

Impact of Overactive Bladder on Work Productivity in the United States: Results From EpiLUTS

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Abstract

Objective: Little research has focused on the impact of overactive bladder (OAB) on work productivity. Consequently, the impact of OAB and other lower urinary tract symptoms (LUTS) on work productivity was evaluated in employed men and women aged 40 to 65 in the United States.

Study Design: Data from a population-based, cross-sectional Internet survey were used to examine the impact of OAB symptoms on work productivity. US participants aged 40 to 65 working full- or part-time were included in the analysis. Participants were asked about the incidence of OAB and other LUTS and a series of questions about work productivity.

Methods: Descriptive statistics and linear and logistic regressions were used to evaluate outcome differences for men and women by the OAB groups of no/minimal symptoms, continent OAB, and incontinent OAB.

Results: The response rate was 60%, and a total of 2876 men and 2820 women were analyzed. Men and women with incontinent OAB reported the lowest levels of work productivity and highest rates of daily work interference. Storage symptoms associated with OAB were most consistently associated with work productivity outcomes; however, significant associations were also found for other storage, voiding, and postmicturition LUTS.

Conclusion: In this large US population-based study, OAB was highly prevalent and was associated with lower levels of work productivity. These findings add to the literature documenting the burden of OAB and other LUTS, underscoring the need for increased screening and treatment.

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For author information and disclosures, see end of text.

Employers in the United States have become more cognizant in recent years of the effects of employee health on work productivity and healthcare costs, leading many employers to offer wellness programs in addition to employee health benefits.¹ Various health conditions have been associated with employee nonattendance (absenteeism) and lack of productivity (presenteeism), including hypertension, angina, depression, irritable bowel syndrome, allergies, bipolar disorder, diabetes, and obesity.²⁻⁸ Goetzel et al¹ analyzed 5 data sources and found absenteeism to be most related to depression/mental illness, cancer (any), respiratory disorders, and asthma; presenteeism was most related to migraine/headache, respiratory disorders, and depression/mental illness.¹

Despite this growing recognition of the importance of health in the workplace, little research has assessed the impact of overactive bladder (OAB) on work productivity. OAB is a symptomatic condition characterized by urinary urgency, with or without urgency incontinence, usually with increased daytime frequency and nocturia.⁹⁻¹¹ The prevalence of OAB is fairly high and ranges from 12% to 22% in Europe and 16% to 17% in the United States.¹²⁻¹⁴ OAB has far-reaching effects on patients' daily lives that can present barriers to work functioning, such as needing to take frequent breaks to use the bathroom.^{9,10} While the symptom burden and impact of OAB on health-related quality of life have been well documented,^{9,10,14-16} few studies have evaluated the effect of OAB on work productivity.

Irwin et al¹⁵ examined employment issues related to OAB and found that OAB led to worry about meeting interruption, factored into work location and scheduling decisions, and influenced decisions relating to voluntary termination or early retirement, particularly among men with incontinent OAB. Data from EPIC indicated that men and women with OAB were more likely to report absenteeism and presenteeism compared with controls.¹⁷ However, differences in the culture of work across countries may influence how OAB impacts men and women in the workplace, highlighting the need for more research in countries not sampled in prior population-based studies. There is also a need to assess aspects of daily work functioning that may be particularly impacted by OAB symptoms. Hu et al¹⁸ analyzed survey data from the NOBLE (National Overactive Bladder Evaluation) study and found significant decreases in work

productivity associated with OAB compared with age- and sex-matched controls. They estimated lost productivity costs of \$841 million, 98% of which was attributable to persons under age 65. To further examine the above issues, data from the EpiLUTS (Epidemiology of Lower Urinary Tract Symptoms) study were used to assess the impact of OAB on work productivity among employed men and women under the age of 65 in the United States.

