

## A COMPARISON OF SKIN DISEASE AMONG NURSING-HOME HEALTH CARE WORKERS IN JAPAN AND KOREA

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### ABSTRACT:

We conducted a dermatological investigation of health care workers (HCW) from two large nursing homes in Japan and Korea. As a group, the Japanese experienced significantly more skin diseases of any type when compared to the Koreans (27.6% vs. 11.8%,  $P < 0.05$ ). The former were also at 6.4 times higher skin disease risk (Odds Ratio 6.4, 95%CI 1.3 - 37.0,  $P < 0.05$ ). Contact dermatitis was the most common dermatologic condition among the Japanese, affecting 17.2%, followed by atopic dermatitis (8.6%) and xerosis (5.2%). Important skin diseases for the Korean group included atopic dermatitis (5.9%), contact dermatitis (3.9%) and scabies (3.9%). In Japan, hands were the most important body site (17.2%). The opposite was true for the Koreans, who suffered no hand involvement at all ( $P < 0.01$ ). Overall, this study has shown that skin disease appears to be an important concern for nursing home HCW in Japan and Korea. The need for more extensive dermatological research is indicated.

### INTRODUCTION

Skin disease represents one of the most common workplace disorders within developed countries [1]. Health care workers (HCW) are a particularly vulnerable occupational group due to their regular exposure to wide variety of contact irritants (including water). Health care related wet-work activities such as cleaning patients and repeated hand washing are an important source of skin trauma, and tasks that may eventually lead to occupational skin disease [1,2]. As nursing home patients are heavily dependent on staff for many activities of daily living, providing this assistance on a daily basis increases the likelihood of irritant exposure. Recent advances in public health have dramatically increased the proportion of elderly citizens worldwide [3]. In Asia, nursing homes are becoming an increasingly attractive option as traditional notions of extended family care decline [4]. Over the past 30 years, nursing home numbers have increased significantly throughout the region to meet this demand [5]. Despite the widespread proliferation of palliative care facilities, occupational skin disease studies within nursing homes are still comparatively rare [6]. To address this shortfall and evaluate the need for larger cohort studies, we considered it necessary to conduct some preliminary epidemiologic research. As Japanese and Korean HCW share many common physiological characteristics, it was also considered worthwhile to investigate whether there were any significant differences in skin disease rates between the two groups.

## SUBJECTS AND METHODS

One large nursing home in Yamanashi, Japan and an equivalent, large facility in Seoul, Korea were initially selected and invited to join our study. All HCW completed a preliminary survey with questions regarding age, sex, working hours, duration of employment and whether they undertook daily wet-work [6]. Staff were also asked if they had a history of skin disease, and if so, what condition. A cohort of 58 HCW from Japan and 51 HCW from Korea were eventually recruited. After obtaining their informed consent, all available HCW in both groups had their skin examined by a team of specialist physicians to detect the presence of dermatological abnormality. Skin disease was divided into 5 categories: contact dermatitis, atopic dermatitis, fungal disease, xerosis and scabies. Diagnosis criteria were taken from standard dermatological texts and were identical in both countries. Any clinically observed condition was marked on an anonymous anatomical chart and then entered into a common spreadsheet program. Data was processed using logistic regression, with P values above 0.05 regarded as statistically insignificant throughout.

## RESULTS AND DISCUSSION

Most participants in this study were female, although the proportion of female Koreans (96.1%) was significantly higher ( $P < 0.01$ ) than for the Japanese (77.6%). There was also a significant difference ( $P < 0.0001$ ) in the average age of Koreans (46.5 years) when compared to the former group (30.6 years). Pre-existing allergy was significantly more common ( $P < 0.0001$ ) amongst the Japanese HCW (Table 1). This result was not surprising, as the prevalence of atopic dermatitis is known to be particularly high in Japan at present [7]. As a group, the Japanese HCW experienced significantly more ( $P < 0.05$ ) skin diseases of any type when compared to the Koreans (27.6% vs. 11.8%). When adjusted for age, sex and total duration of employment, the former were at 6.4 times higher skin disease risk than the latter group (Odds Ratio 6.4, 95%CI 1.3 - 37.0,  $P < 0.05$ ). This situation was most likely due to a higher atopy prevalence among the Japanese HCW. Systemic allergy is a well-documented risk factor for occupational skin disease [1,8]. Our results tend to support this hypothesis, as we were able to avoid confounding factors by including them in the regression model and thus adjust for their affect. Even when adjusted, the odds ratio remained statistically significant.

