The incidence of work-related illness in the UK health and social work sector: The Health and Occupation Reporting network 2002–2003

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Background
In the United Kingdom, The Health and Occupation Reporting network (THOR) collects incidence data on work-related illness. THOR data show that the health and social work sector generates a high proportion of case reports. This study analyses the most recent data for the health and social work sector, from 2002 to 2003.

Methods
Cases returned to the Occupational Physicians Reporting Activity (OPRA) scheme and three other specialist schemes (Surveillance of Occupational Stress and Mental Illness, Musculoskeletal Occupational Surveillance Scheme and occupational skin surveillance) were analysed. Estimates of incidence rates for stress-related illness, musculoskeletal disorders and skin disease were calculated using two denominators.

Results
In this period, 23% (11 016/47 437) of all estimated cases in THOR were in health and social work sector employees. In OPRA, in the health and social work sector, annual average incidence rates per 100 000 calculated using Labour Force Survey (LFS) data as the denominator were 51.2 for mental illness, 35.9 for musculoskeletal disorders and 10.4 for skin disease; using McDonald’s data as the denominator the corresponding rates were 119.5, 83.7 and 24.3. In the specialist THOR schemes, annual average incidence rates per 100 000 using LFS data as the denominator were 18.4 (mental illness), 6.1 (musculoskeletal disorders) and 15.3 (skin disease).

Conclusions
Our results highlight the importance of collecting information on incident cases and denominators, to allow calculation of occupational disease rates. The higher incidence of mental illness (compared with musculoskeletal and skin disorders) in this employment sector merits further investigation.

Key words
Health and social work sector; incidence; reporting schemes; surveillance; work-related.

Introduction
Household surveys of self-reported work-related illness show that the health and social work sector has higher prevalence rates for musculoskeletal disorders and work-related stress, depression or anxiety than corresponding rates for all industries [1]. However, self-reported surveys are based on personal perceptions and, although useful, can only be considered as one element informing an overall picture of the distribution of work-related ill-health. When combined with other national data sources such as specialist medical surveillance schemes, Reporting of Injuries, Diseases and Dangerous Occurrences and the Industrial Injuries Scheme, a picture of the overall scale and distribution of work-related ill-health can be developed [2].

The Health and Occupation Reporting network (THOR) is a voluntary surveillance scheme for work-related ill-health based on systematic reporting of newly diagnosed cases by six groups of clinical consultants and by specialist occupational physicians [3]. THOR succeeded the Occupational Disease Intelligence Network that ran from 1998 to 2002 and had brought together surveillance schemes for specialist consultants (respiratory physicians, dermatologists, rheumatologists, psychiatrists, audiological physicians and consultants in communicable disease control). These six specialist consultant surveillance schemes operate in parallel with the Occupational Physician Reporting Activity (OPRA) scheme and provide estimates of the incidence of occupational disease in the UK based on clinical diagnoses (Figure 1). Labour Force Survey (LFS) statistics [4] provide reasonable denominator data for the calculation of incidence rates for the clinical specialist schemes, but not for OPRA as occupational physicians serve only a subsection of the employed population.
covered by the LFS. To address this, a survey was carried out in 2001 with the aim of providing information on the approximate number of employees covered by OPRA [5]. This study estimated that only 12% of the general working population had access to an occupational physician who reported to OPRA. There was also disproportionate coverage of different industrial sectors, with 43% of the total denominator in the health and social work sector.

The aims of this paper, using recent THOR data from 2002 to 2003, are to describe the distribution of physician-reported work-related illness in the health and social work sector and to provide estimates of incidence focusing on OPRA and three other specialist schemes (Surveillance of Occupational Stress and Mental Illness [SOSMI], Musculoskeletal Occupational Surveillance Scheme [MOSS] and occupational skin surveillance [EPIDERn]) for comparison.

Methods

THOR surveillance schemes use the reporting model developed within the Surveillance of Work-related and Occupational Respiratory Disease (SWORD) project that has been described in detail previously [6]. THOR schemes rely on voluntary reporting and operate on a principle of practicability to encourage the participation of physicians. Participating consultants are asked to report disease or illness that, in their clinical judgement, has been caused or made worse by work. Precise criteria and definitions are not imposed and reporters are not asked to carry out investigations over and above those judged necessary to assign a diagnosis.

