Predictors of Unemployment in Patients with NMO: Characterization of a Global Cohort


Background & Objectives

- The symptoms and effects of NMO can greatly restrict a patient’s employment opportunities, and directly impact their income source. Currently, there are few data for employment in NMO globally, particularly in middle- and low-income countries.
- This prospective global cohort aims to characterize potential sociodemographic and clinical predictors of unemployment in a global cohort of patients with NMO.

Methods

- Physicians at neurology centers in Egypt, Malaysia, Iran, Venezuela, Kuwait, Colombia, Mexico and Guinea administered a REDCap-based survey to patients who
  1) have been diagnosed with NMO by a clinician,
  2) are 18 to 70 years old, and
  3) are AQP4 antibody positive, MOG antibody positive or double seronegative.
- The survey is available in 5 languages, and includes questions about:
  - individual and household demographic information
  - NMO diagnosis
  - current symptoms
  - employment history
- Enrollments for this interim analysis occurred between July 18th, 2022, and February 1st, 2023.
- Analyses of de-identified data were performed using Python, Minitab, and MATLAB.
- A logistic regression model was developed to identify potential associations with unemployment.

Results

1. Demographic Information
   - 221 patients enrolled, 176 female, and 45 male.
   - 49% identified as Hispanic or Latino, 41% as Asian, 32% as Middle Eastern, 29% as Caucasian, and 2% as Black or African American.

2. NMO History and Symptoms
   - On average, patients were diagnosed with NMO at 34 years old, and had had 6.7 attacks since.
   - 56.6% of patients were AQP4-positive, 3.2% were MOG-positive, and 40.2% were double seronegative.
   - 88% of patients reported being affected by fatigue or pain, and 61% experienced both.
   - Fatigue was cited as the cause of reduced or interrupted work for 53%, while 52% of patients said pain was an impediment to their work.

3. Limitations
   - Controls for patients without NMO must be incorporated to future models.
   - Variables are often self-reported
   - Data collection is ongoing in additional countries; the full cohort is not yet represented by these results.

4. Logistic Regression Analysis

   **Table 1: Logistic regression analysis of variables associated with employment pre- and post-NMO diagnosis**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictors</th>
<th>Odds ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed pre-diagnosis</td>
<td>Sex</td>
<td>0.664</td>
<td>0.730</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.355</td>
<td>0.234</td>
</tr>
<tr>
<td></td>
<td>≥ 12 yrs formal education</td>
<td>0.614</td>
<td>0.024*</td>
</tr>
<tr>
<td>Employed post-diagnosis</td>
<td>Sex</td>
<td>0.323</td>
<td>0.045*</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.378</td>
<td>0.094</td>
</tr>
<tr>
<td></td>
<td>Fatigue frequency</td>
<td>0.338</td>
<td>0.045*</td>
</tr>
<tr>
<td></td>
<td>Pain</td>
<td>0.302</td>
<td>0.085</td>
</tr>
<tr>
<td></td>
<td>Visual loss</td>
<td>0.472</td>
<td>0.739</td>
</tr>
<tr>
<td></td>
<td>Spinal cord disease</td>
<td>0.600</td>
<td>0.234</td>
</tr>
<tr>
<td></td>
<td>≥ 12 yrs formal education</td>
<td>0.817</td>
<td>0.024*</td>
</tr>
</tbody>
</table>

   * p ≤ 0.05

- Patients experiencing fatigue frequency above the median (2 or “Sometimes”) were 55% less likely to be employed (p = .045).
- Post-NMO diagnosis, women were 68% less likely to be employed than men (p = .045).
- Patients with over 12 years of formal education (High School and above) were 4 times more likely to be employed post-diagnosis than patients with less than a High School education.

Conclusions

Female gender, less than a High School education, and higher fatigue frequency were found to be associated with unemployment in patients with NMO.

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