

was the outcome known, and this represented a small amount of the data. All of these factors would enhance the quality of the data and reduce the likelihood that the outcome is the result of bias.

Comparison with other studies

Of studies that have used a thorough assessment of stressful life experiences, studies with a prospective design (the current study, and that by Barraclough¹⁰) found no increase in the risk of recurrence of breast cancer, whereas the single case-control study found a strongly increased risk.⁷ Differences in case-control and prospective methods may explain the contradictory results arising from these two types of study.

We took the prospective studies as the more robust, and these data indicate that women with breast cancer need not fear that stressful experiences in life are likely to bring about the return of their disease.

We thank Tirril Harris for invaluable advice on the life events and difficulties schedule, Professor Tom Craig for his input in designing the study, Karen Pinder for carrying out data collection interviews, and the participants for so generously talking about their lives.

Contributors: See bmj.com

Funding: Cancer Research UK.

Competing interests: None declared.

- 1 Kiecolt-Glaser J, Glaser R. Psychoneuroimmunology and cancer: fact or fiction? *Eur J Cancer* 1999;35:1603-7.

- 2 Fawzy F, Fawzy N, Hyun C, Elashoff R, Guthrie D, Fahey J, et al. Effects of an early structured psychiatric intervention, coping, and affective state on recurrence and survival 6 years later. *Arch Gen Psychiatry* 1993;50:681-9.
- 3 Spiegel D, Bloom J, Kraemer H, Gotthel E. Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet* 1989;ii:888-91.
- 4 Edelman S, Craig A, Kidman A. Can psychotherapy increase the survival time of cancer patients? *J Psychosom Res* 2000;49:149-56.
- 5 Forsen A. Psychosocial stress as a risk for breast cancer. *Psychother Psychosom* 1991;55:176-85.
- 6 Funch D, Marshall J. The role of stress, social support and age in survival from breast cancer. *J Psychosom Res* 1983;27:77-83.
- 7 Ramirez A, Craig T, Watson J, Fentiman I, North W, Rubens R. Stress and relapse of breast cancer. *BMJ* 1989;298:291-3.
- 8 Giraldi T, Rodani M, Cartei G, Grassi L. Psychosocial factors and breast cancer: a 6 year Italian follow-up study. *Psychother Psychosom* 1997;66:229-36.
- 9 Maunsell E, Brisson M, Mondor R, Verreault R, Deschenes L. Stressful life events and survival after breast cancer. *Psycho-Oncology* 1998;7(4) (suppl):281.
- 10 Barraclough J, Pinder P, Cruddas M, Osmond C, Taylor I, Perry M. Life events and breast cancer prognosis. *BMJ* 1992;304:1078-81.
- 11 Barraclough J, Osmond C, Taylor I, Perry M, Collins P. Life events and breast cancer prognosis. *BMJ* 1993;307:25.
- 12 Kvikstad A, Vatten L, Tretli S. Widowhood and divorce in relation to overall survival among middle-aged Norwegian women with cancer. *Br J Cancer* 1995;71:1343-7.
- 13 Kvikstad A, Vatten L. Risk and prognosis of cancer in middle aged women who have experienced the death of a child. *Int J Cancer* 1996;67:165-9.
- 14 Brown G, Harris T. *Social origins of depression: a study of psychiatric disorder in women*. London: Tavistock, 1978.
- 15 Hayward J, Meakin W, Stewart H. Assessment of response and recurrence in breast cancer. *Semin Oncol* 1978;5:445-9.
- 16 Spitzer R, Williams J, Gibbon M, First M. *Structured clinical interview for DSM-III-R-patient edition* (SCID-P, version 1.0). Washington, DC: American Psychiatric Press, 1990.

