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Work-related skin diseases in Norway may be underreported: data from 2000 to 2013

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Background

Little is known about the occurrence of work-related skin diseases in Norway (approximately 5 million inhabitants and 2.65 million employees as of 2014) as compared with other Scandinavian countries (1–3).

The Norwegian Work Environment Act of 1977 mandates that Norwegian physicians report confirmed or suspected work-related diseases to the Norwegian Labour Inspectorate (NLI) Registry. The main purpose of the mandatory reporting is to prevent ongoing exposures of employees at their workplaces (4).

We therefore aimed to identify how many cases of work-related skin diseases have been reported to the NLI Registry, and to describe trends in reporting over the past decade.

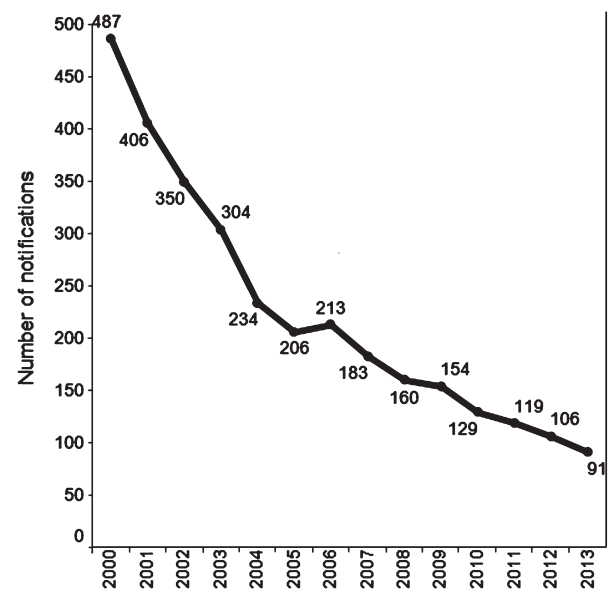
Material and Methods

Our study is a descriptive, register-based study based on the reports of work-related skin diseases for the period 2000–2013. The NLI Registry for work-related diseases includes cases of suspected or confirmed work-related skin diseases (diagnoses coded according to the International Classification of Diseases; version 9 before 2005 and version 10 thereafter) and information on occupation, exposures (European Occupational Disease Schedules exposure codes), and demographic variables.

The NLI Registry does not include data from the Norwegian offshore petroleum sector, as the Petroleum Safety Authority has jurisdiction over the offshore workers and has a different system for registration of work-related diseases (4).

Results

We identified 3142 cases of skin diseases out of all 41 181 notifications (ranked third among all notified diseases,



Source: STAMI, NOA (RAS 2000–2013)

Fig. 1. Number of notified work-related skin diseases by year, 2000–2013. NOA, abbreviation in Norwegian for 'Work Environment Surveillance for Norway'; RAS, abbreviation in Norwegian for 'Register for work-related diseases'.