A ‘core’ group of physicians is asked to report to THOR every month throughout the year, while ‘sample’ reporters are asked to return case reports for patients seen during a randomly assigned calendar month. In OPRA, Medical Inspectors for the Health & Safety Executive formed the entire ‘core’ group of reporters from OPRA’s origin in 1996 until the end of 2003.

Reporters are asked to record diagnosis, age, gender, occupation, industry and information on exposure (task/activity/agent or precipitating event). Participating physicians are requested to return cards even if they have no cases to report. More than one diagnosis can be reported or entered into the database for each case. Underreporting in surveillance schemes is well recognised, but its extent within THOR is unknown.

Diagnoses are coded using the International Classification of Diseases, 10th Revision (ICD-10) [7]. Reported occupation and industry are coded using classifications developed for the Office for National Statistics [8,9,10]. In this analysis the health and social work sector is defined as section N of the Standard Industrial Classification [10]. It is recognised that the information submitted to THOR is not always precise and coding often requires additional judgement. All coding is performed independently by two researchers and then reconciled by a third to minimise misclassification.

The existence of parallel schemes allows for comparison of cases reported by occupational physicians and other specialists. Comparison of disease incidence rates requires estimates to be calculated, taking account of the 1-in-12 sampling fraction for sample reporters. Estimated cases are obtained by multiplying ‘sample’ cases by 12 and adding this sub-total to ‘core’ cases. In this report, annual incidence rates are calculated separately for OPRA and three other specialist schemes (SOSMI, MOSS and EPIDERn). UK employment figures for industry and gender are obtained from the LFS [4]. LFS data from 1999 are used in order to allow comparisons to be made with data from McDonald’s (McD) denominator survey [5]. All rates presented in this paper are expressed as cases per 100 000 per year, and are based on at least 10 reported cases by gender and diagnostic group.

Results

In the 2 years 2002–2003, 2069 physicians throughout the UK returned 11 919 actual case reports to THOR, corresponding to 47 437 estimated cases (an average of 23 719 cases per year). Collaboration within THOR was high, with average monthly participation for physicians exceeding 70% for all schemes except for Surveillance of Infectious Diseases At Work (SIDAW), where participation averaged 55%. In this time period, 23% (11 016/47 437) of all estimated cases in THOR were reported in the health and social work sector (Table 1). Health services consistently contributed a large proportion (89%) of reports within the health and social work sector.
category (Table 2), reflecting large numbers in this sector within the UK’s workforce [4].

### OPRA

In OPRA, the health and social work sector accounts for 25% of estimated cases, which is the highest proportion for any industrial category. Mental ill-health was the most frequently reported diagnostic category in OPRA (51% cases), while musculoskeletal disorders and skin disease accounted for 36 and 11%, respectively (Table 2). Frequently reported diagnoses in OPRA were work-related stress (18%), anxiety (12%), depression (11%), back pain (13%) and contact dermatitis (8%).

### Other THOR schemes

The health and social work sector is also frequently reported in SOSMI (23%) and EPIDERM (18%), but accounted for smaller proportions (8%) of MOSS reports.

### Table 2. Distribution of actual case reports in OPRA 2002–2003

<table>
<thead>
<tr>
<th>OPRA</th>
<th>Health and social work actual case reports n = 506</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Dental practice</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Veterinary practice</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Social work</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Diagnostic category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental ill-health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work-related stress</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Mixed anxiety/depression</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td></td>
<td></td>
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<tr>
<td>Back pain</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Skin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact dermatitis</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

*Diagnoses are provided for categories with more than 10 actual cases.*

In SOSMI, 157 actual case reports were received for health and social work sector employees, with anxiety/depression being cited most frequently (66% cases). Of note, medical practitioners accounted for 35% cases, and if this group of patients is broken down by gender, male medical practitioners outnumber their female counterparts by 21 actual case reports to 16.

MOSS received comparatively small numbers of reports in the health and social work sector (n = 69). Upper limb disorders accounted for 50% of cases reported in MOSS, while in comparison, occupational physicians mainly report back pain.