(Accepted 19 December 2001)

Impact of preventive strategies on trend of occupational skin disease in hairdressers: population based register study

Heinrich Dickel, Oliver Kuss, Anne Schmidt, Thomas L Diepgen

Centre of Occupational and Environmental Dermatology, Department of Clinical Social Medicine, University Hospital of Heidelberg, D-69115 Heidelberg, Germany
Heinrich Dickel dermatologist
Oliver Kuss biostatistician
Thomas L Diepgen professor of clinical social medicine

continued over

BMJ 2002;324:1422-3

Hairdressing is one of the occupations most hazardous to the skin.¹ Various efforts have been made in Germany in the past 10 years to reduce the incidence of occupational skin diseases among hairdressers.²⁻³ Two legislative regulations introduced as Technical Rules for Hazardous Substances 530 "Hairdressing trade" and 531 "Endangerment of the skin by work in the wet environment (wet work)" came fully into force in September 1992 and September 1996.

Because of the high cost of medical treatment, professional retraining, and disability pensions for hairdressers with an occupational skin disease, the Statutory Accident Insurance Institution for the Health and Welfare Services (workers' compensation board) coupled the new technical rules with information campaigns and passed a resolution in 1994 to strengthen "secondary individual prevention," in accordance with the Ordinance on Industrial Disease. Sensitisation to glyceryl monothioglycolate is common, and in 1995 hair cosmetics manufacturers agreed with the hairdressers' guild to stop the use of this allergen in permanent wave solutions. The Health and Safety Authority in Bavaria started educational and enforcement activities to ensure that the new regulations were put into practice.

We analysed data from our register of occupational skin diseases in Northern Bavaria¹ to determine

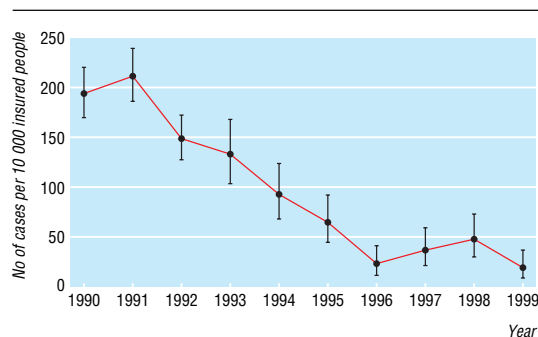
whether a downward trend in the annual incidence of occupational skin disease in hairdressers could be observed.

Methods and results

We identified hairdressers from all initial reports of occupational skin diseases (5285 cases) registered between 1990 and 1999. Of the 997 initial reports of occupational skin disease in hairdressers, 856 (85.9%) cases had a confirmed occupational cause.

Because of asymmetry, we used median and quartiles (Q1, Q3) for statistical description of distributions. We calculated incidences as the number of occupational skin diseases per 10 000 workers per year. We calculated asymptotic 95% confidence intervals according to standard theory. To test for linear trend of rates we used the Cochran-Armitage trend test.⁴ We used SAS 8.1 (SAS Institute, Cary, NC) for data analysis.

The hairdressers with a stated occupational skin disease had a median age of 20 (Q1 18, Q3 22) years and a median occupational period of exposure of 24 (Q1 12, Q3 48) months. The annual incidence fell from 194 to 18 cases per 10 000 workers between 1990 and 1999 (figure), which is not only highly significant ($P < 0.0001$) but also of clinical importance as it corresponds to a 10-fold decline in the annual incidence.



Annual incidence (95% confidence interval) of hairdressers with a stated occupational skin disease. Data are for Upper Palatinate, Upper-Franconia, Middle-Franconia, and Lower-Franconia (Northern Bavaria) from 1990 to 1992 and, after governmental reorganisation, for Upper-Franconia and Middle-Franconia from 1993 to 1999

Comment

An impressive downward trend in cases of occupational skin diseases in hairdressers has occurred in Northern Bavaria over the past decade. This seems to reflect improvements in working conditions due to new legislation and intensified preventive measures rather than a change in the natural history of occupational skin disease.⁵ Because of the size of the region studied and the sampling scheme, the findings can be generalised and applied to Germany as a whole.²⁻³

Although the prognosis for recovery from occupational skin disease has not changed significantly over the past five decades,⁵ cooperation between dermatolo-

gists, government physicians, employers, employees, the competent workers' compensation board, the hairdressers' guild, hair cosmetics manufacturers, and legislative authorities has led to a reduction in occupational skin diseases in hairdressing. However, to achieve a longlasting reduction, interdisciplinary cooperation must be continued and primary prevention should start as early as possible, preferably by legally binding supplementary medical pre-employment examination.² The Principle G24 "Skin diseases (other than skin cancer)" is under discussion in Germany.

