

ORIGINAL RESEARCH

Occupational skin disease in Victoria, Australia

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ABSTRACT

Objectives: To describe the characteristics of patients with occupational skin disease (OSD) in a tertiary referral clinic in Victoria, Australia.

Methods: A retrospective review was conducted of records from patients seen at the Occupational Dermatology Clinic in Melbourne, Australia between 1 January 1995 and 31 December 2010.

Results: Of the 2894 people assessed in the clinic during the 18-year period, 44% were women and 56% were men. In all, 2177 (75%) were diagnosed with occupational skin disease (OSD). Of the patients with a work-related skin condition, 45% ($n = 979$) were considered to be atopic. The most common diagnosis in those with OSD was irritant contact dermatitis (ICD) (44%), followed by allergic contact dermatitis (33%) and endogenous eczema (11%). Women were significantly more likely to have soaps and detergents ($P < 0.001$) and water/wet work ($P < 0.001$) as causes of their ICD than men. Men were significantly more likely to have oils and coolants ($P < 0.001$) and solvent exposures ($P < 0.001$) as causes of their ICD. Occupational groups with the highest incidence of OSD were the hair and beauty professions (70 per 100 000), followed by machine and plant operators (38 per 100 000) and health-care workers (21 per 100 000).

Conclusion: We confirm the importance of occupational contact dermatitis as the most common cause of OSD, with ICD being the most common diagnosis. There are differences in the causes of ICD between our group of male and female workers. For the first time in Australia, rates of OSD in certain industries have been calculated.

Key words: allergic, contact dermatitis, irritant, occupational, patch testing.

INTRODUCTION

Contact dermatitis is the most common form of occupational skin disease (OSD). Estimates from epidemiological data show that contact dermatitis accounts for 70–95% of all cases of OSD,^{1–4} with contact urticaria, folliculitis and acne, mechanical and traumatic causes, infections and neoplasia making up the remainder. Australia lacks a disease register or reporting network for OSD, as exists in certain countries, such as in Germany, Denmark, Finland and the UK.^{1,5–6} The annual incidence of occupational contact dermatitis has been estimated from various international centres to be at 50–190 per 100 000 workers.^{1,6,7} Reports from Australia, such as those that emanate from workers compensation data, are likely to substantially underestimate true rates of OSD.⁸

Information is also limited on the characteristics of patients with OSD in Australia. Such information is likely to assist in identifying determinants of OSD and thereby lead to appropriate preventive strategies. An audit of patient records is the most cost-effective first step in investigating

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Conflict of interest: none

Submitted 21 December 2014; accepted 31 May 2015.

Abbreviations:

ACD	allergic contact dermatitis
CU	contact urticaria
ICD	irritant contact dermatitis
OSD	occupational skin disease

such determinants. Therefore, we have undertaken a review of patients seen in the Occupational Dermatology Clinic in Melbourne since its inception in 1993 until the end of December 2010. This tertiary level patch-testing clinic sees patients predominantly referred from within Victoria, but also some from other states and territories of Australia.

METHODS

Patients

The study population consisted of all patients seen at the Occupational Dermatology Clinic in Melbourne, Australia between 1st January 1993 and 31st December 2010. This clinic is a tertiary referral clinic for the investigation of patients with suspected OSD, predominantly contact dermatitis. Each patient is assessed by a dermatologist through history, examination and patch testing (if indicated). Occasionally other investigations are performed, including blood tests, prick tests and skin biopsies. Most of the referrals were from dermatologists, though referrals are also accepted from general practitioners, occupational physicians and other occupational health staff, allergists, and from employers. There were no exclusion criteria.

Patch testing

All patients who were diagnosed clinically by the dermatologist to have contact dermatitis were patch tested using allergens from Chemotechnique Diagnostics (Malmö, Sweden) and Trolab Hermal (Reinbek, Germany). Patches were applied to the back using Finn Chambers on Scanpor tape (Epitest OY, Tuusula, Finland). They were removed and read at day 2 or day 3, and day 4 or 5.

