Introduction Exposure to pesticides has been reported to cause adverse health effects, and great numbers of people have been affected globally. Annual severe pesticide poisoning cases amount to 3 million worldwide; 25 million symptomatic occupational pesticide poisonings occur each year among agricultural workers in developing countries. Increased health symptoms have been reported as a result of pesticide exposure. In Tanzania there is limited information on health symptoms associated with pesticides exposure among horticultural pestcide applicators.

Methods A cross-sectional study was conducted among 140 pesticide applicators working in horticultural farms in three districts of Arusha region. Data on demograph, types of pesticides used, spray duration, use of personal protection equipment and neurological symptoms were collected by using a structured questionnaire. To determine the intensity of pesticide exposure, acetylcholinesterase assay was done by using the Test-mate Model 400 device with a photometric sensor. Data were analysed by using SPSS version 20.0.

Results The pesticide applicators were men with mean age 29.59±6.789 years and mean work duration of 5.76±3.036 years. Organophosphate pesticides were commonly used by 95% of the pesticide applicators. Sixty percent of pesticide applicators reported to use personal protection equipment during pesticide application. The neurological symptoms reported were body weakness, perspiration, headache, painful part of the body, poor appetite, depression and irritation. The mean average of acetylcholinesterase was 26.788±4.0952 u/g hgb. About 27% of pesticide applicators had acetylcholinesterase level below the limit value of 24.5 u/g hgb.

Conclusion The study shows 27.1% of pesticide applicators had acetylcholinesterase level below the limit value suggesting that exposure to pesticide may result to the neurological symptoms reported. Therefore specific pesticide management interventions are needed to prevent pesticide exposure and reduce the incidence of neurological health symptoms among the pesticide applicators. Acetylcholinesterase monitoring is needed for horticultural farm workers’ surveillance.

Introduction Spills or splash during mixing, loading and application organophosphate insecticide may entail significant dermal exposure to agricultural workers. Although gloves are religiously worn, the level of chemical protection afforded by these gloves is unclear. In this study, the influence of exposure temperature and duration on glove permeation were investigated for acephate, an organophosphate insecticide used for trunk injection on oil palm trees. Potential contamination on the skin of the workers was also investigated.

Methods Nitrile gloves used by oil palm plantation workers during trunk injection were tested at room temperature and elevated temperature (45°C), using standard permeation cells. Skin wipe samples were collected from the face and hands of the workers to examine whether acephate still contaminated the skin. Chemicals analysis was via HPLC-UV.

Results Higher maximum flux and greater cumulative permeation of acephate were observed over the 4 hour exposure period. Gloves with 5% simulated abrasion showed reduced performance compared to new gloves. While workers behaviour was good, emphasis on the correct techniques of glove removal may assist in avoiding transfer of contaminants.
Shiftwork

1193  NIGHT-SHIFTS, DNA METHYLATION AND TELOMERE LENGTH: PRELIMINARY RESULTS FROM A SURVEY ON A SAMPLE OF ITALIAN NURSES

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Abstracts

Introduction IARC defined shift work as probably carcinogenic to humans (Group 2A), after investigations highlighted an increased breast cancer risk in night-shift female workers. The biological mechanisms underlying this association are still unclear. Hence, we evaluated the relationship between night-shift work and molecular alterations potentially related to increased cancer risk, in detail: DNA methylation of the oestrogen receptor gene (ER-Beta) and tumour suppressor genes (BRCA1, p53, p16), global DNA methylation estimated in repeated elements (LINE-1, Alu) and telomere length (TL).

Methods 46 female nurses (age: 35–45 years) who had been working in night-shifts for at least two years (length of service ≥five years) were recruited at the Policlinico Hospital (Milan, Italy) and matched for age, sex and length of service to 51 colleagues not working in night-shifts. Each subject was administered a structured questionnaire and withdrawn a 12 mL blood sample. Linear regression models adjusted for age, BMI, parity, smoking habit and oral contraceptive use were then applied.