Contributors: HD had the original idea for the register study, designed the overall evaluation, and wrote the paper. OK contributed to the design and performed the analyses. AS did most of the case assessments. TLD coordinated the register. All authors participated in interpreting the results and revising the paper. HD, AS, and TLD are guarantors for this paper.

Funding: None.

Competing interests: None declared.

- 1 Dickel H, Kuss O, Blesius CR, Schmidt A, Diepgen TL. Occupational skin diseases in Northern Bavaria between 1990 and 1999: a population-based study. *Br J Dermatol* 2001;145:453-62.
- 2 Schlesinger T, Revermann K, Schwanz HJ. Contact dermatitis in hairdresser trainees in Lower Saxony, Germany: a comparison between 1989, 1994 and 1999 [in German]. *Dermatol Beruf Umwelt* 2001;49:185-92.
- 3 Stresemann E, Lücke A, Brauel R, Scharer E. Did the Regulation for Hazardous Materials (German TRGS 530) contribute to the diminution of dermatoses in hairdressers? [in German]. *Dermatosen* 1998;46:166-9.
- 4 Agresti A. *Categorical data analysis*. 1st ed. Chichester: John Wiley and Sons, 1990.
- 5 Hogan DJ. The prognosis of occupational contact dermatitis. *Occup Med* 1994;9:53-8.

(Accepted 6 December 2001)

Postmortem examinations using magnetic resonance imaging: four year review of a working service

R A L Bisset, N B Thomas, I W Turnbull, S Lee

Magnetic resonance imaging is useful in postmortem examination of neonates.¹ As an alternative to invasive autopsy, the Jewish community asked for magnetic resonance imaging to be used in postmortem examinations in the general population. This service was established with the cooperation of the local coroner, and started in March 1997. Three private magnetic resonance imaging facilities take work for six coroners. Though funded, for religious reasons, by the local Jewish community, the service has also examined Muslim and Christian bodies. We describe the first fully operational service of its kind.

Methods and results

Since the inception of the service, the bodies of 53 people (28 women and 25 men), with an average age of 76 (range 54-96) years, have been examined. All were non-suspicious deaths referred to the coroner because the general practitioner or hospital doctor could not issue a death certificate or there had been recent surgery or other condition needing automatic referral to the coroner.

The cause of death was determined from magnetic resonance imaging and the clinical history. Bodies of people with metabolic disease, or other pathology unlikely to cause macroscopic changes in anatomy, were excluded from examination.

A confident diagnosis of the cause of death was made in 47 cases (87%). In six cases the clinical history and magnetic resonance imaging findings were inconclusive: invasive autopsy was necessary. The scan and autopsy results are given in the table. A full clinical history was obtained in all cases, but in one case further clinical information became available later, casting doubt over our diagnosis with magnetic resonance imaging.

Comment

In cases of non-suspicious death, magnetic resonance imaging is a credible alternative to invasive autopsy. General practitioners and hospital doctors accurately certify only 31-75% of deaths; the six cases examined by both magnetic resonance imaging and autopsy suggest that imaging is at least as accurate.²⁻⁵

Department of Occupational Medicine, Bavarian Health and Safety Executive Nuremberg, D-90429 Nuremberg, Germany
Anne Schmidt
governmental physician
Correspondence to: T L Diepgen
thomas_diepgen@med.uni-heidelberg.de

X Ray Department, North Manchester General Hospital, Manchester M8 5RB

R A L Bisset
consultant radiologist
N B Thomas
consultant radiologist

X Ray Department, Hope Hospital, Salford M6 8HD
I W Turnbull
consultant neuroradiologist

X Ray Department, Manchester Royal Infirmary, Manchester M13 UK
S M Lee
consultant radiologist

Correspondence to: R Bisset
Rob.Bissett@mail.nmanhc-tr.nwest.nhs.uk

BMJ 2002;324:1423-4