Symptom Groups Associated with Smoking Among Persons with Relapsing-Remitting Multiple Sclerosis

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Background

• Tobacco use in persons with MS (pwMS) may result in worsening of vision, urinary problems, depression, and anxiety.
• There is a higher rate of disability as determined by the Expanded Disability Status Scale (EDSS) and lower quality of life (QOL) than among nonsmokers.
• Preliminary data (Newland et al., 2012) indicates symptoms in MS may occur in related groups.
• To fully appreciate the reciprocal relationship, a clearer understanding of the associations between tobacco use and the symptom groups of MS is needed.

Objectives

• To identify symptoms and symptom groups associated with tobacco use in persons with relapsing-remitting MS.

Methods and Analysis

• Cross-sectional design, internet survey; N=101
• Sample of pwMS recruited from two MS clinics.
• The Behavioral Risk Factor Surveillance Systems (BRFSS) tobacco use questions (subset 11, modified;CDC,2011)
• MS-Related Symptom Scale (MS-RS)(Gulick, 1989)
• SR-EDSS (Bowen et al., 2001)
• Demographic survey
• Exploratory factor analysis to reduce the 43 MS symptoms to a lower number of variables and to identify empirically related groups of symptoms.
• Linear Regression modeling.

Sample Characteristics

• The sample included 101 RMMS subjects, majority White (85%), women (83%), with mean age of 43 (SD = 10.6). The time since diagnosis in years was 8.5 (SD =7.3) and the mean SR-EDSS was 3 (SD = .55).

Results

• Overall prevalence of smoking (past or present) in our sample was 52.0%, which is higher than the 45.5% obtained among MS patients responding to the 2002 and 2008 Integrated Health Interview Survey.
• Mental/Emotional and Neuro/Autonomic Symptoms Factors associated with smoking:
  Higher factor scores (indicating more symptoms) on Mental/Emotional group if a current smoker (Column 1, Table 1).
  Higher factor scores on Neuro/Autonomic group if a past regular smoker (Column 2, Table 1).

Table 1. Factor Loadings and Linear Regression of Smoking Status on Symptom Factor Scores

<table>
<thead>
<tr>
<th>Factor Loading (Symptom Item)</th>
<th>Anxiety</th>
<th>Fatigue</th>
<th>Sexuality</th>
<th>Depression</th>
<th>Loss cognitive fatigue</th>
<th>Increased urinary</th>
<th>Frequency-day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever Smoked</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoked 100 cigarettes</td>
<td>.766</td>
<td>.728</td>
<td>.657</td>
<td>.547</td>
<td>.630</td>
<td>.533</td>
<td></td>
</tr>
<tr>
<td>Ever smoked 100 cigarettes</td>
<td>.421*</td>
<td>.279</td>
<td>.376</td>
<td>- .217</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never regular smoker</td>
<td>.664</td>
<td>.069</td>
<td>-.378</td>
<td>.133</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 years ago or more</td>
<td>.032</td>
<td>.572</td>
<td>-.650</td>
<td>-.238</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>.302</td>
<td>.424</td>
<td>-.126</td>
<td>-.468</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within past 6 months</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note: 52/101 ever smoked 100 cigarettes. Factor scores calculated with principal axis factor analysis, using varimax rotation. Cumulative variance = .62. *Dichotomous value for if ever smoked at least 100 cigarettes in entire life. **Regular smoker but not in past 6 months. Only models which were significant overall are included. * p < .05 (in bold).

Conclusions

• Preliminary findings:
  • Symptoms occur in related groups.
  • Two of four groups of symptoms associated with current smoking or past smoking.
• Our data underscore the need for comprehensive assessment of symptoms as well as current & past smoking behavior for pwMS.
• PwMS and clinicians need to be aware of harmful effects from tobacco use, including exacerbation of symptoms/symptom groups.
• Future research needed:
  • To clarify the mechanism by which smoking impacts symptom groups or whether patients use tobacco to control symptoms.
  • To test effective methods for smoking cessation and symptom management in pwMS.

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Disclosures

Drs. Newland, Flick, Xian, and Thomas, have nothing to disclose.

References