The Prevalence of Urinary Incontinence Among Community Dwelling Men: Results From the National Health and Nutrition Examination Survey

Jennifer T. Anger,*,† Christopher S. Saigal,† Lynn Stothers,† David H. Thom,† Larissa V. Rodríguez,† Mark S. Litwin‡ and the Urologic Diseases of America Project

From the Departments of Urology (JTA, CSS, LVR, MSL) and Health Services (MSL), David Geffen School of Medicine and School of Public Health, University of California, Los Angeles, Los Angeles, Department of Family and Community Medicine, University of California, San Francisco School of Medicine (DHT), San Francisco, California, and Department of Surgery, Division of Urology, University of British Columbia (LS), Vancouver, British Columbia, Canada

Purpose: To measure the prevalence of urinary incontinence in community dwelling men in the United States, we analyzed data from respondents to the National Health and Nutrition Examination Survey.

Materials and Methods: From 1999 to 2000 the National Health and Nutrition Examination Survey asked a national sample of community dwelling men, "In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine when you cough or sneeze?" Questionnaire results were recorded and analyzed with respect to demographic data, and compared to the National Health and Nutrition Examination Survey data in women.

Results: The overall prevalence of urinary incontinence in men was 17%. Prevalence increased with age from 11% in men 60 to 64 years old to 31% in men 85 years old or older. Of the men reporting any incontinence 42% reported daily incontinence and 24% reported it weekly. Black men had the highest prevalence of male incontinence (21%) and black women had the lowest prevalence of female incontinence (20%). While the prevalence of incontinence in black women was virtually the same as that in black men, the prevalence of incontinence in white and Mexican-American women was at least 2.5 times that of men of the same ethnicity.

Conclusions: The National Health and Nutrition Examination Survey draws a nationally representative sample of subjects from the community and, thus, provides prevalence data for urinary incontinence for all men in the United States. Ethnicity appears to be a contributing risk factor for incontinence, although racial patterns clearly differ between men and women.

Key Words: age factors, continental population groups, epidemiology, urinary incontinence, sex

Although urinary incontinence is considered to be a condition affecting primarily women,[1] it has a substantial impact on men's health as well. Comparatively less is known about the epidemiology of urinary incontinence in men, largely because it has not been studied to the same degree as it has in women. The male-to-female ratio of incontinence prevalence has been reported to be 1:2.[2] However, increased prevalence in men 65 years old or older narrows this gender gap.[2,3] Whereas men and women can have urge incontinence from an overactive bladder, bladder outlet obstruction may contribute to these symptoms in men. Stress incontinence is much less common in men and when it occurs it is usually a result of prostate surgery or neurological disease.[2] Regardless of the etiology of male urinary incontinence, understanding the true prevalence is essential to directing public resources toward prevention and treatment.

Most of the data regarding risk factors for incontinence in men and women have been derived from studies of volunteer or clinical subjects rather than from population based studies, thus the information is of limited generalizability.[4] NHANES is a continuing series of national sample surveys of households and household members in 50 states that collects data regarding many diseases.[5] Based on its large size and statistical sampling techniques, NHANES can be used to generate accurate national prevalence data for urological diseases and symptoms during the survey period. To assess the prevalence of incontinence among community dwelling men we analyzed NHANES data from 1999 to 2000.

METHODS

NHANES was developed as a result of the National Health Survey Act in 1956, which authorized a survey to provide data on the amount, distribution and effects of illness and disability in the United States. NHANES has been in exis-

Submitted for publication December 14, 2005.

Supported by Grant N-01-DK-1-2460 from the National Institute of Diabetes and Digestive and Kidney Diseases.

* Correspondence: UCLA Department of Urology, Box 951738, Los Angeles, California 90095-1738 (telephone: 310-206-8183; FAX: 310-206-5343; e-mail: janger@mednet.ucla.edu).

† Nothing to disclose.

‡ Financial interest and/or other relationship with TAP Pharmaceuticals, Sanofi-Synthelabo and Amgen.

