

## Work-related Skin Disease in Norway

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Jose Hernán Alfonso at the National Institute of Occupational Health in Oslo, Norway, recently defended his doctoral thesis, titled “Skin diseases in Norway and cutaneous squamous cell carcinoma in four Nordic countries: the role of occupation and occupational exposures. A population-based study”, at the University of Oslo. Opponents were Associate Professor Åke Svensson, University of Lund, Malmö, and Professor María Albin, Karolinska Institutet, Stockholm, Sweden. The thesis book is available at: <https://www.duo.uio.no/handle/10852/52852>.

Skin diseases are associated with a substantial burden in the global context of health. Work-related skin diseases, most of them preventable by reduction of occupational exposures, represent a challenge for workers world-wide.

Whilst epidemiological studies at the population level are an important tool to determine etiologic and contributing factors of work-related skin diseases, little is known about the contribution of occupational exposures to the burden of skin problems and diseases in Norway. Moreover, the variation in the relative risk of cutaneous squamous cell carcinoma between occupational categories of the Nordic countries has not yet been assessed.

In his doctoral thesis, Jose Hernán Alfonso addresses the role and importance of occupation and occupational exposures in the occurrence and burden of skin problems and diseases in Norway, and its contribution to the risk of cutaneous squamous cell carcinoma in the Nordic countries. Alfonso has gathered approaches from dermatology, occupational medicine, and epidemiology. His material is based on data from 3 different registries as well as from the Norwegian Survey on Living Conditions and a Nordic Occupational Cancer Study.

The first paper is a register-based case-series of notified work-related skin diseases for the period 2000–2013 (1). A substantial decline in the number of notifications is observed during this period. The distribution of occupations and causative exposures notified are similar to what has been reported from other countries with more complete notifications systems. A considerable underreporting may explain the remarkable decline in the number of annual notifications, which leads to negative consequences on prevention and research of these conditions.

The second paper is a population-based study with a 3-year follow-up focusing on the risk for skin problems from self-reported occupational exposures (2). Indoor-dry air was a base-



Fig. 1. Maria Albin (2<sup>nd</sup> opponent), Jose Hernán Alfonso, Anne Olaug Olsen (3<sup>rd</sup> member of the evaluating committee) and Petter Gjersvik (acting dean).

line predictor of skin problems at follow-up, and exposure to cleaning products, water, and indoor dry air was a predictor of skin problems at both baseline and follow-up. The population-attributable risk to these factors of 16%, suggests a potential for prevention via reduction of known risk factors.

In the third paper, Alfonso aims to quantify the contribution of occupational skin exposure to the risk of physician-certified long-term sick leave in the general working population of Norway (3). This study shows evidence of an association between self-reported occupational skin exposure to cleaning products and waste in men, and skin exposure to water in women. The large sample drawn from the general Norwegian working-age population and the focus on individual exposure factors are the study's strengths. The estimated population attributable risk of 14.5% emphasizes the contribution of occupational skin exposure as an important risk factor for long-term sick leave.

The fourth paper focuses on the variation of risk for cutaneous squamous cell carcinoma among occupational categories of four Nordic countries (4). The study was based on approximately 12.9 million persons from Finland, Iceland, Sweden, and Norway, with a follow-up up to 45 years. Occupations with high socioeconomic status, some with outdoor work, and some with potential exposure to chemical substances, showed high risk for cutaneous squamous cell carcinoma. The occupational variation in the risk of cutaneous squamous cell carcinoma might be associated with socioeconomic factors, and to some extent to occupational exposures.

In conclusion, this thesis adds to the evidence that occupational skin exposure contributes to the burden of skin problems and long-term sick leave in the general working population of Norway, and identifies targets for prevention of cutaneous squamous cell carcinoma.

### List of original publications

1. Alfonso JH, Løvseth EK, Samant Y, Holm JØ. Work-related skin diseases in Norway may be underreported: data from 2000 to 2013. *Contact Dermatitis* 2015; 72: 409–412.
2. Alfonso JH, Thyssen JP, Tynes T, Mehlum IS, Johannessen HA. Self-reported occupational exposure to chemical and physical factors and risk of skin problems: a 3-year follow up study of the general working population of Norway. *Acta Derm Venereol* 2015; 95: 959–962.
3. Alfonso JH, Tynes T, Thyssen JP, Holm JØ, Johannessen HA. Self-reported occupational skin exposure and risk of physician-certified long-term sick leave: a prospective study of the general working population of Norway. *Acta Derm Venereol* 2016; 96: 336–340.
4. Alfonso JH, Martinsen JI, Pukkala E, Weiderpass E, Tryggvadottir L, Nordby KC, Kjærheim K. Occupation and relative risk of cutaneous squamous cell carcinoma: a 45-year follow-up study in four Nordic countries. *J Am Acad Dermatol* 2016; 75: 548–555.