(including anxiety and depression) together with headache and/or eyestrain, and showed higher scores among women with higher educational level, white-collar jobs, and in the public sector. PC3 included the item on other disorders (comprising neurological, endocrine, autoimmune and voice-related) with some loading from digestive and hearing disorders, and showed higher scores in older and blue-collar workers. PC4 grouped respiratory with infectious diseases; it associated with working in the public sector and reporting work-related accident history. PC5 was composed by circulatory system conditions and associated with former smoking, higher BMI, and white-collar jobs.

Conclusion Work-related diseases aggregated in five distinct components, supporting the need for a shift from a disease-by-disease approach towards a worker-centered approach.

06A.2 BREAST CANCER RISK IN 40.000 DANISH WOMEN BY INDUSTRY

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Background Occupational exposures have been hypothesized as contributors to breast cancer. Nevertheless, studies exploring the risk of breast cancer by occupation or industry generally show somewhat inconsistent results. In addition to small study size and lack of lifetime work history, potential confounders, such as reproductive history, have often not been taking into account and mortality has often been used as outcome. We conducted a nationwide register based nested case-control study in order to explore associations between occupation and incidence of breast cancer, including reproductive history.

Methods A total of 38,347 employed women born in Denmark during the period 1946 to 1995, and diagnosed with breast cancer 1970–2015 were identified in the nationwide Danish Cancer Registry. Five control subjects, work active and born in Denmark, and free of breast cancer at the date of diagnosis of the corresponding case, were chosen randomly from the Danish Civil Register. Using the unique personal identification number assigned to all residents in Denmark, we obtain lifetime employment history from the nationwide Pension Fund Register, which on an individual level has kept detailed information on all employments in Denmark since 1964. Lastly, information on reproductive factors, and socioeconomic status was retrieved from the Danish Civil Register. Odds ratios (ORs) with 95% confidence intervals (CIs) were estimated by conditional logistic regression analysis.

Preliminary results: Risk elevations were e.g. seen in the military (2.1; 1.49–2.90), printing (1.6; 1.22–2.06), airline transportation (2.4; 1.33–4.47), automobile service (1.3; 95% CI 1.12–1.49), laundries (2.4; 1.48–3.79), hairdressing (1.9; 1.11–3.23) and paint factories (1.6; 95% CI 1.22–2.06). Risk reductions were seen in farming (0.4; 0.21–0.59), window cleaning (0.6; 0.44–0.84) and building and carpentry (0.8; 0.70–0.98).

Conclusions The study suggests that breast cancer risk varies significantly by industry and that occupational exposures, including night-shift work, solvents and outdoor work, may play a possible role.

06A.3 IMPLICATIONS OF THE WORKPLACE GENDER COMPOSITION FOR DEPRESSION-RELATED SERVICE UTILIZATION: A RETROSPECTIVE COHORT STUDY OF U.S. ALUMINUM WORKERS

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Introduction Past research finds that both male and female workers in male-dominated workplaces experience decreased job satisfaction and increased work-related stress. Female workers in particular are more likely to experience gender discrimination, sexual harassment, and social isolation. Nevertheless, systematic evidence regarding the association between workplace gender composition and worker mental healthcare utilization remains limited.

Methods Using data from the American Manufacturing Cohort Study (AMC), we examined the association between workplace gender composition and risk of depression-related outpatient visits among hourly workers employed at one of 32 U.S. aluminum plants between 2003 - 2013. Using generalized additive models (GAM) with a logit link, we modeled risk of depression-related outpatient visits as a function of annual workplace gender composition (i.e. percent women) and covariates (baseline age, race, sex, plant, and calendar year). We captured potential nonlinear relationships using cubic smoothing splines. We used g-computation to summarize the counterfactual risk of depression-related outpatient visits under three hypothetical interventions wherein women comprised at least 10, 20, or 30 percent of the workforce at all plants for all years of follow-up. We compared these counterfactual risks to the risk under no intervention (the observed data).

Results Across all 32 U.S. plants, the final study sample included 5,279 female and 24,124 male hourly workers. We observed significant reductions in the number of depression-related outpatient visits when women comprised at least 20% (RD=-6.2, 95% CI -8.75, -3.65) and 30% (-14.6; 95% CI -19.0, -10.2) of the workforce. Findings were consistent within subgroups of male and female workers.

Conclusion The gender composition of industries, occupations, and workplaces is an important expression of social structure. We find that modest increases in the percent women employed in otherwise male-dominated work environments can lead to measurable reductions in the frequency of depression-related outpatient visits among male and female hourly workers.

06A.4 RISK OF POSTMENOPAUSAL BREAST CANCER AND OCCUPATIONAL EXPOSURE TO CHEMICALS IN SWEDISH WOMEN

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Earlier studies have led to a hypothesis of an increased risk of breast cancer after exposure to organic solvents. This study aimed to investigate if exposure to various chemicals in the workplace was associated with an increased risk of breast cancer.