EPIDERM had the highest number of actual cases reported for health and social work sector employees (n = 546), with dermatologists submitting more than 10 times the number of skin case reports compared with occupational physicians. This may be explained in part by the high number of ‘sample’ reporters in OPRA who report only for a single month each year, as the difference in estimated skin cases is less marked (920 EPIDERM cases compared with 625 in OPRA). Contact dermatitis accounted for 79% of skin cases in OPRA and 90% in EPIDERM, with irritant contact dermatitis cases outnumbering allergic cases by a ratio of 2:1 in both schemes. In EPIDERM, nurses comprise the largest occupational group by far, contributing 53% of skin cases. Frequently reported irritants were handwashing/wetwork, soaps/detergents, disinfectants and glove use with latex and rubber chemicals (especially thiurams) commonly reported as allergens.

### Incidence rates

Annual incidence rates for male and female cases reported to OPRA are shown in Table 3, calculated using both LFS and McD denominator data. In OPRA, mental ill-health was found to have the highest incidence overall, followed by musculoskeletal and skin disorders. There was more than a 2-fold increase when switching from LFS to McD denominator data, because only 43% of those covered by the LFS denominator were estimated to have access to OPRA reporters [5].

Incidence rates for mental ill-health and musculoskeletal disorders reported to OPRA using both sets of denominator data (LFS/McD) are shown for males and females in Figure 2. In comparison with rates obtained using LFS statistics, McD denominator data effectively
increase incidence rates for the health and social work sector, with the effect of this increase being disproportionate between genders (higher for females than males). This effect is seen because males in the health and social services sector are reported to have higher coverage (81%) by OPRA reporters than females (34%), but it should be noted that gender was specified in only 23% of the estimated health and social work population when the McD denominator was estimated [5].

Rates calculated from the other specialist schemes using LFS denominator data show annual incidence for SOSMI, MOSS and EPIDERM (Table 4). For the health and social work sector, the highest rates were found for mental ill-health followed by skin disorders and musculoskeletal disease. Overall, the highest rate was found for males with mental illness (34.5 cases/100 000/year), more than double the corresponding rate for females (14.5 cases/100 000/year).

### Discussion

The health and social work sector is a broad category that includes the health services, dental practice, veterinary practice and social services [10]. It is clear from the results presented here that health services consistently make up a large proportion of reports that is not surprising when more than one million employees work within the National Health Service, and are potentially exposed to a wide variety of workplace hazards [11]. Within OPRA, this reporting pattern may also reflect the relatively wide coverage of health service employees by occupational physicians [5]. In contrast, there are no reported cases by occupational physicians for veterinary activities, reflecting smaller numbers of veterinary staff and their limited access to occupational health services.

### Skin disorders

One striking finding of this study is the high number of dermatologists’ reports of skin disease in the health and social work sector, underlining its importance as a cause of occupational morbidity [12]. Our results also indicate that skin disorders may be seen less frequently by occupational physicians, despite good provision of occupational health services within this sector by OPRA reporters. Although fitness for work and sickness absence assessments account for a large proportion of an occupational physician’s caseload [13], if managers perceive skin diseases to be trivial and do not refer cases to occupational health, this may result in under-reporting by occupational physicians. Furthermore, any cases seen by occupational health staff (including occupational physicians who do not participate in OPRA) or by primary care staff, will not be reported to THOR.

As with all clinical specialist schemes, cases reported by dermatologists are likely to be more severe or chronic than cases reported by occupational physicians. Referral for patch testing, an investigation not often performed by occupational physicians, may contribute to the high number of cases seen and reported by dermatologists. We might, therefore, have expected to find a higher proportion of allergic contact dermatitis cases (if this were the main reason for high reporting in EPIDERM), but this was not so, and irritant cases were double the proportion of allergic contact dermatitis cases. As occupational skin conditions are largely preventable by reducing exposure to causative agents and use of appropriate skin care techniques, occupational physicians and dermatologists have a very important role in raising awareness about prevention of work-related skin

![Figure 2](https://academic.oup.com/occmed/article-abstract/55/4/262/1409013)
disorders. Re-evaluation of occupational health care delivery may therefore be required to ensure that work-related skin conditions are not being missed.

