A comparison of occupational health issues among nursing home staff in Australia, Japan, Korea and Taiwan

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We conducted a 4-year investigation of skin disease and musculoskeletal disorders (MSD) among 465 nursing home staff in Australia, Japan, Korea and Taiwan. Skin disease was diagnosed by specialist physicians during medical examinations while MSD information was collected by means of a self-reported questionnaire. The Australian group suffered a generally higher prevalence of skin disease than in the other countries, most likely due to their significantly higher rate of sun-induced skin disorders. Conversely, the Japanese reported a higher overall MSD prevalence at almost all body sites. Important skin disease risk factors included previous skin disease, a history of allergy and employment as a service worker. Interestingly, MSD was found to be a co-factor for current skin disease. Individual MSD risk factors included moving patients, washing patients, working as an assistant nurse and daily alcohol consumption. Overall, our study suggests that nursing home work incurs a reasonable degree of risk and that skin disease and MSD are important occupational issues within these facilities. Further research is required to elucidate the significance of our findings.

Keywords: nursing home staff, occupational health, Australia, Japan, Korea, Taiwan

Introduction

Although skin disease and musculoskeletal disorders (MSD) are common among nursing home workers, to date there have been no coordinated international studies of these occupational issues. Therefore, we felt it was appropriate to conduct one of the first cross-cultural investigations of occupational dermatology and ergonomic complaints among nursing home workers in Australia, Japan, Korea and Taiwan using a previously validated methodology. We also considered it worthwhile to determine if there were any statistically significant differences in demographic factors, disease prevalence rates and occupational risk factors between these 4 geographically-diverse groups.

Materials and methods

The individual data collection methods for this study have been previously described.[1-8] Briefly, we required around 100 typical nursing home staff from each country for our investigation, although the actual number varied during recruitment from 91 to 140. The Australian and Korean cohorts were each derived from single, large nursing homes. The Japanese group came from 2 medium sized facilities, and the Taiwanese staff from 11 small nursing homes all within close proximity to each other. Data from the 4 countries was coded and combined into a large spreadsheet before being analysed by statistical software. Basic statistics and prevalence rates were calculated using standard mathematical techniques. P for trend was calculated using Pearson's chi square test and Fisher's exact test, to establish if there were statistically significant differences in prevalence rates across the 4 countries. Risk factors for skin disease and musculoskeletal disorders were derived using logistic regression, with odds ratios adjusted for age, sex and total duration of employment within the nursing home. Items were chosen using the stepwise selection method and P values above 0.05 were considered statistically insignificant throughout.

Results

A total of 465 nursing home employees were included in this study, with 140 (30.1%) coming from Australia, 109 (23.4%) from Japan, 91 (19.6%) from Korea and 125 (26.9%) from Taiwan. Although the consistent majority of staff were female, the prevalence of smoking varied significantly between the groups (range 5.6% to 36.7%, P for trend = 0.0116). The Japanese staff were 2.2 times more likely to be smokers than workers within the other countries (rate ratio 2.2, 95%CI 1.3 - 4.0). On the other hand, the Japanese employees were of significantly younger age (mean