The study comprised 14 119 women born 1923–1950 and living in Malmö city, Sweden, who were enrolled for a prospective population cohort study between 1991 and 1996. Occupational exposure to various chemicals was assessed from a job-exposure matrix. Individual data on other breast cancer risk factors (age, parity, age at first pregnancy, breastfeeding, hormonal replacement therapy, physical activity, alcohol consumption, height and BMI) were collected at baseline and used for confounding control. Diagnoses of invasive breast cancer were obtained from the Swedish Cancer Registry until end of follow-up at 2013–2031.

Women exposed to any type of chemical (organic solvents, pesticides, fumes or oil mist) for more than 10 years (66 cases) showed an increased adjusted breast cancer risk, HR=1.43, (95% CI 1.10–1.85), and the risk correlated positively with duration of exposure. Investigation of risk in association with organic solvents showed a small and non-significantly elevated risk after >10 years of exposure, HR=1.18 (95% CI 0.81–1.71). The risk tended to be higher, but not significantly elevated, after >10 year of exposure than after 1–10 years of exposure for most of the studied chemicals. More than 10 years of exposure to diesel exhaust was associated with an increased risk (adjusted HR=1.69, 95% CI 1.01–2.82).

Occupational exposure to chemicals in general was associated with an elevated risk of postmenopausal breast cancer, but the study gives no firm support for the hypothesis of an association with exposure to organic solvents. An elevated risk after >10 years of exposure to diesel exhaust was an unexpected finding that needs to be investigated further.

06A.5 MORTALITY AND RISK BEHAVIOURS IN SPANISH FEMALE FARMERS

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Introduction Numerous epidemiological studies have been conducted among farmers, but very few of them have included female farmers. Therefore, the health status of female farmers remains understudied. Our aim is to compare the mortality rates and the prevalence of risk behaviours in a cohort of female farmers and female non-farmers in Spain.

Methods The cohort study followed 5,919,413 female workers in Spain from 2001 to 2011. Participants aged 20–64 years were employed in 2001. The study subjects were grouped as farmers and non-farmers. The prevalence of risk behaviours was calculated from the 2001 National Health Survey for 5573 employed women. For each cause of death, we estimated the age-standardized mortality rates per 1 00 000 person-years of follow-up, the ratio of age-standardized mortality

rates with 95% confidence intervals (CI), and for each risk behaviours age-standardized prevalence ratio in female farmers compared female non-farmers.

Results The mortality rate ratio of female farmers compared to the female non-farmers was 1.00 (95% CI 0.96–1.05). For most these cause of deaths no significant differences were observed in the mortality rates between both groups, except in mortality from lung cancer, chronic lower respiratory disease, transport accidents and suicide, which mortality rate ratios were 0.56 (0.46–0.67), 0.44 (0.23–0.87), 1.47 (1.16–1.86) and 1.41 (1.10–1.81), respectively. The prevalence of smoking and excessive alcohol consumption was lower in female farmers.

Discussion We found a decreased in the mortality ratio for tobacco-related cancers. Exposure to psychosocial risk factors could be the reason of higher mortality of external causes of death of Spanish female farmers.

06A.6 MORTALITY EXPERIENCE OF IN WOMEN IN SOUTH AFRICAN MINING: 2013 – 2015

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Mining is a high-risk industry with both continued accidents and occupational disease, despite controls introduced in the industry. In this study, we looked at the sex differences in mortality between male and female miners in South Africa.

Methods The use of vital registration data for monitoring mortality in miners has largely been unexplored in South Africa. Statistics South Africa provides data from 2013 to 2015 which was used in students-t-tests along with proportion tests to investigate differences between death in all women and women miners along with differences in deaths in male miners and women miners. Multiple logistic regression analysis was performed to calculate mortality odds ratios (MORs) for the underlying cause of death in these groups, with adjustments for age, education level, province of death and smoking status.

Results Of the 8769 deaths recorded with occupation miner ion the years 2013–2015, only 5.7% were in females. Significant differences between all women and women miners were found in age at death (58.8 vs 47.8), no 1 cause of death (ill-defined vs TB) and education (43.6% vs 63.6%). MORs were significantly increased in women miners for TB, HIV and external causes of death compared to all women while being protected from lifestyle and chronic diseases. Women miners compared to male miners had increased odds of HIV death and lifestyle diseases but a similar risk of external causes of death.

Discussion Women miners appear to die at significantly younger ages than both male miners and other women despite a higher level of education. This may be due to the increased mortality due to HIV and external causes of death. Thus increased controls are required on mines to protect the health of women miners.