Musculoskeletal disorders

The health and social work sector is relatively poorly reported in MOSS. This is surprising as it is generally agreed that certain groups of health and social work employees, such as nurses and care assistants, are at risk of developing low back problems [14]. However, our data are limited to reports from rheumatologists, who see only a fraction of all patients with work-related musculoskeletal disorders, and these figures are undoubtedly underestimates.

Data from a self reported work-related illness survey suggested that musculoskeletal disorders were by far the most commonly reported work-related condition and over half the responders who reported a musculoskeletal disorder said that their back was affected [1]. However, rheumatologists may be more likely to see upper limb disorders rather than low back pain, because of referral patterns. For example, work-related back conditions may be referred to orthopaedic or neurosurgical specialities from primary care and would not be captured by THOR. In addition, an unquantifiable, but probably large, number of patients with low back pain are seen solely by general practitioners, and these cases are currently not reported to THOR. However, an additional THOR surveillance scheme for reporting by general practitioners with an interest in occupational health is being launched to increase and improve data capture [3].

Mental ill-health

In recent years there has been increasing interest in the psychological aspects of work, predominantly anxiety/depression and stress-related illness and the occupational contribution to these conditions. There is evidence that mental illness may be more prevalent in health care staff than in other workers. Self-reporting has indicated that the health and social work sector had a significantly higher rate than for all industries (1.7% compared with 0.9%) [1], and questionnaire-based data showed 27% health care staff reporting high levels of psychological ill-health, compared with 18% of the working population generally [16]. Female doctors and managers have also been shown to have higher prevalence rates of self-reported minor psychiatric disorders than their male counterparts [16], but a key finding in our study was the higher incidence of work-related mental ill-health in male workers rather than for females in the health and social care sector.

From the information available here it is not possible to determine whether working in the health and social services sector causes mental ill-health, or that staff enter this sector with ongoing psychiatric disorders. Industry and occupational classifications provide very crude clues to the causes of occupational disease, and our data is unable to provide a reliable explanation for these gender differences. However, the relatively high incidence of mental illness in the health and social work sector warrants further action, including prevention and management strategies. This may also suggest that access to occupational health services and counsellors has an important role to play in this sector.

Incidence rates

The main aim of this paper was to explore physician-reported work-related illness in the health and social work sector, and to examine disease risks as indicated by incidence rates. The existence of specialist medical reporting schemes that operate in parallel should allow comparison of rates reported by occupational physicians and other specialists, as the distribution of workers who have access to the services of an occupational physician has been estimated [5]. McDonald's denominator survey aimed to provide reasonably accurate information about

<table>
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<th>THOR</th>
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<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td></td>
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<tr>
<td></td>
<td>Cases</td>
<td>LFS Rate</td>
<td>Cases</td>
<td>LFS Rate</td>
</tr>
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<td>SOSMI (mental ill-health)</td>
<td>399</td>
<td>34.5</td>
<td>704</td>
<td>14.5</td>
</tr>
<tr>
<td>MOSS (musculoskeletal disorders)</td>
<td>18</td>
<td>-a</td>
<td>348</td>
<td>7.2</td>
</tr>
<tr>
<td>EPIDERM (skin disorders)</td>
<td>102</td>
<td>8.8</td>
<td>818</td>
<td>16.9</td>
</tr>
</tbody>
</table>

Rates are given using LFS denominator data.

*aNo rate calculated for categories with less than 10 actual cases reported.
the approximate number of employees covered by OPRA reporters, but previously mentioned problems relating to the specification of gender (only specified for 23% of the estimated health and social work population) are inherent to these data. Without appropriate denominators for gender for OPRA we can use the information from the schemes for clinical specialists (where LFS denominator data can be applied). However, this may result in the loss of valuable information obtained from OPRA, and also from comparisons between OPRA and the other specialist schemes. Accurate knowledge regarding the incidence of occupational disease is therefore necessary in order to guide effective preventive measures.

This study highlights the importance of having reasonably accurate information about the population covered by THOR. It is clearly important to provide definitive and up-to-date figures, and a rolling denominator data collection programme is underway to address these issues [3]. However, the extent of information collected by THOR makes it the most comprehensive source of information for work-related conditions diagnosed by specialists in the UK. Incidence estimates from these surveillance schemes provide an important contribution to the overall picture, and THOR will continue to increase our knowledge of work-related disease in the UK.

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