Introduction

Hand dermatitis (HD) and musculoskeletal disorders (MSD) are two of the most frequently reported occupational issues among hospital nurses. Workplace exposure is a common risk factor for both conditions as it may aggravate pre-existing skin allergies and musculoskeletal ailments. Various international studies have also shown HD and MSD to be a significant concern for nursing students. Although research undertaken in Japan, Korea, and Thailand has revealed a certain degree of morbidity among their Asian counterparts, previous authors have focused on overall health status rather than specific disorders. To our knowledge, thus far there have been no studies targeting HD and MSD among nursing students in Japan. Such research would be particularly valuable in ascertaining the background prevalence of these conditions among young Japanese women before they enter the health care workforce. Self-reported surveys represent one of the most commonly used and cost effective methods for epidemiological research of HD and MSD prevalence. As their validity and relative accuracy has been previously established by other studies, they were also considered appropriate for use within a Japanese investigation.

Design and Method

This study involved a point-prevalence and retrospective epidemiological analysis of data gathered by means of a self-reported questiona...
naire. The survey was a simple, 2-page anonymous form including demographic questions such as age, sex, smoking status and the presence of systemic allergies. Questions regarding MSD and HD symptoms were also included, with both adapted from previous research. Students were asked if they currently suffered these symptoms, whether any case had occurred in the previous 12-month period and if any persisted longer than 3 weeks. A current HD case was registered if there were 1 or more symptoms currently present. A previous HD case was defined when 1 or more symptoms had occurred in the past 12-month period and had persisted for more than 3 weeks or had recurred more than once during that time period. MSD cases were considered positive if any MSD site was marked on the questionnaire. For this investigation an entire cohort of 80 third-year nursing students were recruited from The Chiba College of Health Science in Chiba Prefecture, Japan. Surveys were distributed to all students during their initial meeting at the beginning of the school year in April 2002 and collected later the same week. Participation was voluntary and all students were given the option of refusal without penalty. Data was entered into a common spreadsheet program before being analysed by statistical software to ascertain basic demographics and prevalence rates. Significant differences between point and 12-month period prevalences were investigated using the chi square test. Risk factors were also calculated using logistic regression and expressed as odds ratios with 95% confidence intervals. Odds ratios were adjusted for age, allergy and previous employment within a hospital as a hospital nurse or nursing assistant. Probability values (P) above 0.05 were regarded as statistically insignificant throughout.

RESULTS

All selected nursing students voluntarily completed and returned their questionnaire, although a solitary male was excluded to reduce gender confounding; leaving 79 participants with a response rate of 98.8%. Most of the remaining group were young, non-smokers (92.4%); with an average age of 20.6 years (SD 1.8). Almost three-quarters (69.6%) consumed some alcohol occasionally, while slightly more than a quarter (29.1%) suffered from atopy or systemic allergies. Around one-quarter (26.6%) were currently or had previously been employed in a hospital as a nursing aid or similar job description (Table 1). The prevalence of current health complaints ranged from 7.6% to 30.4%, with previous symptoms ranging from 7.6% to 34.2%. Slightly more than one-third of the students (34.2%) had suffered HD in the previous 12-month period, with the current prevalence marginally lower at 30.4%. Low Back Pain (LBP) was the most common MSD, with 16.5% currently and 17.7% previously experiencing such symptoms. Shoulder and neck pain was reported by 10.1% and 7.6% respectively (Table 2). The chi square test indicated that there were no statistically significant differences between the point and period prevalences for any symptoms. Previous employment

<table>
<thead>
<tr>
<th>Demographic Items</th>
<th>n</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>55</td>
<td>(69.6)</td>
</tr>
<tr>
<td>Tobacco</td>
<td>6</td>
<td>(7.6)</td>
</tr>
<tr>
<td>Allergy</td>
<td>23</td>
<td>(29.1)</td>
</tr>
<tr>
<td>Work&lt;sup&gt;b)&lt;/sup&gt;</td>
<td>21</td>
<td>(26.6)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>20.6 ± 1.8</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> percentage of all students (N = 79).