All patients were tested to an extended European standard series and to other relevant series based on the Chemotechnique Diagnostics Patch Test Products Catalogue;⁹ however our series has additionally been formulated based on international literature and local trends. Own products brought in from home and the workplace were appropriately prepared for testing according to De Groot's published guidelines of recommended chemical and product patch-test concentrations.¹⁰

Diagnoses

At the end of the patch-testing process, all patients were assigned at least one diagnosis. Often more than one factor was thought to contribute to the patient's current clinical presentation. In these situations, the diagnoses were ordered in order of importance, with the primary diagnosis considered the major cause of the patient's condition.

Definitions

Atopy. Patients were categorised as atopic if they had a personal or family history of asthma, atopic dermatitis or hay fever.

Work relatedness The diagnosis for each patient was considered to be substantially, partially or not work related. An example of a case of partial work relatedness is an individual with atopic eczema involving the hands which was aggravated by work duties involving irritants. Hence endogenous eczema may be included as a diagnosis in patients who had substantially or partially work-related skin disease.

Mathias criteria. These are seven objective criteria proposed by Mathias in 1989 and used to assess the probability that a worker has OSD. Fulfilment of four of the seven criteria is considered suggestive of an occupational cause.¹¹

Classification of occupation and industry groups

The occupation of patients was classified and recorded using the Australian Bureau of Statistics (ABS), Australian Standard Classification of Occupations.¹² The industry of employment of patients was classified and recorded using the ABS and the Australia New Zealand Standard Industry Classification from 2001,¹⁵ which was at the midpoint of the data collection period (1993–2010). For the purposes of this analysis nurses, nursing assistants, dentists, dental assistants, doctors and allied health professionals were grouped together as health-care workers. Criteria for work-relatedness were based on the Mathias criteria.¹¹

Statistical analysis

All analyses were conducted using the STATA (vers. 10.1; STATA Corporation, Texas, USA) statistical package. Contingency tables were analysed using the χ^2 test. Fisher's exact tests were used when one or more expected values were less than 5. Potential differences between proportions were assessed using the 2-tailed two sample test of independent proportions. A two-sided *P* value less than 0.05 was considered as statistically significant.

RESULTS

Participants' characteristics

The characteristics of the sample are reported in Table 1. In total, 2894 people were assessed in the clinic between 1 January 1993 and 31 December 2010. Of the patients seen, 2177 (75%) had a skin condition that was regarded as substantially or partially work related. In all, 42% (*n* = 1209) of all patients were categorised as atopic. Of the patients with a work-related skin condition, 45% (*n* = 979) were considered to be atopic. Of the 1209 atopic patients, significantly more were women (51% of women *vs* 35% of men, *P* < 0.001).

Primary diagnosis

The most common primary diagnosis in the patient with a substantially or partially work-related skin condition was irritant contact dermatitis (ICD) (44%; 958/2177), followed by allergic contact dermatitis (ACD) (35%; 712/2177) and