Editor's Note: **This article is the fifth of 5 published in this issue for which category 1 CME credits can be earned. Instructions for obtaining credits are given with the questions on pages 2322 and 2323.**

DOI:10.1016/j.juro.2006.07.029

tence since the early 1960s and has surveyed more than 130,000 people.[6] The information gathered by NHANES provides a cross-sectional view of the health and nutrition of the United States population. NHANES data have been used to influence policy and improve the health of the United States population. The NHANES target population is the civilian, noninstitutionalized United States population. Sampling includes a broad range of age groups and racial/ethnic backgrounds. NHANES 1999 to 2000 over sampled low income subjects, adolescents 12 to 19 years old, people 60 years old or older, black people and Mexican-Americans.[6]

Participants were selected through a complex, multistage probability cluster design using the most current census information. The country is divided into communities, which are then divided into neighborhoods and the neighborhoods are selected at random. Selected households are approached by NHANES interviewers who ask residents a few short questions to determine if the household is eligible for the study. Each participant represents approximately 50,000 United States residents.[6] NHANES 1999 to 2000 data collection included a standardized home interview followed by a detailed physical examination at a mobile examination center or the participant's home.[7]

Beginning in 1999 NHANES became a continuous, annual survey rather than the periodic survey that it had been previously.[6] For a variety of reasons including confidentiality and reliability issues, the survey data are released in public use data files every 2 years. Two or more years of data are necessary to generate sample sizes adequate for subgroup analyses. During the 2 years from 1999 to 2000, 9,965 persons participated in the survey.[6]

From 1999 to 2000 NHANES asked a national sample of community dwelling men, "In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine when you cough or sneeze?" Responses were categorized as yes or no. Affirmative responses were further stratified into every day, few per week, few per month, few per year or do not know. Questionnaire results from respondents were recorded and analyzed with respect to demographic data including age, race, level of education and poverty level. Poverty level was analyzed based on the PIR, which is a calculated variable based on family income and family size, using tables published each year by the Bureau of the Census in a series of "Current Population Reports" on poverty in the United States.[5] This is the best income variable to use comparing data over time because it is standardized for inflation and other factors. The primary reporting categories are below the poverty level (PIR 0 to 0.999) and at or above poverty (PIR 1.000 or greater). A PIR of 1.85 or less signifies low income (a PIR of 1.85 means that the family income is 85% higher than the federal poverty level for that family size), a PIR of 1.851 to 3.500 signifies middle income and a PIR greater than 3.500, high income. We compared findings in men with NHANES data from women during the same period.

RESULTS

According to NHANES data 17% of men 60 years old or older experienced urinary incontinence (3,131,814 of 18,231,934 as extrapolated from United States population estimates, table 1). Prevalence was highest among nonHispanic black