METHODS

Study Design

A population-based, cross-sectional Internet survey was conducted in the United States, the United Kingdom, and Sweden to examine the prevalence and symptom-specific bother of OAB and other lower urinary tract symptoms (LUTS) as well as to evaluate the impact of these symptoms on quality of life, work productivity, mental health, and sexual health. Given the unique considerations surrounding the work environment in each country, the present study focused only on US data. A total of 20,000 men and women from the United States aged 40 years and older were targeted for recruitment from an Internet-based panel between June 5, 2007, and July 8, 2007. The rationale for this recruitment approach, study design, and further description of the Internet survey are described elsewhere.^{19,20} The present analysis includes US participants aged 40 to 65 years who reported working full- or part-time.

Survey Questionnaire

The following LUTS were assessed: urinary frequency, urinary urgency, nocturia, incontinence (stress, urgency, mixed, nocturnal enuresis, postmicturition, leaking during sexual activity, and leaking for no reason), weak stream, terminal dribble, hesitancy, straining, intermittency, split stream, incomplete emptying, bladder pain, and dysuria. The response options for the majority of LUTS were on a 5-point Likert scale (“never,” “rarely,” “sometimes,” “often,” and “almost always”). For every LUTS occurrence response of “rarely” or more often, participants were asked “how bothered” they were by the particular LUTS. Similarly, bother ratings were assessed on a 5-point Likert scale (“not at all,” “a little bit,” “somewhat,” “quite a bit,” and “a great deal”).

OAB was determined by the presence of urinary urgency or urgency urinary incontinence (UUI). The presence of urinary urgency was a response of “sometimes” or more often to the following question: “During the past 4 weeks, how often have you had a sudden need to rush to urinate? By sudden need to rush to urinate we mean a sudden intense feeling of urgency where you feel you must urinate immediately.” Presence of UUI was a “yes” response to the following question: “During the past 4 weeks, did you leak urine in connection with a sudden need to rush to urinate?” Based on their responses to the questions about OAB and other LUTS, participants were divided into the following OAB subgroups: no/minimal symptoms (absence of any LUTS response of “sometimes” or more often); continent OAB (presence of urinary urgency with absence of UUI); and incontinent OAB (presence of UUI; with or without urinary urgency). Participants with other non-OAB LUTS (eg, weak stream, terminal dribble, straining) at least “sometimes” or more often were not included in this subgroup analysis. Analyses were also conducted using a cutpoint for urinary urgency of “often” or more often.

All participants who responded that they worked either full- or part-time were asked questions about work productivity. If they had more than one job, respondents were instructed to complete the questionnaire based on their “main” job only. Five symptom-related work-impairment questions were adapted from the Output Demands subscale of the Work Limitations Questionnaire.²¹ Questions were as follows: “In the past 2 weeks, how much of the time did your urinary symptoms make it difficult for you to do the following at your job: work the required number of hours; get along easily at the beginning of the workday; start on your job as soon as you arrived at work; do your work without taking numerous bathroom breaks; stick to a routine or schedule?” The response options were: “difficult none of the time (0%); difficult a slight bit of the time; difficult some of the time (50%); difficult most of the time; difficult all of the time (100%).” Urinary-specific work impairment scores were computed by adding the responses and dividing by the number of items; scores were then multiplied by 25, generating a scale score of 0 (least limited) to 100 (most limited). Thus, a urinary-specific

work impairment score of 30, for example, indicates that the respondent was limited in performing these demands during 30% of the reporting period.

Participants were also asked to rate their agreement with 3 statements used in prior population-based survey research to estimate OAB prevalence: (1) “You always worry about interrupting meetings with frequent trips to the bathroom”; (2) “You have changed jobs, retired early, or been fired because of your urinary symptoms”; (3) “Your urinary symptoms have been a factor in decision related to where you work or the hours you work.” Response options for each of these questions were: “agree completely; agree somewhat; disagree somewhat; disagree completely.”

