Occupational Characteristics and Patterns as Risk Factors for Parkinson’s Disease

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Introduction

- Parkinson’s disease (PD) has been associated with employment in certain fields.
- Most occupational studies focused on toxic exposures as potential causal explanations.
- PD also has been associated with personality characteristics including decreased risk-taking and novelty-seeking that may influence occupational choices and patterns.

Objective

- Evaluate the role of personality as indicated by occupational choices and employment patterns in the risk for PD

Sample

- Sample from Movement Disorder and Family Medicine patients at academic medical center
- 89 PD cases; 99 controls

Methods

Structured interviews were conducted and included:
- Every paid job held for at least one year (job title, industry, duties, years of employment)

Employment data were coded according to the Dictionary of Occupational Titles (DOT) job classification system

Analysis:
- Reference year approach for cases and controls
- Logistic regressions controlling for age, sex and education examined associations between occupational characteristics, personality and risk for PD.
- Pearson correlations between occupational variables and early-adult measures of risk-taking and routinization

Exposures

Job categories
- First digit of each occupational code identifies the occupation as belonging to 1 of 9 categories
- Second and third digits of the DOT code provide additional distinctions within each occupational category

Job complexity
- Middle 3 digits of the DOT code define the complexity of the occupation with regard to people, data and things
- Lower codes (closer to 0) indicate more complex work in that area

Number of jobs – count of each paid job held
Number of job categories – each unique 3-digit code for this DOT field indicated a unique category of job for a participant

Personality characteristics related to risk-taking and preference for a routine lifestyle
- Instruments used subjects’ participation in routine and risk-taking activities as a young adult
- Latent variable values representing early-adult activity risks and early-adult routinization were calculated using results from factor analyses

Association of occupational characteristics with PD (OR (95%CI))

<table>
<thead>
<tr>
<th>Total Sample (n=188)</th>
<th>Men (n=102)</th>
<th>Women (n=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of jobs</td>
<td>0.87 (0.75-0.999)\textsuperscript{d}</td>
<td>0.90 (0.75-1.08)</td>
</tr>
<tr>
<td>Number of job categories</td>
<td>0.88 (0.74-1.05)</td>
<td>0.92 (0.73-1.16)</td>
</tr>
<tr>
<td>Duration of longest-held job</td>
<td>1.00 (0.97-1.04)</td>
<td>1.03 (0.99-1.07)</td>
</tr>
<tr>
<td>Complexity of work with data\textsuperscript{e}</td>
<td>0.99 (0.80-1.23)</td>
<td>1.00 (0.73-1.36)</td>
</tr>
<tr>
<td>Complexity of work with people\textsuperscript{e}</td>
<td>0.87 (0.75-1.02)</td>
<td>0.98 (0.81-1.19)</td>
</tr>
<tr>
<td>Complexity of work with things\textsuperscript{e}</td>
<td>1.02 (0.90-1.16)</td>
<td>0.88 (0.75-1.03)</td>
</tr>
</tbody>
</table>

\textsuperscript{d}Adjusted for age, sex and education
\textsuperscript{e}Lower code indicates greater complexity
\textsuperscript{p}<0.05

Conclusions

- Cases with PD held fewer lifetime jobs compared with controls.
- Occupational complexity was associated with the risk for PD among women, but not men.
- Further consideration of the possible influence of personality on occupational choices is warranted.

Disclosure

Dr. Borenstein, Sullivan, Wang and Mortimer face nothing to disclose.
Dr. Borenstein has received personal compensation for speaking services from Astellas, Boehringer Ingelheim, and Teva Pharmaceuticals.
Dr. Zesiewicz has received personal compensation from Teva Pharmaceuticals. By providing services and/or travel support from Bob Brown Eye Center, and the MovED Foundation. Dr. Brownlee has received personal compensation for speaking services from Amelyn Pharmaceuticals and Boehringer-Ingelheim.
Dr. Zesiewicz has received personal compensation from Teva Pharmaceuticals by providing services and travel support. Dr. Brownlee has received personal compensation for speaking services from Amelyn Pharmaceuticals and Boehringer-Ingelheim.

Downloadable data: http://www.occupationalpatterns.org/pdf/occupational_characteristics_patterns.pdf

*mean ± sd (range)