TABLE 1. *Prevalence of difficulty controlling bladder among adult men*

		No. Difficulty Controlling Bladder (%)		
	Total*	Yes	No	Refused to Answer or Do Not Know
All	18,231,934	3,131,814 (17)	15,054,506 (83)	45,614 (0)
Age at screening:				
60–64	5,037,678	546,559 (11)	4,491,119 (89)	0 (0)
65–69	4,731,187	518,157 (11)	4,213,030 (89)	0 (0)
70–74	3,320,840	630,898 (19)	2,675,986 (81)	13,956 (0)
75–79	2,748,396	750,478 (27)	1,988,932 (72)	8,986 (0)
80–84	1,478,414	399,774 (27)	1,078,640 (73)	0 (0)
85+	915,419	285,948 (31)	606,799 (66)	22,672 (2)
Race/ethnicity:				
NonHispanic white	14,790,935	2,395,212 (16)	12,395,723 (84)	0 (0)
NonHispanic black	1,436,582	296,022 (21)	1,122,588 (78)	17,972 (1)
Mexican-American	559,680	81,134 (14)	478,546 (86)	0 (0)
Other race	429,299	142,015 (33)	273,598 (64)	13,686 (3)
Other Hispanic	1,015,438	217,431 (21)	784,051 (77)	13,956 (1)
Education:				
Less than high school	6,072,264	1,214,224 (20)	4,840,068 (80)	17,972 (0)
High school	4,516,092	698,919 (15)	3,817,173 (85)	0 (0)
High school+	7,572,244	1,198,317 (16)	6,373,927 (84)	0 (0)
Refused to answer	25,054	11,368 (45)	0 (0)	13,686 (55)
Do not know	46,280	8,986 (19)	23,338 (50)	13,956 (30)
PIR:†				
Missing	631,305	111,353 (18)	505,996 (80)	13,956 (2)
0	22,159	12,082 (55)	10,077 (45)	0 (0)
Less than 1	1,806,996	440,261 (24)	1,366,735 (76)	0 (0)
1.00–1.84	3,408,381	653,095 (19)	2,755,286 (81)	0 (0)
Greater than 1.84	9,404,848	1,458,110 (16)	7,946,738 (84)	0 (0)
Refused to answer	1,858,169	324,042 (17)	1,511,455 (81)	22,672 (1)
Do not know	1,100,076	132,871 (12)	958,219 (87)	8,986 (1)

The data in this table are based on question KIQ.040: "In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine when you cough or sneeze?" SOURCE: National Health and Nutrition Examination Survey, 1999–2000.

* Totals do not represent respondents to the survey but use sample weighting to reproduce national averages.

† PIR is a calculated variable based on family income and family size. The primary reporting categories are below the poverty level (PIR 0–0.999) and at or above poverty level (PIR 1.000 and greater).

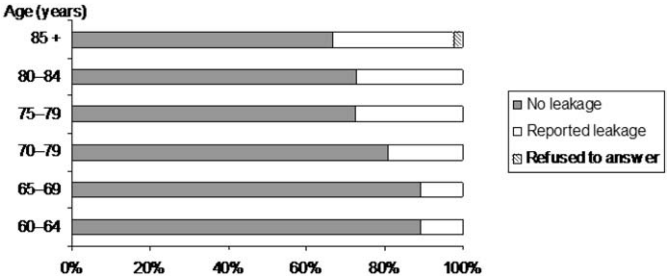

FIG. 1. Difficulty controlling bladder among male responders

men (21%) compared with nonHispanic white men (16%) and Mexican-Americans (14%). Men with less than a high school education had a higher prevalence of incontinence (20%) than did those with a high school education (15%) or at least some college (16%). Similarly men with incomes below the poverty level (PIR of 0) had the highest prevalence of incontinence (55%) compared with men of higher income levels. Prevalence was lowest in the 60 to 64 and 65 to 69 years old groups (11%), and increased with age to 31% for men 85 years old or older (fig. 1).

Among men who responded "yes" to having difficulty controlling the bladder, 42% (comprising 7% of all men older than 60 years) reported daily incontinence and 24% (4% of all men older than 60 years) reported weekly incontinence (table 2). Daily incontinence was most frequent in the 75 to 79 years old group (50%) and weekly incontinence was most prevalent in the 60 to 64 years old group (37%). In all age groups the majority of men with difficulty controlling the bladder had either daily or weekly incontinence ranging from 62% of men in the 85 years old or older group to 71% in the 60 to 64 years old group (fig. 2).

A comparison of NHANES data between men and women older than 60 years reveals several important differences in demographic characteristics (table 3). Overall prevalence of incontinence in men was less than half of that in women (17% vs 38%). In addition, incontinence prevalence in men increased with age and peaked in the 85 years old or older group (31% prevalence), whereas in women prevalence peaked in the 75 to 79 years old group (44%). The prevalence of incontinence in white and Mexican-American women was at least 2.5 times that of men of the same ethnicity. In contrast, the prevalence of incontinence among black men was nearly the same as that in black women (21% and 20%, respectively). While the prevalence of female incontinence was lowest among black women (20% compared to a prevalence of 38% for all women), black men had the highest prevalence of male incontinence (21% compared to a prevalence of 17% for all men).