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34.3 years), when compared to the group as a whole (Table 1). Health care workers constituted the largest job description, ranging from 60.7% to 78.9% in each group. This was followed by service workers (0.0% to 24.3%), with the Australians 4.8 times more likely to have service workers within their nursing homes when compared to other groups (95%CI 2.6 - 9.1, P < 0.0001). The Australian cohort were significantly less likely to undertake patient handling than the staff from other countries (P < 0.0001), while the Taiwanese were less likely to be washing patients (P = 0.0072). The total duration of employment varied significantly between the 4 groups (P = 0.0002), ranging from 26.8 to 73.0 months. Weekly working hours ranged from 31.5 (Australia) to 42.1 (Korea), another statistically significant difference (P for trend = 0.0141). The prevalence of skin disease varied, with the Australians suffering an overall higher prevalence of dermatologic abnormality (Figure 1). Solar-related skin damage such as actinic keratosis and basal cell carcinoma was only detected among this group (12.0%).[1] Conversely, *Sarcoptes scabiei* infestation was seen within Korea and Taiwan, but not Australia and Japan. Other skin diseases diagnosed among the Australian group included fungal infections (17.3%) and dermatoses (13.4%),[1] which were not as common among the Japanese, affecting only 1.3% and 12.7% respectively.[2] Fungal attack and dermatitis affected Korean staff equally (4.8% each), with scabies somewhat less common (2.4%).[3] Fungal infection was the most common affliction within Taiwan, affecting 21.4%, followed by scabies (10.7%) and dermatoses (8.0%).[4] Lower back pain was the most common musculoskeletal disorder detected during this study, with a prevalence ranging from 12.0% in Taiwan,[8] 19.8% in Korea,[7] 23.6% in Australia[5] and 57.8% in Japan (Figure 2).[6] Shoulder, head and upper back pain were reported by the Japanese staff at rates of 34.9%, 26.6% and 22.0% respectively.[6] Shoulder pain was also common within the other groups, affecting 35.2% of the subjects in Korea,[7] 20.7% in Australia[5] and 8.0% in Taiwan.[8] Skin disease risk factors for the entire group (N=465) included a previous history of skin disease (OR 6.1), working in Australia (OR 3.6), having a history of allergy or atopy (OR 3.2), working in a service occupation (OR 1.9), suffering any MSD (OR 1.8), working part-time (OR 1.8) and having worked longer than 36 months in their current job (OR 1.6). Refer to Table 2. MSD risk factors were also calculated for the group as a whole, and revealed the following odds ratios: moving patients (3.5), washing patients (3.2), working in Japan (2.8), working as an assistant nurse (2.8), undertaking daily wet-work (2.4), working as a health care worker (2.3) and drinking alcohol on a daily basis (1.8).

Table 1. Demographic and workplace items of nursing home staff

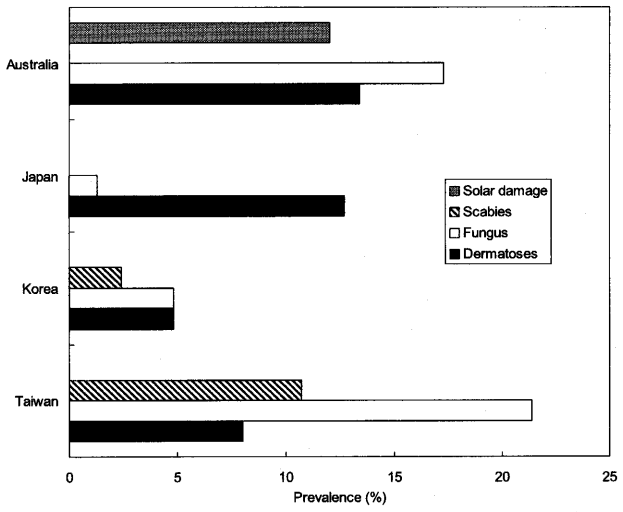
	Australia	Japan	Korea	Taiwan	
Demographics [a]					**Trend** [b]
Female	119 (85.0)	85 (78.0)	73 (80.2)	109 (87.2)	0.1294
Smoker	28 (20.0)	40 (36.7)	14 (15.4)	7 (5.6)	0.0116
Age (yrs)	44.8 ± 10.4	34.3 ± 12.5	45.9 ± 10.5	40.6 ± 12.4	<0.0001
BMI (kg/m^2)	26.7 ± 6.3	21.8 ± 4.2	23.0 ± 2.6	23.7 ± 3.6	0.1117
Job description [a]					
Health care	85 (60.7)	86 (78.9)	56 (61.5)	97 (77.6)	0.7097
Service work	34 (24.3)	8 (7.3)	13 (14.3)	0 (0.0)	0.0296
Miscellaneous	11 (7.9)	5 (4.6)	11 (12.1)	16 (12.8)	0.8207
Administration	10 (7.1)	10 (9.2)	11 (12.1)	12 (9.6)	0.6541
Workplace tasks [a]					
Move patients	53 (37.9)	71 (65.1)	53 (58.2)	70 (56.0)	0.0101
Wash patients	50 (35.7)	63 (57.8)	40 (44.0)	36 (28.8)	<0.0001
Hours / week	31.5 ± 12.9	40.6 ± 4.1	42.1 ± 13.4	36.6 ± 15.8	0.0141
Duration (mnth) [c]	73.0 ± 75.1	53.6 ± 78.6	52.4 ± 44.5	26.8 ± 31.6	0.0002
Sample size	140 (30.1)	109 (23.4)	91 (19.6)	125 (26.9)	**465 (100)**

