**Results and Conclusions** An increased risk of developing ACPA-positive RA was found for individuals ever exposed to any of the 32 occupational inhalable agents (OR=1.25, 95% CI=1.12–1.38). The risk increased in a dose-response manner according to number of agents (Ptrend< 0.001) and duration of exposure (Ptrend< 0.001).

Across 16 specific collections of agents, a very large risk of developing RA in the triple-exposed group (occupational exposure, smoking, and high genetic risk) was observed for the ACPA-positive subtype with odds ratios (ORs) ranging from 18.0 to 45.1, while the estimates for ACPA-negative subtype were much weaker with ORs ranging from 0.85 to 2.64.

Occupational inhalable agents could act as important environmental triggers in RA development and interact with smoking and RA-risk genes leading to an excessive disease risk. These effects are specific to ACPA-positive RA. Preventive strategies aimed at reducing occupational hazards and smoking are warranted for reduction of the burden of RA, especially for those who are genetically vulnerable.

**Injuries**

**FATAL OCCUPATIONAL INJURIES IN FARMING, FISHING AND FORESTRY OCCUPATIONS IN SOUTHEAST ASIA, AUSTRALIA, AND SELECTED EUROPEAN COASTAL COUNTRIES, 2010–2015**

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**Introduction** According to ILO estimates, about 2.3 million men and women worldwide die from work-related illnesses or accidents each year. The category of fishing, farming and forestry industry is among the riskiest and most hazardous occupations. Agriculture employs more than one billion workers and 70 percent of child labor worldwide. Fishermen suffer from wide range of injuries and Forest workers can still be found not wearing the compulsory safety equipment and ignoring safety rules.

**Materials and Methods** This study aimed at describing national statistics on fatal occupational accidents from ILO (International labor organization) on occupational injuries in farming, fishing and forestry occupations in southeast Asia (Malaysia and Philippines), Australia and selected European coastal countries (France, Spain, United Kingdom and Norway). The data of this study was obtained from ILOSTAT database. The following data was obtained:

- Number of cases of fatal occupational injuries per 100,000 workers by economic activity
- Number of cases of non-fatal occupational injuries per 100,000 workers by economic activity

For both, I obtained aggregated total data for agriculture, forestry, and fishing, except Malaysia which had only data for fishing.

**Results** Occupational injuries were described for the period 2010–2015 and obtained research results show that Australia and Europe had lower rates of occupational injuries than Asian countries. For example, mean rate of injuries in Australia was 15.6 per 100,000, for Spain was 6.2 per 100,000, while the mean rate of Malaysia was 35.5 per 100,000 workers between 2010 and 2015. The data was missing for several years for all countries.

**Conclusion** The injury rates vary between the different countries. As the data was insufficient, it was difficult to use for preventive measures.

**Shift work**

**PREDICTORS OF NIGHT SHIFT WORK ADAPTATION**

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**Introduction** Individuals adapt differently to night shift work, although which factors predict this adaptation require further study. This study explored individual differences in night shift work adaptation using a central circadian clock biomarker among rotating night shift workers.

**Materials and Methods** This study included 39 male, rotating shift workers from the automotive industry in Barcelona, Spain, sampled twice at the end of a 3-week night-shift (22:00–06:00 hrs) and 3-week day-shift (06:00–14:00 hrs) rotation. Participants collected all urine voids over 24-hours, wore several sensors, and responded to questionnaires during each shift. Cosinor analysis was performed and acrophase (peak time) of melatonin, was extracted. Adaptation was defined as the difference in the individual acrophase after 3 weeks of night shifts compared to the acrophase after 3 weeks of day shifts. We examined whether the following factors, measured during the night shift, were associated with adaptation to night shift work: light intensity, sleep duration, time of sleep onset, number of sleep problems, chronotype, meal frequency, and fast length. We used linear models to examine differences in the melatonin acrophase during the night shift compared to the day shift and report associations using beta coefficients from models.

**Results** Participants were 38 (±8) years of age. Melatonin peak production time was shifted by a median of 8.9 (IQR 6.8–10.4) hours during the night shift. When examining individual predictors of adaptation, we found that light intensity (coefficient 2.13, 95% CI 0.90–3.33 per lux) and sleep duration (coefficient 0.70, 95%CI 0.12–1.28 per hour) were associated with night shift work adaptation. Other factors were not associated with adaptation.

**Conclusion** Light intensity and sleep duration were associated with night shift work adaptation in a slow backward shift work rotation system. These results can inform light and sleep interventions at the workplace to enhance circadian adaptation of shift workers.