

305

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Title: HEALTH-RELATED CONSEQUENCES OF OVERACTIVE BLADDER

Aims of the Study:

A significant portion of the population endures the economic, physical, and emotional burdens of overactive bladder (OAB). OAB is a condition in which the bladder muscles contract, causing strong, sudden, and often unpredictable urges to urinate. OAB occurs with and without urinary incontinence. People with OAB may be at greater risk for urinary tract infections (UTIs), falls and injuries, and an increased number of visits to the doctor. We know that such consequences are more prevalent among people with urinary incontinence, but to date, the extent to which these treatment and consequence costs are associated with OAB is unknown. This study is the first evaluation of the consequences associated with OAB.

Methods:

A US representative telephone survey under the National Overactive BLadder Evaluation (NOBLE) Program was conducted with 5,204 English-speaking adults over the age of 18. In the survey, people were asked about bladder control symptoms. After the phone survey, all OAB cases and an equal number of age- and gender-matched controls were sent a postal questionnaire to assess a number of factors including the number of UTIs in the past year, whether they fell in the past year, and number of medical visits in the past year. A total of 379 cases and 512 controls returned the questionnaires. All analyses were restricted to these 891 persons. "Urinary tract infections in the past year" was a dichotomous variable and for this outcome we used logistic regression analyses. Both the number of UTIs in the last year and the number of physician visits in the last year were analysed with linear regression. All regression models were controlled for age, gender, race, education, marital status, number of births, self-reported health status, presence of diabetes, and presence of congestive heart failure.

Results:

OAB cases and controls had similar sociodemographic profiles. However, OAB cases had worse self-reported health status and had more diabetes and congestive heart failure. The number of physician visits ranged from 0 to 200, and in multivariate analyses, we found that people with OAB had an average of 0.64 additional visits to the physician ($p < 0.05$). The number of urinary tract infections in the last year ranged from 0-10, and the presence of OAB was also associated with 0.27 additional urinary tract infections in the last year ($p < 0.001$). People with OAB had 46% higher odds of being injured in a fall ($p = 0.1$; see Table 1).

In a sensitivity analysis, removing 5% of the cases with leverage—as identified with Cooks

distance—had little effect on the coefficients. The most notable change was whether we controlled for self-reported health status. When this was not included in the analysis, the effects were larger and more significant. Without controlling for health status, people with OAB had 63% higher odds of having an injurious fall in the past year ($p=0.02$).

Table 1: The effect of OAB on health care utilization in the last year.⁺

	Doctor visits (last year)	UTIs (last year)	Injured in falls (last year)
	<i>Regression coefficients</i>	<i>Regression coefficients</i>	<i>Odds-ratios</i>
Has OAB	0.636*	0.267**	1.416
Age (yrs)	0.029*	-0.003	0.994
Gender (male=0, female=1)	1.145**	0.287**	1.831*
Race/ethnicity (0=white, 1=non-white)	-1.317**	0.028	1.249
Has diabetes	2.304**	0.214*	0.815
Has congestive heart failure	5.443**	0.110	0.884
Self-reported health status			
Excellent (reference group)	--	--	--
Very good	1.176**	0.087	1.320
Good	1.400**	0.184*	1.742
Fair or poor	4.044**	0.283**	3.119**
Constant	0.856	-0.012	--
R-squared	0.195	0.08	--

⁺ The regression models included marital status, # of births and education, but these variables were omitted from the table

* significant at $p < 0.05$; ** significant at $p < 0.01$ (two-tailed test)

Conclusions:

People with OAB share many of the same consequences as people with urinary incontinence. We find strong evidence that OAB patients are at risk for additional urinary tract infections. The data also suggest that people with OAB are at greater risk for injuries from falls. In addition, people with OAB make more visits to health-care providers than people without OAB. Therefore, people with OAB are likely to have significantly higher medical costs than those without OAB, and these consequences are likely to be reduced with treatment.

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