[a] figures are expressed as the total number of cases per group (with the percentage of each group in parenthesis), [b]P for trend calculated using Pearson's chi square test and Fisher' s exact test depending on cell count size, [c]total duration of employment in the nursing home

Discussion

The Australian group suffered a generally higher prevalence of skin disease than in the other 4 countries investigated, most likely due to their significantly higher rate of sun-induced skin disorders. Solar-related damage usually affects fair-skinned Caucasians more than Asians, due to the latter groups' higher cutaneous levels of protective melanin. The high prevalence of fungal disease seen within Taiwan most probably arose from its comparatively higher temperature and relative humidity. Although MSD was found

Figure 1. Prevalence of skin diseases among nursing home staff



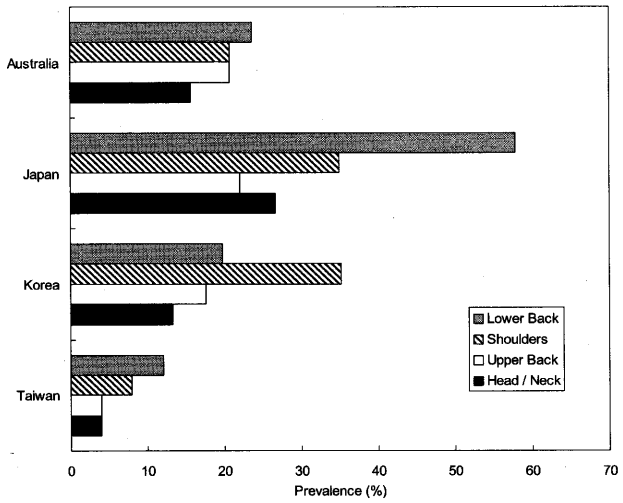
(individual skin disease prevalence rates are adapted from Smith et al[1-4])

Table 2. Risk factors associated with skin disease and musculoskeletal disorders

	n	(%) [a]	OR [b]	95% CI	P value [c]
SD risk factors					
Previous skin disease	118	(25.4)	6.1	(3.8 – 9.8)	<0.0001
Australian staff	140	(30.1)	3.6	(2.3 – 5.8)	<0.0001
History of allergy	58	(12.5)	3.2	(1.8 – 5.8)	<0.0001
Service worker	55	(11.8)	1.9	(1.0 – 3.6)	0.0342
Any self-reported MSD	235	(50.5)	1.8	(1.6 – 2.8)	0.0087
Part-time worker	209	(44.9)	1.8	(1.1 – 2.7)	0.0106
Working >36 months	200	(43.0)	1.6	(1.1 – 2.5)	0.0270
MSD risk factors					
Moving patients	247	(46.9)	3.5	(2.4 – 5.3)	<0.0001
Washing patients	189	(40.6)	3.2	(2.2 – 4.9)	<0.0001
Japanese staff	109	(23.4)	2.8	(1.7 – 4.6)	<0.0001
Assistant nurse	216	(46.5)	2.8	(1.9 – 4.2)	<0.0001
Daily wet-work	379	(81.5)	2.4	(1.4 – 4.5)	0.0031
Health care worker	324	(69.7)	2.3	(1.5 – 3.7)	0.0003
Alcohol drinker	192	(41.3)	1.8	(1.2 – 2.7)	0.0057

[a]percentage of all staff is shown in parenthesis, [b]odds ratios (OR) calculated using the presence of any diagnosed skin disease as the dependent variable and demographic or workplace items as the independent variables, [c]adjusted for age, sex and total duration of employment within the nursing home

Figure 2. Prevalence of musculoskeletal disorders among nursing home staff



(individual musculoskeletal disorder prevalence rates are adapted from Smith et al[5-8])

to be most prevalent among the Japanese group at almost all body sites during our investigation, the reasons for this are not clear. It may have related to a generally higher MSD rate, or a higher degree of self-reporting on their questionnaires. Important skin disease risk factors included previous skin disease and a history of allergy, both of which are consistent with previous research. Interestingly, MSD was found to be a co-factor for current skin disease. Individual MSD risk factors included moving patients, washing patients, working as an assistant nurse and daily alcohol consumption. Overall, our study suggests that nursing home work incurs a reasonable degree of risk and that skin disease and MSD are important occupational issues within these facilities.

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