The association between socioeconomic status and incontinence differed notably between men and women. Men with less than a high school degree reported the highest prevalence of incontinence (20%) compared with more educated men. In contrast, women with less than a high school degree had the lowest prevalence of incontinence (32%) compared with that of more educated women. Stratification by poverty level yielded similar gender disparity in that incontinence prevalence was the highest among the poorest men but the lowest among the poorest women (table 3).

DISCUSSION

Our analysis of NHANES data has several principal findings. The overall prevalence of urinary incontinence in men older than 60 years was 17%, which corresponds to nearly

TABLE 2. *Frequency of bladder control problems among those who responded "yes" to difficulty controlling bladder*

	No. (%)					
	All	Every Day	Few/Wk	Few/Mo	Few/Yr	Do Not Know
All	3,131,814	1,307,755 (42)	747,906 (24)	577,835 (18)	459,015 (15)	39,303 (1)
Age at screening:						
60–64	546,559	187,452 (34)	204,858 (37)	48,555 (9)	105,694 (19)	0 (0)
65–69	518,157	172,945 (33)	153,221 (30)	104,208 (20)	87,783 (17)	0 (0)
70–74	630,898	299,011 (47)	111,501 (18)	118,464 (19)	100,100 (16)	1,822 (0)
75–79	750,478	377,370 (50)	101,664 (14)	176,165 (23)	86,293 (11)	8,986 (1)
80–84	399,774	137,186 (34)	134,527 (34)	60,591 (15)	54,106 (14)	13,364 (3)
85+	285,948	133,791 (47)	42,135 (15)	69,852 (24)	25,039 (9)	15,131 (5)
Race/ethnicity:						
NonHispanic white	2,395,212	1,039,490 (43)	505,540 (21)	418,365 (17)	403,322 (17)	28,495 (1)
NonHispanic black	296,022	111,731 (38)	106,168 (36)	35,532 (12)	33,605 (11)	8,986 (3)
Mexican-American	81,134	47,757 (59)	17,210 (21)	6,213 (8)	8,132 (10)	1,822 (2)
Other race	142,015	37,697 (27)	63,131 (44)	41,187 (29)	0 (0)	0 (0)
Other Hispanic	217,431	71,080 (33)	55,857 (26)	76,538 (35)	13,956 (6)	0 (0)
Education:						
Less than high school	1,214,224	423,490 (35)	386,717 (32)	244,357 (20)	157,838 (13)	1,822 (0)
High school	698,919	245,562 (35)	137,414 (20)	184,242 (26)	118,337 (17)	13,364 (2)
High school+	1,198,317	627,335 (52)	223,775 (19)	149,236 (12)	182,840 (15)	15,131 (1)
Refused to answer	11,368	11,368 (100)	0 (0)	0 (0)	0 (0)	0 (0)
Do not know	8,986	0 (0)	0 (0)	0 (0)	0 (0)	8,986 (100)
PIR:						
0	12,082	0 (0)	0 (0)	12,082 (100)	0 (0)	0 (0)
Less than 1	440,261	144,297 (33)	112,216 (25)	123,240 (28)	58,686 (13)	1,822 (0)
1.00–1.84	653,095	262,660 (40)	170,625 (26)	116,420 (18)	88,259 (14)	15,131 (2)
Greater than 1.84	1,458,110	640,720 (44)	356,276 (24)	193,356 (13)	254,394 (17)	13,364 (1)
Refused to answer	324,042	156,956 (48)	47,695 (15)	72,079 (22)	47,312 (15)	0 (0)
Do not know	132,871	86,722 (65)	11,890 (9)	14,909 (11)	10,364 (8)	8,986 (7)
Missing	111,353	16,400 (15)	49,204 (44)	45,749 (41)	0 (0)	0 (0)

The data in this table are based on question KIQ.060: "How frequently does this (referring to KIQ.040) occur? Would you say this occurs . . . every day, a few times a week, a few times a month, or a few times a year?"