Statistical Analyses

All statistical analyses were performed using SAS Version 9.1.3. Sample matching was used to construct a population-representative sample of respondents within each country’s Internet-based panel, and poststratification weights were calculated to correct small amounts of imbalance based on differences in response rates.²⁰

Demographic variables and work productivity outcomes were evaluated by descriptive analyses and are presented by OAB subgroup separately for men and women. General linear models with Scheffe’s post hoc subgroup comparisons were used to compare OAB subgroups. Linear and logistic regressions were performed to evaluate the predictors of

Table 1A. Demographics of Working US Participants Aged 40 to 65 by Overactive Bladder (OAB) Status: Men

Characteristics, n (%)	No/Minimal Symptoms N = 1893	Continent OAB N = 538	Incontinent OAB N = 445	P
Age, y, mean (SD)	49.3 (6.2)	51.1 (6.9)	51.8 (6.4)	1*, 2**
Race, n (%)^b				
White	1401 (74.0)	348 (64.7)	303 (68.1)	<.0001
Black	165 (8.7)	83 (15.4)	72 (16.2)	
Asian	81 (4.3)	15 (2.8)	22 (4.9)	
Hispanic	215 (11.4)	80 (14.9)	46 (10.3)	
Other	32 (1.7)	12 (2.2)	2 (0.4)	
Marital status, n (%)^b				
Single	268 (14.2)	76 (14.1)	56 (12.6)	.1874
Married/living with partner	1366 (72.2)	364 (67.7)	313 (70.3)	
Divorced	241 (12.7)	89 (16.5)	71 (16.0)	
Widow/widower	17 (0.9)	10 (1.9)	5 (1.1)	
Missing	1 (0.0)	0 (0.0)	0 (0.0)	
Education, n (%)^b				
High school or less	597 (31.5)	184 (34.2)	160 (36.0)	.7547
Some college	590 (31.2)	169 (31.4)	132 (29.7)	
4-year college	403 (21.3)	101 (18.8)	87 (19.6)	
Postgraduate	302 (16.0)	84 (15.6)	66 (14.8)	
Missing	1 (0.0)	0 (0.0)	0 (0.0)	
Current employment status, n (%)^b				
Working full-time	1735 (91.7)	463 (86.1)	391 (87.9)	.0005
Working part-time	130 (6.9)	66 (12.3)	44 (9.9)	
Other work for pay	29 (1.5)	9 (1.7)	11 (2.5)	

^aSignificant differences between age means using Scheffe’s test adjusting for multiple post hoc pairwise comparisons: 1 = No symptoms vs incontinent OAB, 2 = No symptoms vs continent OAB, and 3 = Continent OAB vs incontinent OAB.

^bAll N’s presented are weighted; subgroups may or may not equal total N due to rounding or weighted values.

*P < .001.

urinary-specific work productivity scores and binary outcomes of work interference (agreement/disagreement). Regression models included age, race, education level, number of comorbid conditions, and body mass index as covariates, followed by the frequency of individual LUTS. Given the large sample size and multiple analyses conducted, a *P* value of <.01 was used as the threshold for statistical significance.

RESULTS

The US response rate was 60%. Of the 20,000 participants (9416 men, 10,584 women) in the total US sample, 5301 men and 4394 women were age 40 to 65 and were working full- or part-time.

Using the cutpoint of “sometimes” or more often, 10.2% (n = 538) of men had continent OAB, 8.4% (n = 445) had incontinent OAB, 35.7% (n = 1893) had no/minimal LUTS, and 45.7% (n = 2425) had other non-OAB LUTS symptoms at least “sometimes” or more often and, thus, were not included in subsequent subgroup analyses. Among women, 12.0% (n = 521) had continent OAB, 25.6% (n = 1126) had incontinent OAB, 26.7% (n = 1173) had no/minimal LUTS, and 35.8% (n = 1574) had other non-OAB LUTS symptoms at least “sometimes” and were excluded from subgroup analyses. Analyses conducted using a response of “often” or more often showed a similar pattern of results, with greater impairments noted. To simplify, results

