (SA). However, the effectiveness of such changes is not well known. The aim was to assess the effectiveness of the introduction of part-time sick leave in 2007 and an amendment in its use in 2010 (enabling use at early stage of disability) on RTW and work participation. We also looked at RTW and work participation after the so-called 30–60–90 day rule was enacted in 2012, obligating, among others, early notification of prolonged SA (>30 days) as well as assessment of remaining work ability and possibilities to continue working (before 90 days).

**Methods** We used nationwide register information on ill-health benefits, as well as employment and unemployment periods. Receivers of partial sickness benefit were compared with propensity-score matched controls of full sickness benefit receivers. For the 30–60–90 day rule, we followed-up (2–10 months) those who had a continuous SA of 30 calendar or 60 compensated days before and after 2012.

**Result** Part-time sick leave at the early stage of disability enhanced return to work. Moreover, the proportion of time at work was at a significantly higher level in the part-time than full-time sick leave group. The prevalence of full disability retirement reduced and that of partial disability retirement increased among users of part-time compared with those with full-time sick leave. Work participation did not essentially differ after a SA of 30 calendar or 60 compensated days after the introduction of the 30–60–90 day rule.

**Discussion** The use of part-time sick leave enhances return to work and overall work participation, and should be considered, when a person is not able to work full time. The 30–60–90 day rule seems not to have affected work participation during our follow-up times.

### 429 SIGNATURE OF EPIGENETIC ALTERATIONS INDUCED BY CARBON NANOTUBE- IN VITRO, IN VIVO AND IN WORKERS

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**Introduction** Growing indication of toxicity and production of carbon nanotubes (CNTs), have resulted in concern about