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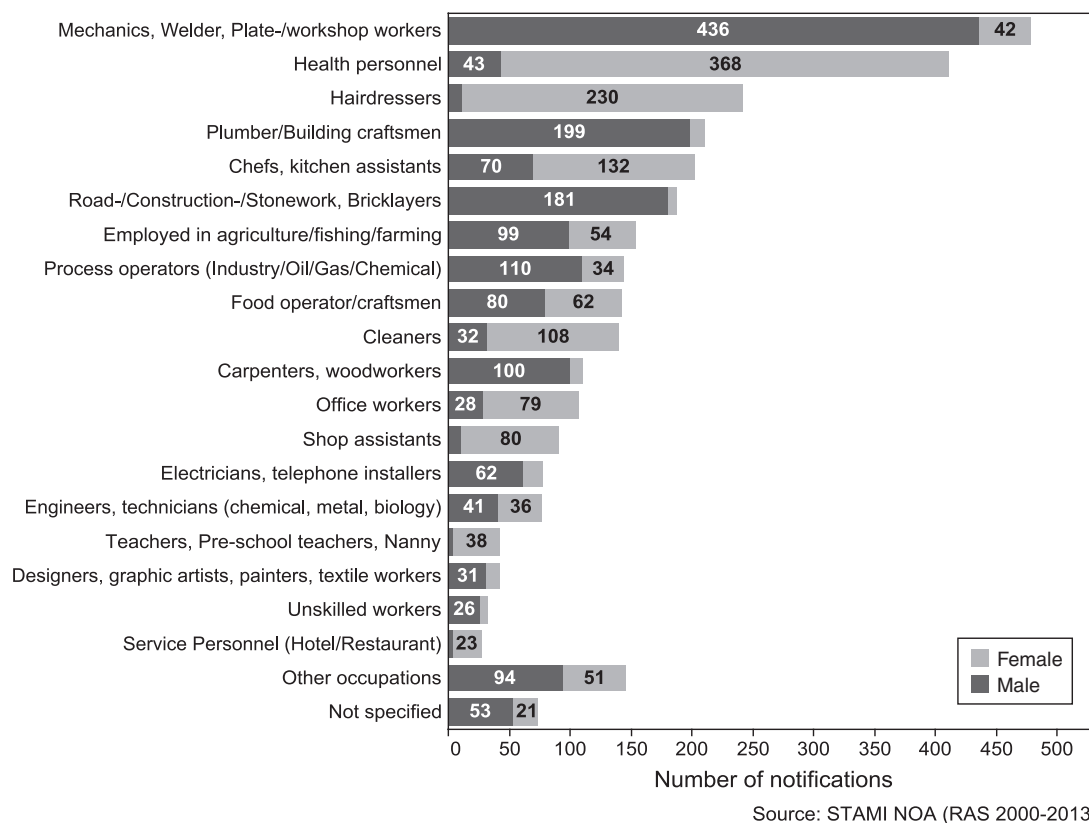


Fig. 2. Occupations by sex for notified work-related skin diseases 2000–2013. NOA, abbreviation in Norwegian for 'Work Environment Surveillance for Norway'; RAS, abbreviation in Norwegian for 'Register for work-related diseases'.

after diseases of the ear and the respiratory system). The total number of notified skin diseases declined over this period (Fig. 1).

Contact dermatitis (CD) accounted for 94% of all cases (41% allergic CD, 43% irritant CD, and 10% unspecified CD). The most common occupations are shown in Fig. 2.

The commonest exposures are shown in Fig. 3.

Discussion

The substantial decline in the total number of annual notifications, including work-related skin diseases, over the past decade is noteworthy. For the period from 2002 to 2010, 286 cases of occupational skin diseases were reported to the Association of Norwegian Private Insurance Companies registry of occupational injuries, representing ~15% of the skin conditions reported to the NLI for the same period of time (5).

A simplified reporting system, with regular follow-up, was tried out during a 2-year-period (1994–1995) in Oslo; only 24% of the work-related skin diseases reported here were also reported to the NLI registry (6).

It seems plausible that the decline in the number of notifications might be attributable to considerable underreporting. Underreporting of work-related conditions is a universal phenomenon that undermines the findings of register-based studies (7). In a survey covering 14 European countries (not including Norway), only Finland and Luxembourg replied that underreporting of occupational diseases was not considered to be a cause for concern in their countries (8). As suggested earlier, underreporting in the general population may be partly influenced by barriers to reporting that are present at each stage, from the diagnosis and management of these diseases until the official reporting registries (9). Other reasons may include employees' beliefs that their health problems are ordinary consequences of their job, or that their symptoms are not serious enough (10), physicians failing to diagnose or assess the work-relatedness of health problems, lack of reporting prioritizing because of high total workload or few incentives (11), and lack of knowledge about reporting requirements among employees, employers, and physicians (9–11). These factors have not been systematically examined in Norway, but,