Table 1B. Demographics of Working US Participants Aged 40 to 65 by Overactive Bladder (OAB) Status: Women

Characteristics, n (%)	No/Minimal Symptoms N = 1173	Continent OAB N = 521	Incontinent OAB N = 1126	<i>P</i>
Age, y, mean (SD)	49.5 (6.4)	49.8 (6.5)	51.1 (6.5)	1*, 3**
Race, n (%)^b				
White	827 (70.5)	333 (63.9)	826 (73.4)	<.0001
Black	132 (11.3)	74 (14.2)	144 (12.8)	
Asian	61 (5.2)	16 (3.1)	23 (2.0)	
Hispanic	136 (11.6)	95 (18.2)	116 (10.3)	
Other	16 (1.4)	4 (0.8)	17 (1.5)	
Marital status, n (%)^b				
Single	133 (11.3)	57 (10.9)	103 (9.1)	.1186
Married/living with partner	752 (64.1)	316 (60.7)	725 (64.4)	
Divorced	242 (20.6)	132 (25.3)	238 (21.1)	
Widow/widower	44 (3.8)	15 (2.9)	57 (5.1)	
Missing	1 (0.1)	1 (0.2)	3 (0.3)	
Education, n (%)^b				
High school or less	574 (48.9)	289 (55.5)	569 (50.5)	.0018
Some college	261 (22.3)	130 (25.0)	293 (26.0)	
4-year college	188 (16.0)	60 (11.5)	143 (12.7)	
Postgraduate	151 (12.9)	43 (8.3)	121 (10.7)	
Current employment status, n (%)^b				
Working full-time	846 (72.1)	388 (74.5)	755 (67.1)	.0186
Working part-time	294 (25.1)	118 (22.6)	334 (29.7)	
Other work for pay	34 (2.9)	15 (2.9)	37 (3.3)	

^aSignificant differences between age means using Scheffe’s test adjusting for multiple post hoc pairwise comparisons: 1 = No symptoms vs incontinent OAB, 2 = No symptoms vs continent OAB, and 3 = Continent OAB vs incontinent OAB.

^bAll N’s presented are weighted; subgroups may or may not equal total N due to rounding or weighted values.

**P* <.001.

Table 2A. Work Productivity by Overactive Bladder (OAB) Subgroups \geq Sometimes: US Men Aged 40 to 65 Currently Working

	No/Minimal Symptoms N = 1893	Continent OAB N = 538	Incontinent OAB N = 445	P
Work Limitations Questionnaire total score, mean (SD)	N = 1483 0.6 (4.2)	N = 533 9.3 (14.3)	12.5 (16.7)	1*, 2*, 3**
Always worry about interrupting meetings with frequent trips to bathroom, n (%)^b	N = 1481	N = 533		
Agree completely	42 (2.8)	33 (6.2)	26 (5.8)	<.0001
Agree somewhat	13 (0.9)	110 (20.6)	126 (28.3)	
Disagree somewhat	42 (2.8)	92 (17.3)	73 (16.4)	
Disagree completely	1384 (93.5)	299 (56.1)	219 (49.2)	
Have changed jobs, retired early, or been fired because of your urinary symptoms, n (%)^b	N = 1475	N = 527		
Agree completely	43 (2.9)	5 (0.9)	6 (1.3)	<.0001
Agree somewhat	2 (0.1)	4 (0.8)	8 (1.8)	
Disagree somewhat	6 (0.4)	13 (2.5)	17 (3.8)	
Disagree completely	1424 (96.5)	505 (95.8)	411 (92.4)	
Your urinary symptoms have been a factor in decisions related to where you work or the hours you work, n (%)^b	N = 1483	N = 530		
Agree completely	42 (2.8)	10 (1.9)	17 (3.8)	<.0001
Agree somewhat	5 (0.3)	33 (6.2)	32 (7.2)	
Disagree somewhat	8 (0.5)	32 (6.0)	28 (6.3)	
Disagree completely	1428 (96.3)	454 (85.7)	365 (82.0)	

