

Christian Apfelbacher
Dr. sc. hum.

**Occupational hand dermatitis and atopic diathesis:
10-year follow-up of the Prospective Audi Cohort Study**

Geboren am 14.07.1977 in Freising
Diplom der Fachrichtung Berufspädagogik am 29.07.2004 an der Technischen Universität
München

Promotionsfach: Klinische Sozialmedizin
Doktorvater: Prof. Dr. med. T.L. Diepgen

Work-related skin diseases, particularly hand dermatitis (HD), rank first among all occupational diseases, can result in significant physical and psychological morbidity and may necessitate change of job or occupational retraining. The assessment of burden, prognosis and predictive factors of HD is necessary to inform occupational health policy, if HD should be prevented. Only few epidemiological studies on HD in the metalworking industry have been conducted and no study has attempted a long-term follow-up.

The aim of the Prospective AUDI Cohort Follow-up Study (PACO II) was to estimate

- (i) burden
- (ii) prognosis, and
- (iii) risk

of HD in a car industry setting in a long-term follow-up perspective (10 years) with special consideration of atopic diathesis.

Eligible participants were individuals who had been examined in the original PACO study (1990-1998) and had been followed through until the end of their apprenticeship (N=1909). Participants were interviewed and the state of their skin on hands and/or forearms was examined. They underwent detailed dermatological examination and an exposure assessment was carried out according to a pre-defined algorithm.

Two case-control studies were nested within the cohort, one using current HD cases (n=110) and one using current cases with a presumption diagnosis of irritant contact dermatitis (ICD) or a mixed form diagnosis with an irritant component (n=57). The control group consisted of 120 individuals with exposure information, but no current HD. Multivariable, predictive modelling was performed, using logistic regression.

The follow-up rate was 78.3% (1494/1909). Mean follow-up time was 13.3 (SD 1.3) years. The period prevalence of HD in the follow-up period was 21.0% (95% CI 19.0%-23.1%), yielding a cumulative incidence of 29.3% (95% CI 26.9%-31.6%) in the entire study period.

HD persisted after the end of apprenticeship in 40.0% (95% CI 33.3%-46.7%) of subjects who had had HD during apprenticeship (N=205). 18.0% (95% CI 15.9%-20.1%) developed HD in the follow-up period (N=1289).

An inverse association of age ≥ 30 and a positive association of atopic skin diathesis (ASD) with HD as well as skin protection/skin care was found in both case-control-studies. Having an office job remained in the eliminated model in the first analysis, and wetwork ≥ 2 h more than once daily remained in the eliminated model in the second case-control study only. ASD was found to be the single most important determinant of HD in both analyses, suggesting that constitution plays a dominant role compared to (single) environmental hazards in this setting. Prevalence and incidence estimates indicate that the burden of HD in the car industry is considerable. Indicators of HD severity imply that the HD cases were mild-to-moderate. There was no evidence supporting a healthy worker effect, however, we cannot exclude that individuals might choose not to take up the metalworking profession. It seems that mild forms of HD are less likely to be reported in the telephone interviews, yielding lower figures of disease occurrence. Compared to the figures reported in the literature, prognosis of HD seems to be better in this setting,

Under an established skin protection policy, HD appears as a disease predominantly determined by endogenous factors (age, ASD) in the long run, compared to single occupational/environmental hazards.