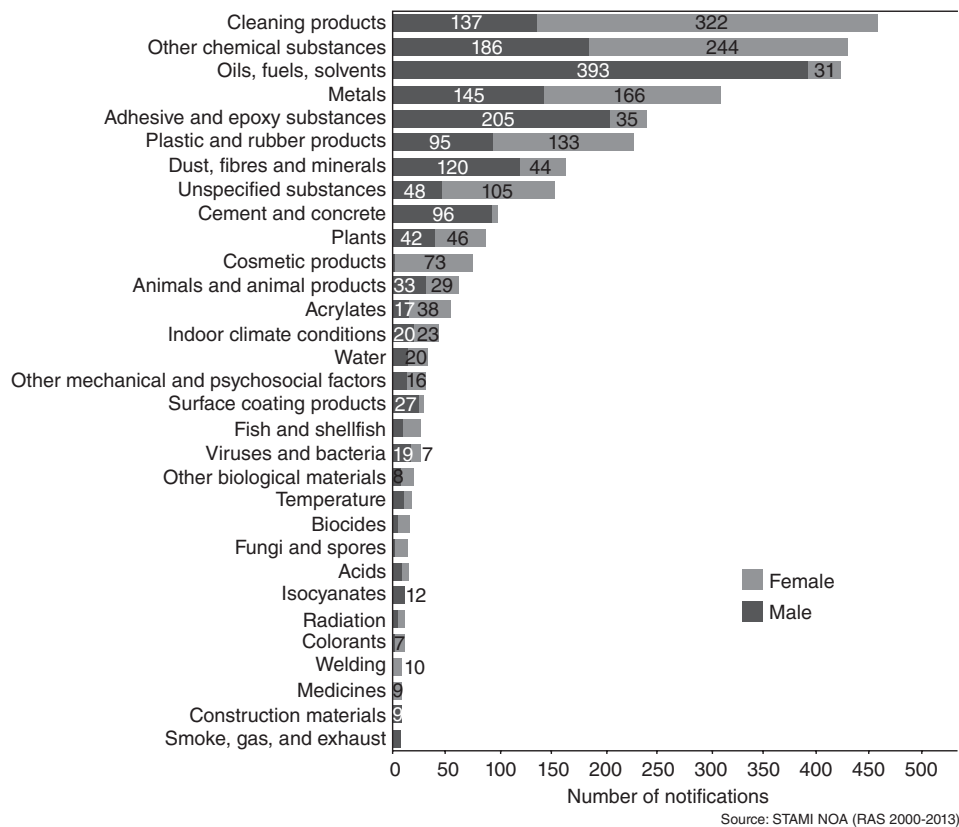


Fig. 3. The work exposure factors most commonly notified for work-related skin diseases, 2000–2013. NOA, abbreviation in Norwegian for 'Work Environment Surveillance for Norway'; RAS, abbreviation in Norwegian for 'Register for work-related diseases'.

on the basis of experience, they may also be of importance here (10, 11).

This register is incomplete, because the notified cases may not reflect the true number of patients with the disease, and mild cases of short duration may be missed (12). Nevertheless, the most frequently reported exposure factors and occupations were similar to those in Denmark and Finland (1, 13).

Data from the European Working Conditions Survey 2005 showed that levels of skin exposure to chemical products and irritants were lower in Norway (13%) than in Sweden (16%) and Finland (23%), but higher than in Denmark (10%) (14). It would therefore be expected that the number of reported work-related skin diseases would be at least similar in Norway and Denmark. Nevertheless, ~2000 new cases of occupational skin disease are reported annually in Denmark, and the number of cases reported has increased since 2008, reaching 2660 in 2011 (15). Hence, a reduction in the level of chemical and irritant skin exposures in Norway is less likely to be a plausible explanation for the decline in the number of notifications.

In Norway, the notification form for work-related conditions does not include information on severity and the consequences for sick leave and job loss. Together, the absence of more detailed information limits our ability to comment on the severity of the reported work-related skin diseases. Further studies focusing on the consequences of work-related skin exposures for the sick leave of the general working population of Norway are warranted.