^aSignificant differences between Work Limitations Questionnaire score means using Scheffe's test adjusting for multiple post hoc pairwise comparisons: 1 = No symptoms vs incontinent OAB, 2 = No symptoms vs continent OAB, and 3 = Continent OAB vs incontinent OAB.
^bAll N's presented are weighted; subgroups may or may not equal total N due to rounding or weighted values.
 *P <.001.

using the cutpoint of “sometimes” or more often are presented here. Participant demographic information is presented separately for men (Table 1A) and women (Table 1B) by OAB subgroup.

Among men, those with no/minimal symptoms were slightly younger (mean age, 49.3 years; standard deviation [SD], 6.2) than those with continent OAB (mean age, 51.1 years; SD, 6.9) and incontinent OAB (mean age, 51.8 years; SD, 6.4). A similar pattern was evident among women, with those with no/minimal symptoms being the youngest (mean age, 49.5 years; SD, 6.4), followed by those with continent OAB (mean age, 49.8 years; SD, 6.5), and incontinent OAB (mean age, 51.1 years; SD, 6.5). The sample was diverse with respect to race and reflective of the US population. Men with no/minimal symptoms were more likely to be working full-

time (92% vs 86% and 88% in the continent OAB and incontinent OAB groups, respectively). The proportion of women working full-time was lower across groups (no/minimal symptoms, 72%; continent OAB, 75%; incontinent OAB, 67%), with a higher percentage of women working part-time.

Mean urinary-specific work impairment scores were highest for individuals with incontinent OAB (men, 12.5%; women, 12.6%), followed by continent OAB (men, 9.3%; women, 10.8%), and no/minimal symptoms (men, 0.6%; women, 1.0%), indicating that men and women with incontinent OAB were limited in performing their job demands 13% of the time in the prior 2 weeks (Tables 2A and 2B). In parallel, over a third of men (34%) and women (36%) in this group reported always worrying about interrupting meetings with frequent

■ **Table 2B.** Work Productivity by Overactive Bladder (OAB) Subgroups \geq Sometimes: US Women Aged 40 to 65 Currently Working

	No/Minimal Symptoms N = 1173	Continent OAB N = 521	Incontinent OAB N = 1126	P
Work Limitations Questionnaire total score, mean (SD)	N = 958 1.0 (5.3)	N = 516 10.8 (15.6)	N = 1106 12.6 (16.7)	1*,2*, 3**
Always worry about interrupting meetings with frequent trips to bathroom, n (%)^b	N = 957	N = 513	N = 1104	
Agree completely	35 (3.7)	31 (6.0)	115 (10.4)	<.0001
Agree somewhat	16 (1.7)	129 (25.1)	287 (26.0)	
Disagree somewhat	57 (6.0)	86 (16.8)	220 (19.9)	
Disagree completely	850 (88.8)	267 (52.0)	483 (43.8)	
Have changed jobs, retired early, or been fired because of your urinary symptoms, n (%)^b	N = 956	N = 513	N = 1106	
Agree completely	37 (3.9)	10 (1.9)	20 (1.8)	<.0001
Agree somewhat	1 (0.1)	9 (1.8)	16 (1.4)	
Disagree somewhat	6 (0.6)	12 (2.3)	41 (3.7)	
Disagree completely	912 (95.4)	482 (94.0)	1029 (93.0)	
Your urinary symptoms have been a factor in decisions related to where you work or the hours you work, n (%)^b	N = 957	N = 515	N = 1103	
Agree completely	34 (3.6)	23 (4.5)	62 (5.6)	<.0001
Agree somewhat	1 (0.1)	34 (6.6)	105 (9.5)	
Disagree somewhat	11 (1.1)	42 (8.2)	79 (7.2)	
Disagree completely	910 (95.1)	417 (81.0)	857 (77.7)	