<sup>b</sup> previous employment within a hospital.
as a hospital nurse or nursing assistant was found to be an important risk factor for hand dermatitis (OR 4.0, 95% CI 1.4–12.1, P < 0.05). Conversely, the presence of allergy decreased the risk of suffering any MSD 5-fold (OR 0.2, 95% CI 0.0–0.7, P < 0.05). Refer to Table 3.

**DISCUSSION**

The point-prevalence and 12-month period-prevalence of hand dermatitis during this research was 30.4% and 34.2% respectively, which is lower than a previous study of HD among Danish nursing students where prevalence rates of between 32% and 56% were reported\(^2\). The figures from our study are also lower than those documented among working Dutch nurses (47.7%)\(^12\), but higher than the cumulative HD incidence among Dutch nursing students (21.8%)\(^3\). Previous Asian research has not specifically targeted HD, although the prevalence of sensitive or tender skin among Thai nursing students has been reported at 51.8%\(^9\). General skin problems have been documented among 48% of Japanese nursing students\(^8\), while itchy skin and changes in skin colour have been known to affect Korean nursing students at prevalence rates of 22.6% and 7.8% respectively\(^10\). Conversely, general skin complaints among Japanese university students have been previously documented at a reasonably low rate of 13%\(^9\). A similarly low rate of skin problems has also been reported among German nursing students (14.3%)\(^14\). Previous employment as a hospital nurse or nursing assistant was found to be an important risk factor for HD (OR 4.0), which is supported by other studies where student nurses suffered less HD than working nurses\(^3,12\). The presence of dry skin and atopy were not identified as HD risk factors however, despite previous reports indicating an association\(^3\).

The point-prevalence of low back pain, shoulder pain and neck pain during this investigation was 16.5%, 10.1% and 7.6%, with the 12-month period-prevalence being 17.7%, 10.1% and 7.6% respectively. This LBP prevalence was considerably lower than previous studies of Australian (31% to 67%\(^5\)), British (37%\(^6\)) and Korean (35.8%)\(^10\) nursing students, and also

![](https://example.com/table3.png)

**Table 3. Risk factors for hand dermatitis and musculoskeletal disorders (MSD)**

<table>
<thead>
<tr>
<th>12-month period Risk factor Category</th>
<th>(%)</th>
<th>OR</th>
<th>(95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand dermatitis Work (^a)</td>
<td>No (96.2)</td>
<td>1.0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Any MSD</td>
<td>Yes (3.8)</td>
<td>4.0</td>
<td>(1.4–12.1)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Allergy</td>
<td>No (84.8)</td>
<td>1.0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Yes (15.2)</td>
<td>0.2</td>
<td>(0.0–0.7)</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

\(^a\) previous employment within a hospital as a hospital nurse or nursing assistant, \(^b\) percentage of all students in each category (N = 79), \(^c\) risk factors calculated using logistic regression and expressed as odds ratios with 95% confidence intervals (adjusted for age, systemic allergy and previous hospital work).
lower than a study of Finnish nursing school applicants (31% to 42%)\textsuperscript{4}). Although no specific LBP research has been conducted among Japanese nursing students, Fukahara et al\textsuperscript{8} documented MSD affecting 21.6% of their student cohort. Similarly, there are no studies of shoulder or neck pain among student nurses with which to compare the current data, even though these disorders seem to be common amongst employed nurses\textsuperscript{11}. Only one risk factor was identified (a history systemic allergy) and interestingly it decreased the risk of MSD 5-fold (OR 0.2). Why atopic disease might protect nursing students from MSD is difficult to say, although it may have related to a self-selection effect where atopic individuals avoid high-risk activities during their leisure time. Alternatively, it may simply have arisen as a statistical artefact due to the small sample size (N = 79). No other predictive variables were detected for HD or MSD during this study even though the presence of certain health risk behaviours such as tobacco and alcohol consumption was similar to a previous American investigation\textsuperscript{15}.

CONCLUSION

Overall, it appears that the Japanese nursing students within this study experienced HD and MSD at reasonably low levels, particularly when compared to other international reports. Certain demographic items were statistically associated with these complaints, although the exact reason could not be satisfactorily ascertained. Direct comparisons with other investigations were also difficult, due to slight differences in research methodology and study groups. Further research and larger study cohorts with control groups are required to clarify these issues.

Acknowledgements

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References


