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# Examination of work-related diseases among young people in Norway

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## SHORT REPORT

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## BACKGROUND

The hospital departments for occupational medicine and the National Institute of Occupational Health (STAMI) established a shared, anonymous patient register in 2009. This report describes the diagnoses, occupations and exposure factors that occur most frequently in the youngest patient group. This will reflect exposures in modern working life in particular, and thus produce important knowledge with regard to targeted prevention efforts.

## MATERIAL AND METHOD

We have undertaken a descriptive analysis of 910 examinations of patients in the age group 20–29 years, performed in occupational medicine departments in Norway during the period 2010–17.

## RESULTS

Examinations of patients aged 20–29 years accounted for 914 (8 %) of a total of 11 969 recorded patient examinations. We excluded four participants for whom information on their sex was missing. This age group encompassed 498 (55 %) men, compared to 75 % men in the total dataset. The most frequent diagnoses were asthma (187/910, 21 %), contact eczema (184/910, 20 %) and rhinitis (73/910, 8 %). The most frequent exposure factors were irritants/allergens (469/910, 52 %). The most common occupations were hairdresser (159/910, 17 %) and painter/varnisher (46/910, 5 %). Hairdresser was the predominant occupation among women (154/412, 37 %), while painter/varnisher (35/498, 7 %) and electrician (25/498, 5 %) predominated among men.

## INTERPRETATION

Young patients who are examined in occupational medicine departments in Norway are most frequently registered with asthma or hand eczema. Hairdressers are especially exposed, indicating a special need for primary prevention in this occupation to prevent development of illness. In cases of asthma and hand eczema, doctors should be aware of the possibility that this might be occupationally related.

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### Main findings

Young patients who are examined by occupational medicine departments are most frequently diagnosed with asthma or hand eczema

The most common occupation was hairdresser, which accounted for 17 % of the patient examinations

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Working conditions have a significant impact on public health. A Norwegian study has shown that up to 30–40 % of all sickness absence may be attributed to workplace conditions [\(1\)](#). To obtain a better overview of the patient examinations in hospital departments for occupational medicine and the National Institute of Occupational Health (STAMI), a shared, anonymous register of patient examinations was established in 2009 [\(2\)](#). This report describes the diagnoses, occupations and exposure factors that occur most frequently among young patients. This will elucidate the current situation and prevailing occupationally related exposure, which are important for targeted preventive efforts.

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## Material and method

The register of patients who have undergone occupational health examinations has been described in a previous article [\(2\)](#). A total of 11 969 examinations undertaken in hospital departments for occupational medicine and STAMI

were registered during the period 2010–17. This report encompasses examinations of patients in the age group 20–29 years. Data were retrieved using a registration form that the examining doctor completes after each consultation. The variables included sex, age group, referring agency, exposure factors, occupation and industry, occupational activity, social insurance benefits, symptom organ, diagnosis (ICD-10 code), assessment of work-related origin and notification to the Labour Inspection Authority if relevant. We used SPSS Statistics, version 24, for statistical analysis of the material.

## Results

Examinations of patients in the age group 20–29 years accounted for 914 (7.6 %) out of a total of 11 969 examinations undertaken in the period 2010–17. We excluded four participants for whom data on their sex was missing. Table 1 describes the sample (n = 910). There were 498 men (55 %), compared to 75 % men in the total dataset (all age groups) (2).

**Table 1**

Characteristics of 910 patients in the age group 20–29 years who had been examined by occupational medicine departments in Norway in the period 2010–17. Results are stated as prevalence n (%).

<b>Variables</b>	<b>Total n = 910<sup>1</sup></b>	<b>Women n = 412</b>	<b>Men n = 498</b>
<b>Exposure factor<sup>1</sup></b>			
Irritants/allergens	469 (52)	250 (61)	219 (44)
Other chemicals	94 (10)	61 (15)	33 (7)
Toxic gases/fumes	54 (6)	15 (4)	39 (8)
Organic solvents	48 (5)	16 (4)	32 (6)
Other	217 (24)	61 (15)	156 (31)
<b>Occupation<sup>2</sup></b>			
Hairdresser/skin therapist	159 (17)	154 (37)	5 (1)
Painter or varnisher	46 (5)	11 (3)	35 (7)
Chef	34 (4)	22 (5)	12 (2)
Baker	34 (4)	13 (3)	21 (4)
Electrician	29 (2)	4 (1)	25 (5)
Other	564 (62)	193 (47)	371 (74)
<b>Diagnoses</b>			
Asthma (J45)	187 (21)	73 (18)	114 (23)
Contact dermatitis (L23–25)	184 (20)	109 (26)	75 (15)