^aSignificant differences using Scheffe's test adjusting for multiple post hoc pairwise comparisons: 1 = No symptoms vs incontinent OAB, 2 = No symptoms vs continent OAB, and 3 = Continent OAB vs incontinent OAB.
^bAll N's presented are weighted; subgroups may or may not equal total N due to rounding or weighted values.
* P < .001.

trips to the bathroom, compared with 27% and 31% of men and women with continent OAB and 4% and 5% of men and women with no/minimal symptoms. Across groups, less than 4% of men and women reported that their urinary symptoms were a factor in job changes, such as early retirement or being fired. Interestingly, the proportion who endorsed this statement was highest among women in the no/minimal symptoms group (3.9%) and was similarly elevated among men with no/minimal symptoms (3.0%). However, it is important to note that in this age cohort of <65 years, the percentage of men who are retired is significantly higher among men with continent OAB (15%) and incontinent OAB (18%) compared with men with no/minimal symptoms (10%). Although retirement rates among women are similar across groups, rates of permanent disability are significantly higher

among continent and incontinent men and women with OAB (continent: men 16%, women 10%; incontinent: men 18%, women 14%) as compared with those with no/minimal symptoms, in which the permanently disabled rate is 4% for both men and women. The proportion of men and women who reported that their urinary symptoms had been a factor in decisions related to where they worked or their work hours was highest among those with incontinent OAB (men, 11%; women, 15%), followed by those with continent OAB (men, 8%; women, 11%) and no/minimal symptoms (men, 3%; women, 4%). As noted above, effects were more pronounced for those with continent OAB when the cutpoint "often" or more often was used to define groups. For example, 17% of men and 21% of women with continent OAB defined as "often" or more often reported that their urinary

Table 3. Summary of Linear and Logistic Regressions

	Urinary-Specific Work Impairment Scores (higher scores indicate greater impairment)		Worry About Interrupting Meetings (agree/disagree)	
	Parameter Estimate		Parameter Estimate	
	Men	Women	Men	Women
Covariates				
Age	-0.064 ^a	-0.091 ^b	-0.021	-0.022 ^b
Race				
Hispanic vs white	-0.873	-0.091	-0.207	-0.085
Other vs white	-0.301	-0.559	0.656	-0.010
Asian vs white	-0.168	2.870 ^b	0.049	-0.278
Black vs white	-1.031	0.978	-0.250	-0.263
Body mass index	-0.035	-0.048	0.017	0.003
Number of comorbid conditions	0.600 ^e	0.660 ^e	0.049	0.066
Education				
Postgraduate vs high school	-0.483	-2.011 ^b	0.181	0.165
Four-year college vs high school	-0.245	-1.098	0.186	0.064
Some college vs high school	-0.234	-1.279 ^b	-0.175	-0.020
Lower urinary tract symptoms				
Perceived frequency	4.438 ^c	5.508 ^c	1.245 ^c	1.235 ^e
Nocturia ^d	0.271 ^c	0.167	0.104 ^c	0.032
Urgency	0.817 ^c	0.968 ^a	0.136	0.138
Urgency with fear of leaking	2.232 ^c	0.960 ^b	0.377 ^c	0.316 ^c
UUI	0.832 ^a	0.941 ^c	0.023	0.038
SUI (laughing, sneezing, coughing)	1.340	-0.235	-0.017	0.031
SUI (physical activities)	1.189	1.312 ^b	-0.031	0.099
Leak for no reason	1.334	0.580	0.301	0.079
Nocturnal enuresis	1.318 ^b	1.025 ^b	0.340	0.011
Leak during sexual activity	0.517	0.210	-0.126	0.226
Weak stream	-0.291	-0.034	-0.162	0.086
Split stream	0.300	1.140 ^c	0.096	0.081
Intermittency	-0.099	0.605	-0.060	0.042
Hesitancy	0.512 ^b	1.030 ^a	0.170	0.088
Straining	1.445 ^c	1.533 ^c	0.194	0.058
Terminal dribble	0.001	-0.006	0.001	0.041
Incomplete emptying	0.932 ^c	0.882 ^a	0.322 ^c	0.094
Postmicturition incontinence	-0.058	0.289	0.230	-0.001
Bladder area pain	2.221 ^c	1.316	0.157	0.229
Dysuria	1.512	2.574 ^b	0.374	-0.136