Table 1 Characteristics of participants by primary diagnosis

	Total <i>n</i> (%) [†]	Men [‡] <i>n</i> (%)	Women [‡] <i>n</i> (%)	Age (mean ± SD)	Age (range)
Total	2894 (100)	1608 (56)	1285 (44)	37.2 ± 12.8	15–80
Work-related diagnosis					
Significantly	1740 (60)	961 (60)	779 (61)	35.7 ± 12.6	15–74
Partially	437 (15)	247 (15)	190 (15)	37.4 ± 12.2	16–76
Not work related	701 (24)	388 (24)	312 (24)	40.5 ± 13.0	15–80
Not known	16 (1)	12 (1)	4 (0)	44.4 ± 13.3	26–71
Atopic	1209 (42)	560 (35)*	649 (51)*	33.4 ± 11.9	15–80
Primary work-related diagnosis (<i>n</i> = 2177)	2177/2894 (75)	1208/2177 (56)	969/2177 (45)		
Atopic	979 (45)	439 (36)	540 (56)	32.2 ± 11.4	15–70
ICD	958 (44)	544 (45)	414 (43)	35.3 ± 12.3	16–70
ACD	712 (33)	400 (33)	312 (32)	36.6 ± 13.1	15–74
Endogenous	229 (11)	128 (11)	101 (10)	36.2 ± 11.4	17–63
Psoriasis	51 (2)	44 (4)	7 (1)	45.6 ± 10.9	20–70
Latex allergy	61 (3)	13 (1)	48 (5)	32.8 ± 11.7	17–60
Contact urticaria	55 (3)	26 (2)	29 (3)	30.6 ± 11.4	16–65
Persistent post-occupational dermatitis	15 (1)	7 (1)	8 (1)	45.7 ± 10.2	25–60
Other	74 (3)	41 (3)	33 (3)	38.8 ± 12.4	19–76
Unclassified	22 (1)				

* $P < 0.001$. [†]Percentage total number of subjects or percentage of male or women, respectively. [‡]Sex not recorded for 1 person. ACD, allergic contact dermatitis; ICD, irritant contact dermatitis.

Table 2 Causes of skin irritation in patients with a primary diagnosis of occupational irritant contact dermatitis; *n* (%)

Irritant	Total (<i>N</i> = 958)	Men (<i>N</i> = 544)	Women (<i>N</i> = 414)	<i>P</i> value
Water and wet work	362 (38)	103 (19)	259 (63)	<0.001
Soap and detergents	309 (32)	104 (19)	205 (50)	<0.001
Heat and sweating	150 (16)	81 (15)	69 (17)	0.45
Oils and coolants	142 (15)	136 (25)	6 (2)	<0.001
Solvents	138 (14)	115 (21)	23 (6)	<0.001
Dusts and fibres	95 (10)	66 (12)	29 (7)	<0.001
Acids and alkalis	41 (4)	36 (7)	5 (1)	<0.001
Other	211 (22)	147 (27)	64 (16)	<0.001

endogenous eczema (11%, 229/2177). Sex was not associated with the primary diagnosis.

ICD

ICD was diagnosed in 71% (1549/2177) of patients with OSD, and was the primary diagnosis in 44% (958/2177) in these patients. In those with a primary diagnosis of ICD, it was regarded as substantially work related in 90% (862/958) and partially work related in 10% (96/958). The most common skin irritants are listed in Table 2. Women were significantly more likely to have soaps and detergents ($P < 0.001$) and water and wet work ($P < 0.001$) as causes of their ICD than men. Men were significantly more likely to have oils and coolants ($P < 0.001$) and solvent exposures ($P < 0.001$) as causes of their ICD.

ACD

ACD was diagnosed in 52% (1135/2177) of patients with OSD. In all patients with a primary diagnosis of ACD ($n = 712$), it was regarded as substantially work related in 95% (675/712) and partially work related in 5% (37/712).

The most common allergens with an occupationally relevant reaction in all patients and in those with ACD are shown in Figure 1. Thiuram mixes or individual thiuram chemicals accounted for four of the top 10 most common occupationally relevant allergens. A total of 43% of patients with a primary diagnosis of ACD were atopic, which is not significantly different to the frequency seen in those with ICD (46%, $P = 0.210$).

Multiple diagnoses

The complexity of occupational contact dermatitis is highlighted by the fact that there are multiple contributing factors to occupational dermatitis. Table 3 reports the frequencies of multiple diagnoses in patients with significantly or partially work-related dermatitis.