There has been a paucity of Norwegian studies focusing on skin diseases caused or worsened by occupational exposure during the last 20 years (16). Underreporting of work-related skin diseases may hamper research and prevention on these conditions, in that they will not be highly prioritized by work and health authorities. Therefore, actions must be taken in order to reduce underreporting and to increase research activity within occupational dermatology in Norway.

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References

- Caroe T K, Ebbehøj N, Agner T. A survey of exposures related to recognized occupational contact dermatitis in Denmark. *Contact Dermatitis* 2010; **70**: 56–62.
- Kanerva L, Jolanki R, Toikkanen J, Tarvainen K, Estlander T. Statistics on occupational dermatoses in Finland. *Curr Probl Dermatol* 1995; **23**: 28–40.
- Meding B, Lantto R, Lindahl G, Wrangsjö K, Bengtsson B. Occupational skin disease in Sweden – a 12-year follow-up. *Contact Dermatitis* 2005; **53**: 308–313.
- Samant Y, Parker D, Wergeland E, Wannag A. The Norwegian Labour Inspectorate's registry for work-related diseases: data from 2006. *Int J Occup Environ Health* 2008; **14**: 272–279.
- Association of Norwegian Insurance Companies (ANPIC). Occupational injuries reported. Association of Norwegian Insurance Companies 2014: 46–57. Available at: <https://www.fno.no/pagefiles/8420/yrkesskader%20daysy-rapporter/daysy-rapport%202014.pdf> (last accessed 16 December 2014) (Article in Norwegian).
- Skulberg K, Kjuus H, Wergeland E. Registration of work-related skin and lung diseases in the Oslo region: a two years pilot project. National Institute of Occupational Health 1998 (ISSN 0801-7794) (in Norwegian).
- Rosenman K D, Kalush A, Reilly M J et al. How much work-related injury and illness is missed by the current national surveillance system? *J Occup Environ Med* 2006; **48**: 357–365.
- Eurogip. *Survey of Under-reporting of Occupational Diseases in Europe*. Report No. Eurogip-03/E: Paris, Eurogip (Groupement de l'Institution Prevention de la Securite Sociale pour l'Europe), 2002.
- Azaroff L S, Levenstein C, Wegman D H. Occupational injury and illness surveillance: conceptual filters explain underreporting. *Am J Public Health* 2002; **92**: 1421–1429.
- Bratt U, Leira H L. The occupational injury act – an improvement for persons with occupational diseases? *Tidsskr Nor Lægeforen* 1997; **117**: 207–211 (Article in Norwegian).
- Mowe G, Gylseth B. Medico-legal aspects of malignant mesothelioma. *Scand J Soc Med* 1984; **12**: 15–23.
- Taylor J. Occupational disease statistics in perspective. *Arch Dermatol* 1988; **124**: 1557–1558.
- Finnish Institute of Occupational Health. Occupational diseases and suspected cases 2012, 2014. Available at: http://www.ttl.fi/en/health/occupational_diseases/statistics_on_occupational_diseases/pages/default.aspx (last accessed 18 December 2014).
- Eurofound. *Fifth European Working Conditions Survey: Luxembourg*. Publications Office of the European Union, 2012. Available at: http://eurofound.europa.eu/sites/default/files/ef_files/pubdocs/2011/82/en/1/EF1182EN.pdf (last accessed 16 December 2014).
- Friis U F, Menné T, Flyvholm M A et al. Occupational allergic contact dermatitis diagnosed by a systematic stepwise exposure assessment of allergens in the work environment. *Contact Dermatitis* 2013; **69**: 153–163.
- Alfonso J H, Danielsen T E, Holm J Ø. Re: The working environment continues to cause illness. *Tidsskr Nor Lægeforen* 2015; **135**: 11 (Article in Norwegian).