Results Working in night-shifts (yes/no) was associated with BRCA1 hypomethylation (β: –0.512, 95% CI: –1.039 to 0.015). When considering also former night-shift workers, the number of years in night-shifts (NYNS) was associated with BRCA1 hypomethylation (β: –0.084, 95% CI: –0.127 to –0.042), p53 (β: –0.072, 95% CI: –0.133 to –0.011) and LINE-1 (β: –0.043, 95% CI: –0.083 to –0.002). After graphically inspecting the NYNS-TL relationship, we stratified our study population by NYNS <15 vs ≥15 years. Among nurses with NYNS ≥15 years, NYNS was associated with telomere shortening (β: –0.065, 95% CI: –0.122 to –0.008) and hypermethylation of BRCA1, p53 and LINE-1.

Conclusion Our results show epigenetic alterations that might play a role in cellular ageing, genomic instability and carcinogenesis. We are currently extending our study to other molecular targets involved in the cascade of events that might bring from night-shift exposure to cancer.

1252  LONG WEEKLY WORKING HOURS AND RISK OF ISCHAEMIC HEART DISEASE AND STROKE

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Introduction Studies have indicated that long working hours is associated with circulatory diseases. The aim of the present studies was to test if long working hours were prospectively associated with ischaemic heart disease (IHD), usage of antihypertensive drugs (AD) and stroke, in a large randomly selected sample from the general workforce of Denmark.

Methods Self-reported data on weekly working hours from the Danish Labour Force Survey (1999–2013) was linked to national registers. Participants were followed until becoming a case, emigration/death due other causes or end of study period (2014).

Poisson regression was used to analyse incidence rates as a function of weekly working hours. The analyses were controlled for calendar time, time since start of follow-up, age, sex, SES, night and health care work (the latter two for IHD only).

Result Around 1 45 000 persons were included with 3635 cases of IHD, 20 648 cases of AD and 1737 cases of stroke. With 32–40 hours/week serving as reference, the estimated rate ratios for IHD were 0.95 (95% CI: 0.85–1.06) for 41–48 and 1.07 (0.94–1.21) for >48 hours/week. The corresponding rate ratios for AD were 0.99 (0.95–1.04) and 1.02 (0.97–1.08).

In the study of stroke 35–40 working hours/week served as reference. The estimated rate ratios for overall stroke were 0.97 (95% CI: 0.83–1.13) for 41–48, 1.10 (0.86–1.39) for 49–54, and 0.89 (0.69–1.16) for ≥55 hours/week. The estimated rate ratios per one category increase in working hours were 0.99 (0.93–1.06) for overall stroke, 0.96 (0.88–1.05) for ischaemic stroke and 1.15 (1.02–1.31) for haemorrhagic stroke.

Discussion The analyses cannot confirm long working hours to be associated with IHD, AD or overall stroke. Data suggest however, that long working hours might be associated with increased rates of haemorrhagic stroke.

1426  CLOCKWISE AND COUNTER-CLOCKWISE JOB SHIFT ROTATION DIFFERENTLY IMPACTS ON WORK-LIFE BALANCE

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Introduction Rapidly rotating shiftwork schedule, is common in hospital nurses as it provides continuity to the patients’ care. It has been suggested that shift rotation in clockwise (CW) direction produces less disruption of circadian rhythms than counterclockwise (CCW) rotation. Little is known about the effects of different direction of shift rotation on work-life balance, particularly in women characterised by additional commitments and responsibilities in the home and outside of work.

Aim To evaluate if CW and CCW shift rotation differently impacts on family and social relationships in female nurses.

Methods One hundred healthy hospital nurses (F, 20–50 years) were enrolled. Fifty of them worked in CW (Morning, M; Afternoon, A; Night, N; two rest days) and 50 in CCW (A, M, M, N, three rest days) shift rotation direction. A daily