Occupational groups

Table 4 reports the occupational group for all patients with a work-related diagnosis stratified by primary diagnosis. Of the patients assessed in the clinic, 26% were skilled manual workers or labourers, followed by health-care workers

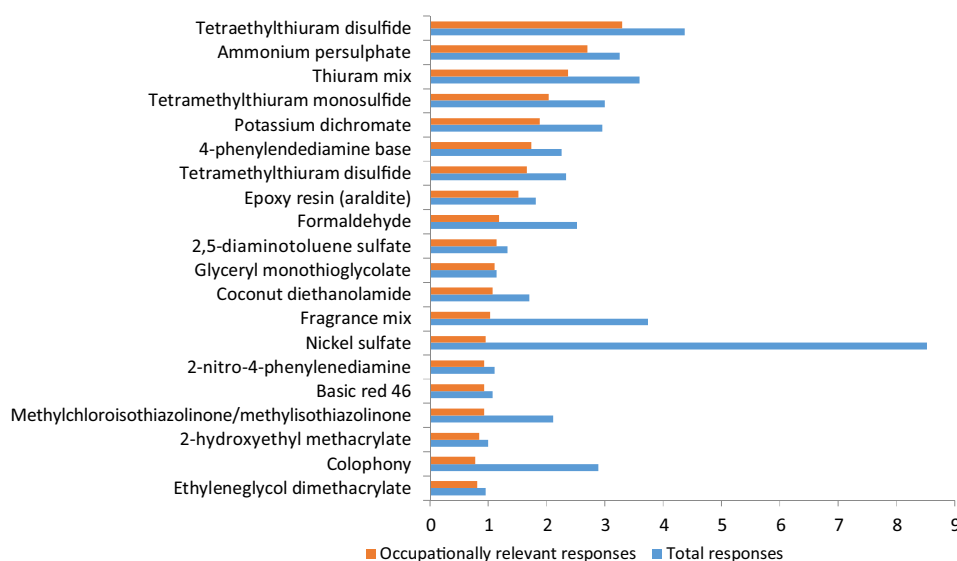


Figure 1 Top 20 occupationally relevant allergens in patch-tested patients ($N = 2698$).

Table 5 Multiple diagnoses in patients with a significantly or partially work related condition; n (%)

Condition	Primary	Secondary	Tertiary	Quaternary
ICD ($N = 1549$)	958 (62)	498 (32)	87 (6)	6 (0)
ACD ($N = 1135$)	712 (63)	290 (26)	111 (10)	20 (2)
Contact urticaria ($N = 133$)	55 (41)	41 (31)	22 (17)	14 (11)
Latex ($N = 133$)	61 (46)	52 (39)	18 (14)	2 (2)
Psoriasis ($N = 105$)	51 (49)	36 (34)	12 (11)	5 (5)
PPOD ($N = 54$)	15 (28)	28 (52)	8 (15)	3 (6)
Endogenous eczema ($N = 641$)	229 (36)	249 (39)	133 (21)	27 (4)
Other ($N = 177$)	74 (42)	68 (38)	29 (16)	4 (2)

ACD, allergic contact dermatitis; ICD, irritant contact dermatitis; PPOD, persistent post-occupational dermatitis.

(21%) and food handlers (10%). For those with a primary diagnosis of ICD, 24% were health-care workers and 24% were skilled manual workers. Food handlers (12%) were the third most common occupational group with a primary diagnosis of ICD. For ACD, the most common occupational groups were skilled manual workers (31%), hair and beauty therapists (17%) and health-care workers (15%).

Rates of OSD

Table 5 reports those occupations with the highest incidence of OSD. This includes ICD and ACD but also other causes such as contact urticaria and latex allergy. People in the hair and beauty professions had the highest incidence rate at 70 per 100 000, followed by machine and plant operators (38 per 100 000) and health-care workers (21 per 100 000).

DISCUSSION

This is the largest study to date to describe the clinical characteristics and associated risk factors for occupational contact dermatitis in Australia. It is also the first study to report occupation-specific rates of occupational contact dermatitis from Australia. Hair and beauty workers are

those most at risk of OSD, followed by machine and plant operators, health-care workers and automobile workers. The rate of food handlers, skilled manual workers and labourers is lower due to the large number of workers in these occupational groups in Australia. These groups are similar to those reported from the UK.¹⁴ It is also interesting to note that there is a higher incidence of ICD than ACD in most occupational groups. The exceptions to this are hair and beauty workers, photographic workers and machine and plant operators, where there is increased possibility of exposure to allergens.