Variables	Total n = 910 <sup>1</sup>	Women n = 412	Men n = 498
Rhinitis (J30-31)	73 (8)	42 (10)	31 (6)
Other diagnoses	466 (51)	188 (46)	278 (56)
Assessment of work-related origin <sup>3</sup>			
Likely or possible	653 (72)	312 (76)	341 (68)
Not very likely/unlikely	212 (23)	84 (20)	128 (26)

<sup>1</sup>Missing data for 28 (3 %) (9 women, 19 men)

<sup>2</sup>Missing data for 44 (5 %) (15 women, 29 men)

<sup>3</sup>Missing data for 45 (5 %) (16 women, 29 men)

The most frequent diagnoses were asthma (ICD-10 code J45) (187/910, 21 %), contact dermatitis (L23 allergic, L24 toxic, L25 unspecified) (184/910, 20 %) and rhinitis (J30 vasomotor and allergic, J31 chronic) (73/910, 8 %).

The most frequent exposure factors included irritants/allergens (469/910, 52 %), followed by 'other chemicals' (chemicals other than organic solvents, toxic gases/fumes, asbestos, mercury, other metals and organic/inorganic dust) (94/910, 10 %). The most common occupation was hairdresser/skin therapist (159/910, 17 %). Hairdresser was the predominant occupation among women, while painter/varnisher predominated among men.

For work-related asthma, hairdresser (n = 35/187, 19 %), baker (n = 13/187, 7 %) and carpenter (n = 11/187, 6 %) headed the occupational statistics, while for contact eczema hairdresser (n = 49/184, 27 %), chef (n = 11/184, 6 %), plumber (n = 7/184, 4 %) and mechanic (n = 7/184, 4 %) were the most common occupations.

Data were missing for some variables: occupation (n = 44), assessment of work-related origin (n = 45) and exposure factor (n = 28).

## Discussion

The young employees were most frequently registered with asthma or contact eczema, and hairdressers were the most exposed occupational group. There were relatively few missing data for the variables, and we do not suspect any systematic bias. We therefore believe that the results are representative for young employees who are examined in departments of occupational medicine nationwide. Since the register is anonymous, we cannot follow individual patients over time. Some patients may have been registered more than once as a result of having undergone multiple examinations (referred from different agencies or having come in for a renewed assessment). The number of unique patients is therefore somewhat lower than the number of examinations.

The young patients were most frequently diagnosed with asthma or contact eczema. These conditions have a relatively short time span between exposure and onset of illness. Work-related asthma is a substantial public health problem and is assumed to be responsible for 5–15 % of all cases of new-onset asthma in adults (3). It is therefore important to determine whether a new-onset case of asthma is work-related. As regards work-related hand eczema, a report from the Nord-Trøndelag Health Study (HUNT) showed a prevalence of 4.8 %, but in occupations involving wet-work exposure, other skin irritants and/or allergenic chemical substances, the prevalence was significantly higher (4). Moreover, the study showed that most of the cases of hand eczema were found among women (4), which tallies with our findings.

As regards development trends, a recent study of the prevalence of work-related illness in European countries in the period 2000–12 showed that the prevalence of hand eczema and asthma is declining (5). In the longer term, we want to use the patient examination register to study trends in Norway.

In cases of new-onset asthma and contact eczema it is important to examine whether workplace exposure may have caused the illness, especially whether sensitivity to allergens or low-molecular substances in the working environment has developed. Identification and removal of the chemical or physical irritants that cause the symptoms tend to be difficult. Once such illness has occurred, a relocation or change of occupation will therefore often be required. In cases of recognised occupationally related asthma, cessation of the exposure is especially important to improve the long-term prognosis (6).

The high prevalence of work-related asthma and hand eczema among young patients in our register underscores the importance of preventive efforts, for example reduced use of irritants and allergens in the working environment and correct use of protective equipment, such as respiratory protective equipment (RPE) and gloves. Occupationally related asthma was especially common among hairdressers, bakers and carpenters, and contact eczema was common among hairdressers and chefs. This is indicative of a special need for appropriate primary protection efforts in these occupations to prevent development of illness.

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*The article has been peer reviewed.*

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