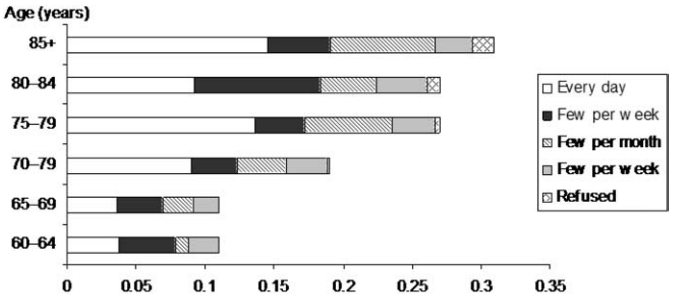

FIG. 2. Frequency of bladder control problems among male responders who answered "yes" to difficulty controlling bladder.

3.4 million American men.[1] This is consistent with previous population based studies such as that by Langa et al, who found the prevalence of urinary incontinence among community based men 70 years old or older to be 13%.[8] Similarly, in a collection of data from 21 international population based surveys, Thom found the prevalence of incontinence among older men to range from 11% to 34% with a median of 17% and a pooled mean of 22%.[9] We also found that, as in women, the majority of men with incontinence (66% or 11.2% of all men) had either daily (42%) or weekly (24%) incontinence. Our finding of daily incontinence among 7.1% of all men is consistent with that previously published in the pooled study by Thom, in which 2% to 11% of men 60 years old or older reported daily incontinence, with a mean and median of 5% and 4%, respectively.[9] However, we found that younger men (60 to 64 years old) were more likely to experience daily or weekly incontinence compared to men 85 years old or older (71% vs 62%). This contrasts with NHANES findings in women, in whom the prevalence of daily or weekly incontinence increased with age.[10] This might be due to selection or a survivor effect from a much smaller population of men alive at 85 years old or older. Men still alive at this age may actually have fewer comorbidities, resulting in a lower prevalence of daily incontinence compared to younger age groups.

Studies in men have demonstrated a predominance of urge incontinence (40% to 80%) compared with mixed incontinence (10% to 30%) or stress incontinence (less than 10%).[1,11] Among men in whom urge incontinence clearly predominates compared to stress, black men had the highest prevalence of urinary incontinence compared to other racial groups. Based on these data we can speculate that the relatively higher percentage of urinary incontinence in black men may be due to a greater prevalence of urge rather than stress incontinence. However, whether black race is a risk factor for urge incontinence in men is unknown.

Historically men with lower urinary tract symptoms including urge incontinence have often been diagnosed with bladder outlet obstruction due to BPH. However, whether BPH has a significant etiological role in the development of urge incontinence symptoms has become controversial. It is possible that many of the symptoms attributed to the prostate in the past may, in fact, be due to nonobstructive overactive bladder.[12] However, in those men whose lower urinary tract symptoms are, in fact, due to BPH, urge incontinence may occur as a consequence of delayed treatment. Since receiving treatment is a function of financial means and access to care, it is possible that the increased prevalence of incontinence among black men is at least partly attributable to untreated BPH. This is consistent with findings of Xia et al, who found that black men had 10% to 24% lower rates of prostatectomy for BPH compared to white men.[13]

Studies in women have found the proportion of urge incontinence among those with incontinence to range from 17% to 40%, and stress incontinence to range from 40% to 60%.[14–17] In a population based cohort study of 2,109 women, black women had less stress incontinence than white, Hispanic and Asian-American women, but had the highest prevalence of urge incontinence.[18] After adjusting for multiple risk factors, white women appeared to have nearly 3 times the risk of stress incontinence compared to black women. However, differences in the relative risk of urge incontinence between the 2 groups were not significant,[18] casting doubt on whether black race is truly a risk factor for urge incontinence in women. According to data from NHANES, nonHispanic white women had an overall

TABLE 3. *Comparison of prevalence of difficulty controlling bladder, NHANES 1999–2000*[1,14]