The top most common occupationally relevant allergens in our study were different from those reported by Kucenic and Belsito from the USA, who found nickel to be the most common allergen in OSD.¹⁵ They also reported high rates of allergy to the topical antibiotics neomycin sulphate and bacitracin. While we did find nickel to be the most common positive reaction on testing, we often did not find any relevance to this allergy in the workplace, and it is ranked 14th in our data. Neomycin and bacitracin are not present on our list and are not commonly used in Australia. Finally, 4-phenylenediamine (a permanent hair dye), ammonium persulphate (hairdressing bleach) or glyceryl monothioglycolate (perming solution) are not listed as common allergens in some reports.^{15,16} This appears to be

Table 4 Occupations by primary diagnosis of patients with occupational skin disease; *n* (%)

Number	Total <i>N</i> = 2177 [†]	ICD <i>N</i> = 958	ACD <i>N</i> = 712	Endog <i>N</i> = 229	Psoriasis <i>N</i> = 51	Latex <i>N</i> = 61	CU <i>N</i> = 55	PPOD <i>N</i> = 15	Other <i>N</i> = 74
Occupation									
Skilled manual workers & labourers	560 (26)	226 (23)	217 (31)	75 (32)	19 (37)	1 (2)	4 (7)	2 (15)	17 (23)
Healthcare workers	459 (21)	234 (24)	105 (15)	46 (20)	3 (6)	42 (69)	3 (6)	2 (13)	10 (14)
Food handlers	219 (10)	115 (12)	34 (5)	21 (9)	1 (2)	8 (13)	30 (55)	2 (13)	7 (10)
Hair & beauty	191 (9)	49 (5)	119 (17)	10 (4)	0 (0)	6 (10)	1 (2)	0	5 (7)
Machine & plant operators	161 (7)	63 (7)	60 (8)	16 (7)	9 (18)	0 (0)	2 (4)	2 (13)	7 (10)
Process workers & packers	97 (5)	47 (5)	28 (4)	7 (3)	4 (8)	0 (0)	1 (2)	2 (13)	8 (11)
Automotive	92 (4)	65 (7)	17 (2)	4 (2)	4 (8)	0 (0)	0 (0)	1 (7)	1 (1)
Engineering	76 (4)	40 (4)	23 (3)	5 (2)	2 (4)	0 (0)	1 (2)	1 (7)	4 (5)
Farmers	55 (2)	16 (2)	25 (4)	6 (3)	0 (0)	0 (0)	3 (6)	0 (0)	3 (4)
Cleaners	49 (2)	26 (3)	12 (2)	7 (3)	2 (4)	1 (1)	0 (0)	1 (7)	0 (0)
Science	36 (2)	16 (2)	10 (1)	5 (2)	1 (2)	1 (2)	1 (2)	0 (0)	0 (0)
Miscellaneous/others	32 (2)	12 (1)	13 (2)	4 (2)	1 (2)	0 (0)	1 (2)	0 (0)	1 (1)
Cash handlers	28 (1)	9 (1)	6 (1)	5 (2)	1 (2)	1 (2)	4 (7)	1 (7)	1 (1)
Clerical & managerial	23 (1)	8 (1)	8 (1)	5 (2)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Production managers	23 (1)	3 (0)	13 (2)	4 (2)	1 (2)	0 (0)	1 (2)	0 (0)	2 (3)
Transport workers	13 (1)	3 (0)	5 (1)	2 (1)	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)
Teachers	11 (1)	4 (0)	2 (0)	2 (1)	0 (0)	0 (0)	0 (0)	0 (0)	2 (3)
Photographic workers	7 (0)	2 (0)	3 (0)	0 (0)	0 (0)	0 (0)	2 (4)	0 (0)	0 (0)
Veterinary	5 (0)	3 (0)	0 (0)	1 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)
Others	5 (0)	3 (0)	1 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Childcare	4 (0)	1 (0)	2 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Emergency workers – other	3 (0)	2 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Missing	30 (1)	11 (1)	8 (1)	4 (2)	0 (0)	1 (2)	0 (0)	1 (7)	5 (7)