SUI indicates stress urinary incontinence; UUI, urgency urinary incontinence.

^a*P* < .001.

^b*P* < .01.

^c*P* < .0001.

^dEntered into the model as a continuous variable, as it was collected.

symptoms had been a factor in decisions related to where they worked or work hours.

Results from the linear and logistic regressions to evaluate the predictors of urinary-specific work impairment scores and binary outcomes of “worry about meeting interrupting” due to frequent bathroom visits (agree/disagree) are presented in **Table 3**. Additional logistic regressions were performed for binary outcomes based on participant agreement with the 2 other work-interference statements (“changed jobs, retired early, or been fired because of your urinary symptoms”; and “urinary symptoms have been a factor in decision related to where you work or the hours you work”); however, these models yielded poor fit and, thus, are not presented here.

Age was significantly associated with urinary-specific work impairment in both men and women and with worry about interrupting meetings in women, with younger age related to lower productivity and increased likelihood of worry. Increasing numbers of comorbid conditions were related to lower scores (indicating more impairment) for both men and women, whereas lower levels of education (high school as compared with some college and postgraduate) were related to more impairment in women. Asian women reported higher urinary-specific work impairment as compared with white women.

Among LUTS, significant associations with work impairment and increased worry were present for a number of storage symptoms. Urgency associated with a fear of leaking urine and perceived daytime frequency were the most consistently robust LUTS associated with productivity outcomes for both men and women. In men, nocturia was related to higher work impairment and worry about interrupting meetings. Other storage symptoms significantly linked to work impairment scores for both men and women included urinary urgency (without qualification of fear of leaking), urgency incontinence, and nocturnal enuresis. Significant associations for voiding symptoms in relation to urinary-specific work impairment included split stream in women and hesitancy and straining in both men and women. Links for postmicturition symptoms included incomplete emptying for both men and women in relation to work impairment and, for men, in relation to worry about interrupting meetings. Other significant predictors of work impairment were bladder area pain for men and dysuria for women.

DISCUSSION

This is the first paper to describe in detail the impact of OAB on work productivity in the United States. As in EPIC, OAB was associated with similar levels of diminished work productivity in men and women—with the most pronounced impact among those with UUI. Irwin et al¹⁷ found that men and women with OAB—both with and without UUI—were more likely to report absenteeism and presenteeism compared with controls. In terms of the impact of symptoms on daily work activities, findings indicated that a substantial proportion of men and women with OAB—particularly those with incontinence—worry about interrupting meetings and have considered their urinary symptoms in decisions about work location and hours. However, our findings differ somewhat from another cross-sectional population-based survey in 6 European countries,¹⁵ which demonstrated that men with OAB and incontinence were significantly more likely to report impact on their daily work life as compared with women. Results for men and women with OAB and incontinence in the present study were generally similar, with women reporting slightly higher rates than men. For example, 38% of men versus 22% of women with incontinent OAB in Irwin et al¹⁵ reported worrying about interrupting meetings due to bathroom frequency as compared with 34% of men and 36% of women in EpiLUTS; and 21% of men and 8% of women with incontinent OAB in Irwin et al¹⁵ reported that their symptoms affected decisions about work location and hours as compared with 11% of men and 15% of women in EpiLUTS.