Table 1. Demographic and workplace items

<b>DEMOGRAPHICS</b>	<b>JAPAN</b>	<b>KOREA</b>
	<b>n (%)<sup>a</sup></b>	<b>n (%)<sup>a</sup></b>
Female **	45 (77.6)	49 (96.1)
SD history	28 (48.3)	16 (31.4)
Allergy ***	20 (34.5)	2 (3.9)
Wet-work	48 (82.8)	36 (70.6)
<b>JOB DESCRIPTION</b>		
Nurse aide *	29 (50.0)	37 (72.5)
Nurse *	25 (43.1)	11 (21.6)
Therapist	4 (6.9)	3 (5.9)
<b>MEAN ± SD</b>		
Age (yrs) ***	30.6 ? 10.1	46.5 ? 7.2
Duration (yrs) <sup>b</sup>	5.0 ? 8.4	4.7 ? 3.7
<b>SAMPLE SIZE</b>	N=58	N=51

<sup>a</sup> number of cases and percentage of cases per group; <sup>b</sup> duration of employment in current job

\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.0001

The complicity of work environment on skin disease was however, less clear-cut, and we were unable to find any relationships between skin disease and workplace factors. Such results were surprising, as HCW usually represent an occupational group at increased risk of skin disease due to their regular contact with disinfectants, detergents and water [1,2,9]. The physiological relationship between workplace exposure and skin disease is multifactorial and complex, although the risk of developing hand dermatitis is known to be increased among atopic individuals when conducting either wet or dry work [1]. Atopic skin is also believed to be more easily irritated than that of non-atopics, while workers suffering allergic diseases may eventually develop chronic eczema [9]. Although gloves represent an effective method to protect HCW against skin disease and pathogen infection, latex allergy was not detected among the participants of our study and similarly, glove usage was not related to skin disease. This lack of statistical association between occupational factors (such as wet-work) and skin disease among our HCW is similar to a previous report [6].

The prevalence of current atopic dermatitis was similar between the two groups, suggesting that past, not present allergy is a more important predictive variable for occupational skin disease. Contact dermatitis was the most common dermatologic condition among the Japanese, affecting 17.2%, followed by atopic dermatitis (8.6%) and xerosis (5.2%). Contact dermatitis was significantly less common (P < 0.05) among the Korean HCW, affecting only 3.9% of them (Table 2). Once again, a higher proportion of pre-existing allergy most likely contributed to the higher Japanese rate. Other important skin diseases for the Korean group included atopic dermatitis (5.9%) and scabies (3.9%). In Japan, hands appeared to be the most important body site (17.2%), followed by the arms (8.6%) and legs (6.9%). The opposite was true for the Koreans, who suffered no hand involvement at all (P < 0.01). Our higher proportion of Japanese staff with hand dermatitis most likely related to their higher prevalence of systemic allergy. Hand dermatitis is a common occupational problem in workers with pre-existing allergy [8]. The abdomen (9.8%), arms and legs (both 3.9%) were important body sites for skin disease among nursing home workers in Seoul. These anatomical differences probably reflected the presence of *Sarcoptes scabiei* among the Korean group and not the Japanese. All HCW with scabies demonstrated widespread lesions on their abdomen, upper legs and arms; symptoms that were absent in non-scabies cases. Alternatively, dermatoses constituted the majority of skin diseases seen in Japan.

Table 2. HCW skin disease prevalence

CATEGORY	JAPAN	KOREA
	n (%) <sup>a</sup>	n (%) <sup>a</sup>
Contact dermatitis *	10 (17.2)	2 (3.9)
Atopic dermatitis	5 (8.6)	3 (5.9)
Fungal disease <sup>b</sup>	1 (1.7)	1 (2.0)
Mild xerosis	3 (5.2)	0 (0.0)
<i>Sarcoptes scabiei</i>	0 (0.0)	2 (3.9)
<b>LOCATION</b>		
Head and neck	3 (5.2)	0 (0.0)
Arms (L/R)	5 (8.6)	2 (3.9)
Hands (L/R) **	10 (17.2)	0 (0.0)
Abdomen	1 (1.7)	5 (9.8)
Legs and feet (L/R)	4 (6.9)	2 (3.9)
<b>ANY SKIN DISEASE *</b>	<b>16 (27.6)</b>	<b>6 (11.8)</b>

<sup>a</sup> number of cases and percentage of cases per group; <sup>b</sup> incorporating tinea pedis and paronychia

\*P < 0.05, \*\*P < 0.01

## CONCLUSION

Overall, this study has shown that skin disease appears to be an important concern for nursing home HCW in Japan and Korea. Our higher detection rate among the former group confirmed the importance of systemic allergy as a dermatologic risk factor. The need for more extensive skin disease studies in these regions is therefore indicated.

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