[†]Unclassified occupational skin disease (*n* = 22). ACD, allergic contact dermatitis; CU, contact urticaria; endog, endogenous eczema; ICD, irritant contact dermatitis; PPOD, persistent post-occupational dermatitis

Table 5 Incidence rates of occupational skin disease per 100 000 persons per year, by occupational group, 1995–2010 (18-year period)

Major occupational group	2001 ABS Vic employment figures	All OSD	ICD	ACD	Rate per 100 000 per year with all OSD	Rate per 100 000 per year with ICD	Rate per 100 000 per year with ACD
Hair & beauty	15 191	191	49	126	70	18	46
Machine & plant operators	23 475	161	64	65	38	15	15
Health-care workers	124 300	459	243	116	21	11	5
Automobile workers	28 729	92	66	18	18	13	4
Science	11 366	36	16	13	18	8	6
Engineering	29 582	76	41	24	14	8	5
Skilled manual workers & labourers	226 152	560	231	229	14	6	7
Photographic workers	2897	7	2	5	13	4	10
Food handlers	106 396	219	121	40	11	6	2
Veterinary	2488	5	3	0	11	7	0
Process workers & packers	66 031	97	48	34	8	4	3
Cleaners	44 713	49	27	15	6	3	2
Production managers & inspectors	30 535	23	3	14	4	1	3
Farmers	83 177	55	16	28	4	1	2
Miscellaneous	100 755	32	12	14	2	1	1
Childcare	17 528	4	1	2	1	0	1
Transport workers	57 453	13	4	8	1	0	1
Emergency workers, other	14 669	3	3	1	1	1	0
Cash handlers	227 822	28	10	8	1	0	0
Teachers	103 539	11	6	5	1	0	0
Others	48 426	5	3	2	1	0	0
Clerical & managerial	565 190	23	11	12	0	0	1
Social welfare	18 963	0	0	0	0	0	0
Missing		30	15	26			

ABS Vic,¹² Australian Bureau of Statistics, Victoria.¹⁵ ACD, allergic contact dermatitis; CU, contact urticaria; ICD, irritant contact dermatitis; OSD, occupational skin disease.

because these centres did not assess many hairdressers, while hairdressers and beauty therapists are our fourth most common occupational group in this sample of patients and have been shown to have a high incidence rate for OSD elsewhere.^{17,18} Our list of most common allergens is similar to that of Dickel and colleagues from Germany,¹ although their study included natural rubber latex in this group, it being their most common allergen, followed by potassium dichromate and ammonium persulphate. As expected, the most common allergens found in Rosen and Freeman's study from another Australian state (New South Wales) were similar to ours: potassium dichromate, thiurams and epoxy resins.¹⁸ It should be noted that this study reflects data from the period prior to routine testing with the allergen methylisothiazolinone, which is currently causing high rates of allergy in Australia and around the world.

Of the patients diagnosed with substantially or partially work-related skin disease, 56% were men. This is higher than reported by Kucenic and Belsito¹⁵ or Dickel and colleagues,¹⁹ but less than reported by Goon and colleagues.¹⁶ In a smaller German study by Dickel's group, a preponderance of female workers was found (58%).¹ Sex differences could be accounted for by differences in workforce patterns or by differences in the way information is collected about affected individuals. We have previously found that women are less likely to claim workers' compensation.²⁰ In contrast, men account for approximately 75% of cases of OSD in Singapore,¹⁶ possibly because the industries particularly represented are engineering, building and construction and electrical industries, and are dominated by male workers. Hairdressers are not captured at all in their statistics.¹⁶