	Total Men	No. Men With Incontinence (%)	Total Women	No. Women With Incontinence (%)
All	18,231,934	3,131,814 (17)	23,477,726	8,929,543 (38)
Age at screening:				
60–64	5,037,678	546,559 (11)	5,699,785	2,168,863 (38)
65–69	4,731,187	518,157 (11)	4,895,878	1,785,380 (36)
70–74	3,320,840	630,898 (19)	4,505,164	1,683,804 (37)
75–79	2,748,396	750,478 (27)	3,453,472	1,515,900 (44)
80–84	1,478,414	399,774 (27)	2,981,558	989,003 (33)
85+	915,419	285,948 (31)	1,941,869	786,593 (41)
Race/ethnicity:				
NonHispanic white	14,790,935	2,395,212 (16)	18,729,539	7,662,444 (41)
NonHispanic black	1,436,582	296,022 (21)	1,941,269	386,480 (20)
Mexican-American	559,680	81,134 (14)	649,003	230,567 (36)
Other race	429,299	142,015 (33)	1,576,419	468,823 (30)
Other Hispanic	1,015,438	217,431 (21)	581,496	181,229 (31)
Education:				
Less than high school	6,072,264	1,214,224 (20)	8,374,762	2,692,649 (32)
High school	4,516,092	698,919 (15)	7,692,149	3,484,970 (45)
High school+	7,572,244	1,198,317 (16)	7,212,158	2,725,611 (38)
PIR:				
0	22,159	12,082 (55)	111,440	31,876 (29)
Less than 1	1,806,996	440,261 (24)	3,145,548	1,116,508 (35)
1.00–1.84	3,408,381	653,095 (19)	5,520,548	2,193,641 (40)
Greater than 1.84	9,404,848	1,458,110 (16)	9,649,331	3,538,606 (37)

incontinence prevalence of 41% and Mexican-American women 36%, compared to only 20% in black women. These prevalence differences can possibly be explained by the high prevalence of stress incontinence among white and Mexican-American women. Therefore, the difference in incontinence prevalence between men and women may be explained by the large proportion of women with stress incontinence.

Socioeconomic status among adults with urinary incontinence, as evidenced by education level and income level, also differed greatly between men and women surveyed. For example, the men with the lowest levels of education and income had the highest prevalence of incontinence, whereas women of the same socioeconomic background had the lowest prevalence of incontinence. It is possible that the racial differences in urinary incontinence prevalence among men and women may at least partially explain the noted socioeconomic differences. However, whether these differences in prevalence are due to differential reporting between groups or other confounding factors is presently unknown.

Given the increasing population of aging adults and the high prevalence of urinary incontinence among aging men, treatment and prevention strategies are imperative. Population based primary prevention programs that address urinary incontinence risk factors such as obesity, smoking and poor mobility are a key means of preventing the onset of urinary incontinence.[2,19] Given that few men (less than 1%) with incontinence actually seek care for it,[1] efforts to improve public awareness of the condition are needed to expand the access to treatment.

Secondary prevention directed at incontinent individuals has demonstrated great success in the nursing home setting.[19] Prompted voiding, alone and combined with individualized, functionally oriented endurance, and strength training exercises and toileting (Functional Incidental Training), have led to a significant decrease in the frequency of urinary incontinence episodes among elderly nursing home residents.[19,20] Translating similar secondary prevention programs from nursing homes to the community dwelling elderly may reduce the severity and even the overall prevalence of incontinence. By promoting continence and physical functioning, such interventions may also allow community dwelling elderly individuals to maintain their independence as long as possible.