One surprising result in the present study was that men and women with no/minimal symptoms were as or more likely to report they had changed jobs, retired early, or been fired as a result of their urinary symptoms as those with OAB. The most likely explanation for this finding that may also account for some of the aforementioned differences between the present study and prior research is that only those who were currently working were included in the present study. As noted previously, men with OAB in EpiLUTS were significantly more likely to be retired (continent OAB: men, 15%; incontinent OAB: men, 18%), and men and women with OAB were significantly more likely

to be permanently disabled (continent OAB: men, 16%, women, 10%; incontinent OAB: men, 18%, women, 14%) than those with no/minimal symptoms (retired: men, 10%; permanently disabled: men and women, 4%). Thus, a substantial proportion of men and women whose work productivity may have been compromised by OAB—possibly even to the point of contributing to an early retirement or disability—were not included in this analysis. This limitation notwithstanding, it should be noted that the no/minimal symptoms group does include participants who have reported experiencing 1 or more LUTS “rarely” or more often. While the proportion of those bothered using this cutpoint was dramatically less than that using the more conservative cutpoint of “sometimes” or more often (data not shown here), there was a small contingency of participants who reported negative consequences in their life as a result of these symptoms. Other factors that may explain differences between results observed here and those reported in Irwin et al¹⁵ include discrepancies in how OAB was defined and cultural differences (data presented here include men and women from the United States, whereas the sample in Irwin et al¹⁵ comprised individuals from France, Germany, Italy, Spain, Sweden, and the United Kingdom).

In addition to examining differences in work outcomes by OAB subgroups, the present study evaluated the relative contribution of other LUTS. Results of linear and logistic regressions indicated that urgency accompanied by a fear of leaking and perceived daytime frequency were most strongly associated with work productivity impairment in both men and women, while links were also evident for other typical OAB storage symptoms (nocturia, urgency, and UUI) as well as voiding and postmicturition symptoms, dysuria, and bladder area pain. In terms of clinical implications, these findings underscore the importance of assessing the symptom frequency and impact of all LUTS in evaluating treatment options.

Several limitations to this study bear mentioning. First, the data are cross-sectional, preventing any inference about a potential causal relationship between the experience of symptom frequency and symptom-specific bother and treatment seeking. Other factors that were not measured in this study—such as other health and psychological

conditions—may also account for differences in work productivity. The potential for study bias resulting from an Internet-based sample poses some risk to generalizability related to Internet usage; however, it is important to note that the most recent population census was used as the basis for creating a “target sample” to ensure that the data collected would be representative of the general population according to the demographics of age, sex, race, and education.¹⁹

Taken together, findings presented here demonstrate that OAB and other LUTS are associated with decreases in individuals’ daily work functioning and add to existing evidence documenting the larger economic costs of OAB. As only working Americans were included in this study, findings presented here represent a conservative estimate of the impact of OAB and other LUTS. The higher rates of early retirement among individuals with OAB present a real burden to society as there is a total loss of productivity while many individuals will draw on employer retirement benefits. Using data from a 2000 national postal survey in the United States, the total economic cost of urinary incontinence and OAB was estimated to be \$19.5 billion and \$12.6 billion.¹⁸ These estimates suggest that the societal burden of OAB is comparable to that of osteoporosis and gynecologic and breast cancer.¹⁸

CONCLUSION

In this large US population-based study, OAB was highly prevalent among both men and women and was associated with lower levels of work productivity and interference with work-related activities—with particularly pronounced effects observed among those with incontinent OAB. In addition to the associations observed for OAB, findings from regression analyses indicated that a number of other storage, voiding, and postmicturition LUTS are associated with diminished work productivity. These findings add to the literature documenting the burden of OAB and underscore the need for increased screening and treatment. Furthermore, these findings highlight the loss in productivity associated with OAB and point to the need for future cost-benefit analyses to examine treatment benefits from an economic perspective.

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