Temporary employment, leukaemia and hair dyes

A prospective Finnish study has investigated whether mortality is associated with the type of employment (permanent/temporary) contract or with dissatisfaction regarding temporary employment or if there was a voluntary/involuntary basis for temporary work [1]. Temporary employees who felt insecure had 1.95-fold higher risk of mortality than permanent employees [95% confidence interval (CI): 1.13–3.35] after adjustment for confounding factors. Temporary employees involuntarily thus had a 2.6-fold higher risk of mortality than permanent employees (95% CI: 1.16–5.80). This study confirms that temporary employees are not a homogeneous group and those dissatisfied by their insecure employment or who worked in temporary work involuntarily had higher risk of mortality than permanent employees.

It has been estimated that up to 10% of leukaemia cases in the USA [2] and Europe [3] are attributable to occupational exposure and a recent study examined association between occupation and leukaemia [4]. Researchers interviewed 225 cases (aged 20–75 years) notified to the New Zealand Cancer Registry during 2003–04, and 471 randomly selected controls, collecting demographic details, information on potential confounders and employment history. Using logistic regression adjusting for gender, age, ethnicity and smoking, associations were observed in agricultural sectors including horticulture/fruit growing [odds ratio (OR): 2.6, 95% CI: 1.5, 4.6], plant nurseries (OR: 7.5, 95% CI: 1.85, 30.4), vegetable growing (OR: 3.1, 95% CI: 1.2, 8.4) and appeared greater in women (ORs: 4.7, 7.75, 7.98, respectively). Elevated ORs were observed in market farmers/crop growers (OR: 1.8, 95% CI: 1.1, 3.0), field crop/vegetable growers (OR: 3.98, 95% CI: 1.46, 10.9), market gardeners (OR: 5.5, 95% CI: 1.6, 19.0) and nursery growers (OR: 4.2, 95% CI: 1.3, 13.4) also greater in women (ORs: 3.5, 7.6, 15.7 and 11.7, respectively). Elevated ORs were predominantly for chronic lymphocytic leukaemia (CLL). Associations were observed in rubber/plastics products machine operators (OR: 3.8, 95% CI: 1.1, 13.1), predominantly in plastic product manufacturing. CLL was elevated in tailors and dressmakers (OR: 7.0, 95% CI: 1.8, 27.7), cleaners (OR: 2.0, 95% CI: 1.0, 4.1) and builder’s labourers (OR: 4.0, 95% CI: 1.3, 12.5).

Skin irritation and contact allergies are common in hairdressers. The predominant oxidative hair dye components, such as p-phenylenediamine (PPD) and aminophenol isomers, can cause contact dermatitis. Protective gloves reduce contact with skin irritants. A Taiwanese study investigated permeation characteristics of p-aminophenol, m-aminophenol, o-aminophenol (OAP) and PPD in single and mixed challenge solutions with disposable natural rubber latex (NRL) gloves, polyvinylchloride (PVC) gloves and neoprene (NP) gloves [5]. Breakthrough times (BTs), cumulative permeated masses and steady-state permeation rates (SSPRs) were measured. No chemicals tested broke through the NP gloves when exposed for 8 h. PPD and OAP in ethanol solution broke through PVC gloves after 40 min. Disposable NRL or disposable PVC gloves appear unsuitable for work with hair dyes. NP gloves appear safe for at least 8 h. Low chemical concentrations in challenge solutions delayed BT and decreased the SSPR. The physical and chemical properties (molar volume and polarity) of challenge solutions affected the ability of different gloves to withstand permeation. Hydrogen peroxide did not accelerate chemical BT.

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References