A primary diagnosis of ICD was made in 44% of cases of OSD. Overall, however, ICD was part of the diagnostic scenario in 71% of cases. The rate of ICD is comparable to that reported by Dickel and colleagues (75%),¹ but higher than previously reported elsewhere.¹⁵ We have noted a reluctance among some dermatologists to make a diagnosis of ICD, as there is no diagnostic test that can be performed and the diagnosis is largely subjective after the exclusion of ACD with patch testing. That 70% of patients with OSD have some degree of ICD is perhaps surprising, but is likely to reflect our policy of identifying all the factors contributing to a worker's disease. It is, however, difficult to compare rates of diagnoses in referred populations, where there may be differences in referral patterns.

The differences in causes of skin irritation between the sexes are explained by their differing occupations. Women constitute the majority of hairdressers and nurses, where wet work and frequent exposure to detergents and shampoos are daily events. Men constitute the majority of mechanics and engineers, where exposure to solvents and cutting oils is common. Overall, most of the cases of ICD occurred in men, representing the predominance of men in manual jobs. The overall causes are generally similar to those reported by Goon and colleagues¹⁶ and Dickel and colleagues,¹ although wet work was the most common irritant in Dickel and colleagues' study.

While a diagnosis of ACD was made in 1135 (52%) cases of OSD, it was the primary diagnosis in only 712 (33%). Relatively few groups have reported more than one diagnosis contributing to workers' clinical presentations, which we feel is an important oversight in the literature.^{1,15,21} Rietschel and colleagues did report frequencies for both primary and secondary diagnoses, and found that ACD was more common than ICD as a primary diagnosis but less common as a secondary diagnosis.¹⁷ However, overall they had a secondary diagnosis in only 30% of patients, with no tertiary diagnosis. We have assigned a secondary diagnosis to 58% of patients with OSD and a tertiary diagnosis to 19% of patients (Table 3). Recognising that there may be multiple contributing factors to a patient's skin condition is extremely important, so that all causative factors may be addressed as part of patient's management.

The most common occupations represented in our data were skilled manual workers and labourers, health-care workers, food handlers, hairdressers and beauty technicians and machine and plant operators. This is broadly similar to occupations previously reported,^{1,17,18} with the exception of the Singaporean data,¹⁶ and those from Kucenic and Belsito,¹⁵ for reasons previously discussed.

Nearly 50% of patients diagnosed with OSD in this clinic were considered to be atopic. Dickel and colleagues have previously reported that 22% of OSD cases in certain occupational groups may be ascribed to an atopic skin diathesis; that is, a personal history of atopic dermatitis.²² Definitions of atopy inevitably vary between studies, making comparisons difficult, but atopy is clearly common in this population and is important to consider. Rosen and Freeman showed that workers with an atopic diathesis were more at risk of ICD than ACD.¹⁸

The main limitation to this study is that it is confined to one tertiary referral clinic in Melbourne, and most, although not all, patients were referred from the state of Victoria. Our clinic is the only occupational dermatology clinic in Victoria. However, some patients with OSD are seen elsewhere and so will not be captured in our statistics. There is also an inherent bias in that only the more severe cases of OSD are likely to be referred for patch testing. However, the specialist nature of the clinic means that each patient undergoes a full investigation, including patch testing and often prick testing, and therefore detailed information is obtained. With the majority (>95%) of patients in this study having been assessed by the same physician, there has been consistency with regard to the process of diagnostic decision-making and the determination of atopy. Notwithstanding this, there are limitations in using a database not designed solely for research, including the misclassification of information and failure to enter information into the database.

In summary, we confirm the importance of occupational contact dermatitis as the most common cause of OSD, with more ICD than ACD in a referred clinic population. We provide further evidence on the common causes of ICD and explain the differences observed between male and female workers. There were high rates of atopy in patients diagnosed with OSD. Finally, and for the first time in Australia,

rates of OSD in certain industries were calculated, which may have implications for future initiatives aimed at improving work practices.

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