Burden of atopic dermatitis in Japanese adults: an analysis using the National Health and Wellness Survey

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Kazuhiko Arima

COI relationship to be disclosed pertaining to the presentation topic:
(1) Corporate employee: Sanofi

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Background

- Atopic dermatitis (AD) is a chronic, inflammatory skin disease characterized by xerosis, intense pruritus, and eczematous lesions\(^1\)
- AD is the second most frequent skin disease observed in dermatology clinics in Japan\(^2\)
  - The point prevalence (September 2004) of AD in Japanese adults was estimated at 6.9\(^3\)
  - AD presents in a mild form in 76.7\%, moderate form in 18.5\%, and severe/very severe form in 4.8\% of Japanese adult patients\(^3\)
- Studies in North America and Europe highlight substantial patient burden of AD, encompassing
  - Sleep disturbance, functional impairment, anxiety and depression, impaired health-related quality of life (HRQoL) and reduced work productivity\(^4\text{–}^7\)

There are limited data on the burden of illness among adult patients with AD in Japan

Objectives

- To evaluate the burden of disease in Japanese adults with AD in a real-world setting, encompassing:
  - Comorbidities
  - Mood
  - Sleep disorders
  - HRQoL
  - Work productivity
  - Activity
METHODS
Study design and patient population

- Data were from the 2013 National Health and Wellness Survey (NHWS), a cross-sectional, general population survey\(^1\)
  - NHWS is an internet-based survey comprising a self-administered questionnaire
  - approved by the Essex Institutional Review Board (Lebanon, NJ, USA)

- In total, 607,712 individuals were asked to complete the 2013 Japan NHWS, of whom 41,893 responded (6.9%)
  - Of the responders, 30,000 (71.6%) met the inclusion criteria: Japanese adults, aged $\geq 18$ years, ability to read and write Japanese, completed the survey, and gave informed consent for their anonymized data to be used for research purposes

### Analysis cohorts

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AD</strong> (n=634)</td>
<td>Adult respondents who indicated that they had experienced AD (dermatitis/eczema/AD) in the last 12 months and that had been diagnosed by a physician</td>
</tr>
<tr>
<td><strong>Non-AD</strong> (n=1268)</td>
<td>Adult respondents who did not report experiencing AD, dermatitis or eczema in the past 12 months with propensity-score matched</td>
</tr>
</tbody>
</table>

- **Propensity-score matching**: patients with a self-reported diagnosis of AD were propensity-score matched to non-AD controls (1:2 ratio) based on demographic characteristics
  - Age, sex, marital status, education, income, insurance status, body mass index, smoking status, and the Charlson Comorbidity Index (CCI)

The CCI is a weighted index predicting 1-year mortality of patients based on presence of 22 comorbid conditions

Collected data and statistical analysis

- **Demographics and patient characteristics**
- **Self-reported comorbidities**
  - Based on previous physician diagnoses of arthritis, atopic-related comorbidities (asthma, hay fever/nasal allergies), diabetes, hypertension, high cholesterol, osteoporosis/osteopenia
- **Self-reported mental health conditions**
  - Previous physician diagnoses of anxiety, depression, sleep disorders
- **HRQoL during the past 4 weeks**
  - Short Form (SF)-36v2 Mental Component Summary (MCS) and Physical Component Summary (PCS) scores
- **Productivity loss in the past 7 days**
  - Work productivity in employed patients and activity impairment (WPAI)

WPAI evaluates productivity and activity impairment for four domains over last 7 days:
- **Absenteeism** (% work time missed due to health problems);
- **Presenteeism** (% work time impaired due to health problems);
- **Overall work impairment** (% total work impairment due to health problems [absenteeism + presenteeism]);
- **Activity impairment** (% activity impairment due to health problems)

- **Statistical analysis**
  - Chi-squared test (categorical variables) or the Student’s t-test (continuous variables) were used to compare differences in outcomes between AD patients and matched non-AD controls

RESULTS
## Demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>AD† (n = 634)</th>
<th>Non-AD (n = 1268)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years, mean (SD)</td>
<td>38.7 (13.1)</td>
<td>38.4 (12.9)</td>
<td>0.695</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>332 (52.4)</td>
<td>622 (49.1)</td>
<td>0.173</td>
</tr>
<tr>
<td>BMI, kg/m² mean (SD)</td>
<td>21.8 (3.7)</td>
<td>21.9 (3.8)</td>
<td>0.805</td>
</tr>
<tr>
<td>Current smoker, n (%)</td>
<td>135 (21.3)</td>
<td>292 (23.0)</td>
<td>0.381</td>
</tr>
<tr>
<td>Married/living with partner, n (%)</td>
<td>277 (43.7)</td>
<td>556 (43.8)</td>
<td>0.948</td>
</tr>
<tr>
<td>College educated, n (%)</td>
<td>338 (53.3)</td>
<td>702 (55.4)</td>
<td>0.397</td>
</tr>
<tr>
<td>Household income ≥¥8M/year, n (%)</td>
<td>140 (22.1)</td>
<td>260 (20.5)</td>
<td>0.929</td>
</tr>
<tr>
<td>Employed full time, n (%)</td>
<td>279 (44.0)</td>
<td>585 (46.1)</td>
<td>0.379</td>
</tr>
<tr>
<td>CCI, mean (SD)</td>
<td>0.18 (0.59)</td>
<td>0.16 (0.60)</td>
<td>0.499</td>
</tr>
</tbody>
</table>

†Of the 638 AD patients who met the inclusion criteria, four were not able to be matched to non-AD controls
BMI, body mass index
## Prevalence of self-reported comorbidities

<table>
<thead>
<tr>
<th>Prevalence, n (%)</th>
<th>AD (n = 634)</th>
<th>Non-AD (n = 1268)</th>
<th>(P)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Atopic comorbidities</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Asthma</td>
<td>80 (12.6)</td>
<td>31 (2.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Nasal allergies/ hay fever</td>
<td>234 (36.9)</td>
<td>188 (14.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Non-atopic comorbidities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arthritis</td>
<td>24 (3.8)</td>
<td>11 (0.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diabetes</td>
<td>17 (2.7)</td>
<td>34 (2.7)</td>
<td>1.000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>47 (7.4)</td>
<td>72 (5.7)</td>
<td>0.141</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>57 (9.0)</td>
<td>54 (4.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Osteoporosis/ osteopenia</td>
<td>9 (1.4)</td>
<td>6 (0.5)</td>
<td>0.028</td>
</tr>
</tbody>
</table>
The prevalence of self-reported depression, anxiety, and sleep disorders were all significantly greater in AD patients compared with non-AD controls.
Health-related quality of life
(SF-36v2 mental and physical component summary scores)

Values above the bars are means; lower scores denote worse health-related quality of life. Mental component scores (MCS) and physical component scores (PCS) are normed to a mean of 50 (standard deviation of 10) based on the US population.

- AD patients reported significantly reduced HRQoL vs non-AD controls

AD patients (n = 634)  Non-AD controls (n = 1268)
Work productivity and activity

Presenteeism, work productivity and activity were significantly impaired in AD patients vs non-AD controls.
Conclusions

• AD is associated with a substantial burden in Japanese adults, consistent with that observed in European and US studies$^{1–4}$
  – Relative to matched controls, AD has a significant impact on health status, mood, sleep, work productivity and activities

Limitations

• NHWS data were self-reported
  – Subject to recall error and subjective bias
• NHWS does not include data on key AD-specific outcome measures, such as itch and pain