The data from NHANES allow for nationally representative estimates of the prevalence of urinary incontinence in men. However, as in many population based surveys, this study is not without limitations. Self-reporting of incontinence episode frequency is subject to recall error. In addition, by simply asking whether subjects had difficulty controlling their bladder, there was no differentiation between stress incontinence and urge incontinence symptoms. Also, the question in the NHANES survey, "In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine when you cough or sneeze?" is a complex, compound question. It includes a time reference, a phrase about difficulty controlling the bladder, an instruction to include small amounts of urine, and a cue to the common stress precipitants of coughing and sneezing. Such a question may confuse those being interviewed (resulting in recall error) and it may overestimate the prevalence of incontinence by defining men with only 1 episode of leakage per year as incontinent. We did not analyze important etiological and coexisting factors such as benign prostatic hyperplasia, history of prostate surgery or other prostate treatments, or neurological diseases. Nor did we account for men taking medications for overactive bladder or outlet obstruction, which may have had an effect on our numbers.

CONCLUSIONS

The NHANES survey draws a nationally representative sample of subjects from the community and, thus, provides prevalence data for urinary incontinence for all men in the United States. Overall prevalence is 17%, and varies with age, race/ethnicity and socioeconomic variables. Although the prevalence of urinary incontinence in men is less than half of that in women, it is nonetheless high and warrants population based awareness strategies to improve prevention and treatment.

Abbreviations and Acronyms

BPH	=	benign prostatic hyperplasia
NHANES	=	National Health and Nutrition Examination Survey
PIR	=	poverty-to-income ratio

REFERENCES

1. Stothers, L., Thom, D. and Calhoun, E.: Urinary Incontinence in Men. In: Urologic Diseases in America. Edited by M. S. Litwin and C. S. Saigal. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, D. C.: US Government Publishing Office, NIH Publication No. 04-5512, pp. 71–103, 2004. Also accessible at www.uda.niddk.nih.gov
2. Moore, K. N. and Gray, M.: Urinary incontinence in men: current status and future directions. Nurs Res, **53:** S36, 2004
3. Stewart, W. F., Van Rooyen, J. B., Cundiff, G. W., Abrams, P., Herzog, A. R., Corey, R. et al: Prevalence and burden of overactive bladder in the United States. World J Urol, **20:** 327, 2003
4. Brown, J. S., Nyberg, L. M., Kusek, J. W., Burgio, K. L., Diokno, A. C., Foldspang, A. et al: Proceedings of the National Institute of Diabetes and Digestive and Kidney Diseases International Symposium on Epidemiologic Issues in Urinary Incontinence in Women. Am J Obstet Gynecol, **188:** S77, 2003
5. Saigal, C. S., Joyce, G. F., Geschwind, S. A. and Litwin, M. S.: Methods. In: Urologic Diseases in America. Edited by M. S. Litwin and C. S. Saigal. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, D. C.: US Government Publishing Office, NIH Publication No. 04-5512, pp. 283–316, 2004. Also accessible at www.uda.niddk.nih.gov
6. http://www.cdc.gov/nchs/nhanes.htm. Accessed February 25, 2006
7. Vupputuri, S., Longnecker, M. P., Daniels, J. L., Guo, X. and Sandler, D. P.: Blood mercury level and blood pressure among US women: results from the National Health and Nutrition Examination Survey 1999–2000. Environ Res, **97:** 195, 2005
8. Langa, K. M., Fultz, N. H., Saint, S., Kabeto, M. U. and Herzog, A. R.: Informal caregiving time and costs for urinary incon-

