

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 RRMS 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

Factor Loading (Symptom Item)	Anxiety	Loneliness	Depression	Itching	Sexual problems	Loss cognitive fatigue	Increased urinary frequency-day
	.766	.726	.547	.728	.657	.630	.533
Smoking Status							
Ever Smoked							
Never smoked 100 cigarettes.	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Ever smoked 100 cigarettes	.421*			.279	.376		-.217
Regular Smoker							
Never regular smoker	Reference	Reference	Reference	Reference	Reference	Reference	Reference
10 years ago or more	.664			-.069	-.378		.133
>6 months	.032			.572	-.650		-.238
Within past 6 months	.302			.424	-.126		-.468

Note: 52/101 ever smoked 100 cigarettes. Factor scores calculated with principal axis factor analysis, using varimax rotation. Cumulative variance =. 62. ^a Dichotomous value for if ever smoked at least 100 cigarettes in entire life, ^b 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.

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