Quality of Life of Patients With Alzheimer’s Disease: A Comparison With the General Population

Background

- Alzheimer’s disease (AD) has a detrimental effect on patients’ cognition and function, thus adversely affecting patients’ quality of life (QoL).
- However, how this impact compares with the general population is less well understood.

Objectives

- This analysis aimed to demonstrate the humanistic burden of prodromal or mild AD on patients by comparing them with a sample of general population controls.

Methods

- Data were taken from the 2015/16 Dementia Disease Specific Programme (DSP) and the 2014 Health Survey for England (HSE).
- The former is a cross-sectional survey of physicians and their patients with cognitive impairment (CI) in 5 major EU countries and the US, while the latter is a general population sample of adults and children, representative of the whole English population at both national and regional levels. Both sources included EuroQoL-5D (EQ-5D, EQ-VAS).
- Prognostic score matching (PSM) was used to compare health utility of the general population sample with that of prodromal DSP patients and mild DSP patients separately. Subjects were matched on their demographics and clinical characteristics.
- DSP patients were classified as prodromal (24-30) or mild (18-23) based on their current mini-mental state examination score.
- The latter group had a diagnostic label of AD, early onset AD, or mixed dementia, while the former group could not have one of these labels but had a mild CI (MCI), amnestic MCI, predementia AD, or prodromal AD label.
- Only patients with a milder condition (as perceived by the physician) were invited to complete a patient self-completion form containing EQ-5D (3L) with visual analog scale (EQ-VAS).
- As a limited number of DSP patients completed the patient form (due to the nature of the condition), accompanying caregivers were asked to provide proxy values for the patients’ EQ-5D (3L) and EQ-VAS.
- 1:1 nearest neighbor propensity score matching (PSM) was used to assess differences in EQ-5D (3L) between both the prodromal and mild AD sample of the DSP and the general public HSE sample.
- Calculation of the propensity score took into account subjects’ demographics (age, sex, body mass index (BMI), employment status) and clinical characteristics (comorbid conditions suffered).
- Higher-order terms and interaction terms were considered in the model.
- Covariate balance was assessed using standardized mean differences (SMDs), whereby an absolute SMD <10% is indicative of adequate balance.
- Statistical significance was assessed via calculation of Abadie-Imbens standard error.
- Missing data were expected in the DSP due to imperfect physician knowledge, patients’ unwillingness to answer certain questions, etc.

Results

- A total of 10,080 subjects resided in the 2014 HSE, while 1,130 and 1,468 prodromal and mild AD patients, respectively, were collected in the DSP.
- Demographics of all subgroups are detailed in Table 1.
- After PSM, DSP patients with mild AD had significantly worse EQ-5D (3L) scores (0.61 vs 0.84; P<0.001) compared with the general population sample (Figure 2).
- This difference exceeded the minimally important difference (MID) for the EQ-5D (3L)¹ of 0.074.
- The prodromal DSP sample also had significantly worse EQ-5D (3L) scores (0.80 vs 0.86; P<0.001) compared with the general population, but this difference did not exceed the MID (Figure 1).
- In both models, all covariates were adequately balanced between groups (Figure 3).

Table 1. Patient and subject demographics

<table>
<thead>
<tr>
<th></th>
<th>Prodromal (DSP)</th>
<th>Mild (DSP)</th>
<th>HSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=1,130)</td>
<td>(n=1,468)</td>
<td>(n=10,080)</td>
</tr>
<tr>
<td>Patient Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25th, 75th percentiles</td>
<td>66.0, 78.0</td>
<td>72.0, 83.0</td>
<td>21.0, 61.0</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>561 (49.7)</td>
<td>786 (53.6)</td>
<td>5,456 (54.1)</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1,062</td>
<td>1,379</td>
<td>8,334</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>26.3</td>
<td>26.1</td>
<td>28.0</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired, n (%)</td>
<td>803 (72.2)</td>
<td>1,235 (85.1)</td>
<td>2,145 (26.8)</td>
</tr>
</tbody>
</table>

¹Patients reported to be 90+ were assumed to be 90 years of age.

Figure 1. Differences in health utility between prodromal DSP patients and general population controls

Figure 2. Differences in health utility between mild AD DSP patients and general population controls

Figure 3. Covariate balance

Conclusions

- Prodromal and mild AD patients in the DSP sample both suffered from worse QoL compared with a general population sample with similar demographic and clinical characteristics.
- This suggests that there is still an unmet need in the current disease management of AD.

References