tinence in older individuals in the United States. J Am Geriatr Soc, **50:** 733, 2002
9. Thom, D.: Variation in estimates of urinary incontinence prevalence in the community: effects of differences in definition, population characteristics, and study type. J Am Geriatr Soc, **46:** 473, 1998
10. Nygaard, I., Thom, D. and Calhoun, E.: Urinary Incontinence in Women. In: Urologic Diseases in America. Edited by M. S. Litwin and C. S. Saigal. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, D. C.: US Government Publishing Office, NIH Publication No. 04-5512, pp. 71–103, 2004. Also accessible at www.uda.niddk.nih.gov
11. Engstrom, G., Walker-Engstrom, M. L., Loof, L. and Leppert, J.: Prevalence of three lower urinary tract symptoms in men-a population-based study. Fam Pract, **20:** 7, 2003
12. Jaffe, W. I. and Te, A. E.: Overactive bladder in the male patient: epidemiology, etiology, evaluation, and treatment. Curr Urol Rep, **6:** 410, 2005
13. Xia, Z., Roberts, R. O., Schottenfeld, D., Lieber, M. M. and Jacobsen, S. J.: Trends in prostatectomy for benign prostatic hyperplasia among black and white men in the United States: 1980 to 1994. Urology, **53:** 1154, 1999
14. Hannestad, Y. S., Rortveit, G., Sandvik, H. and Hunskaar, S.: A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. Epidemiology of Incontinence in the County of Nord-Trondelag. J Clin Epidemiol, **53:** 1150, 2000
15. Nygaard, I. E. and Lemke, J. H.: Urinary incontinence in rural older women: prevalence, incidence and remission. J Am Geriatr Soc, **44:** 1049, 1996
16. Hunskaar, S., Burgio, K., Diokno, A. C., Herzog, A. R., Hjalmas, K. and Lapitan, M. C.: Epidemiology and natural history of urinary incontinence. In: Incontinence. Proceedings of the 2nd International Consultation on Incontinence. Edited by P. Abrams, L. Cardozo, S. Khoury and A. Wein. Plymouth, UK: Health Publication Ltd., pp. 165–202, 2002
17. Hunskaar, S., Burgio, K., Diokno, A., Herzog, A. R., Hjalmas, K. and Lapitan, M. C.: Epidemiology and natural history of urinary incontinence in women. Urology, **62:** 16, 2003
18. Thom, D. H., van den Eeden, S. K., Ragins, A. I., Wassel-Fyr, C., Vittinghof, E., Subak, L. L. et al: Differences in prevalence of urinary incontinence by race/ethnicity. J Urol, **175:** 259, 2006
19. Sampselle, C. M., Palmer, M. H., Boyington, A. R., O'Dell, K. K. and Wooldridge, L.: Prevention of urinary incontinence in adults: population-based strategies. Nurs Res, **53:** S61, 2004
20. Schnelle, J. F., Keeler, E., Hays, R. D., Simmons, S., Ouslander, J. G. and Siu, A. L.: A cost and value analysis of two interventions with incontinent nursing home residents. J Am Geriatr Soc, **43:** 1112, 1995

EDITORIAL COMMENT

This article presents compelling evidence on the importance of urinary incontinence in men. A major strength of the work is the use of the NHANES, a database that is well recognized in quality and methodology.[1]

A limitation of this study is also the use of the NHANES in that it was not primarily designed to study urinary incontinence. Here all urinary incontinence estimates were derived from a single question. Milestone epidemiological urinary incontinence studies have contained multiple questions,[2] allowing simplicity in wording, redundancy as a reliability check and specificity. The question in this study—"In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine, when you cough or sneeze?"—is complex, containing 4 clauses. Also, while the "difficulty controlling your bladder" clause might be more akin to "difficulty holding" (important in older men, in particular),[3] the subsequent clause "coughing and sneezing" directs the respondent to consider only stress precipitated episodes. Additionally, the specification to include "small amounts" may mean that some respondents are including dripping or dribbling as urinary incontinence, which would lead to an overestimation of prevalence.

Ted Johnson
Rehabilitation Research and Development
Atlanta Veterans Affairs Medical Center
Decatur, Georgia

1. Anger, J. T., Saigal, C. S., Litwin, M. S. and Urologic Diseases of America Project: The prevalence of urinary incontinence among community dwelling adult women: results from the National Health and Nutrition Examination Survey. J Urol, **175:** 601, 2006
2. Herzog, A. R. and Fultz, N. H.: Prevalence and incidence of urinary incontinence in community-dwelling populations. J Am Geriatr Soc, **38:** 273, 1990
3. Wetle, T., Scherr, P., Branch, L. G., Resnick, N. M., Harris, T., Evans, D. et al: Difficulty with holding urine among older persons in a geographically defined community: prevalence and correlates. J Am Geriatr Soc, **43:** 349, 1995