HHS Public Access

Author manuscript

Female Pelvic Med Reconstr Surg. Author manuscript; available in PMC 2016 May 01.

Published in final edited form as:

Female Pelvic Med Reconstr Surg. 2015 ; 21(3): 170–175. doi:10.1097/SPV.0000000000000136.

Functional disability and compromised mobility among older women with urinary incontinence

Elisabeth A. Erekson, MD MPH[1,2], **Maria M. Ciarleglio, PhD**[3], **Paul D. Hanissian, MD**[1], **Kris Strohbehn, MD**[1], **Julie P.W. Bynum, MD MPH**[2], and **Terri R. Fried, MD**[4,5]

[1]Department of Obstetrics and Gynecology at the Geisel School of Medicine at Dartmouth, Hanover, New Hampshire

[2]The Dartmouth Institute for Health Policy and Clinical Practice at the Geisel School of Medicine at Dartmouth, Hanover, New Hampshire

[3]Yale Center for Analytical Sciences at Yale University School of Public Health, New Haven, Connecticut

[4]Department of Medicine, Yale University School of Medicine, New Haven, Connecticut

[5]Clinical Epidemiology Research Center, VA Connecticut Healthcare System

Abstract

Objective—Our objective was to determine the prevalence of functional disability among older women with urinary incontinence (UI).

Methods—We conducted a secondary analysis of the 2005-06 National Social Life, Health and Aging Project (NSHAP). Daily UI was defined as answering “daily” to the question, “How frequently...have you had difficulty controlling your bladder, including leaking small amounts of urine, leaking when you cough or sneeze, or not being able to make it to the bathroom on time?” We then explored functional status. Women were asked about seven basic activities of daily living (ADLs). Statistical analyses with percentage estimates and 95% confidence intervals (CI) were performed. Logistic regression was performed to assess the association between functional status and daily UI.

Results—In total, 1,412 women were included in our analysis. Daily UI was reported by 177 (12.5%) women. Functional dependence or disability with any ADLs was reported in 62.1% (95% CI 54.2%, 70.1%) of women with daily UI. Among women with daily UI, 23.6% (95% CI 16.8%, 30.5%) reported specific difficulty or dependence with using the toilet signifying functional limitations which may contribute to urine leakage. After adjusting for age category, race/ethnicity, education level, and parity, women with daily UI had 3.31 increased odds of functional difficulty or dependence compared with continent older women.

Conclusion—Over 60% of older women with daily UI reported functional difficulty or dependence and 1/4 of women with daily UI specifically reported difficulty or dependence with using the toilet.

Corresponding Author: Elisabeth A. Erekson, MD MPH Geisel School of Medicine at Dartmouth Division of Urogynecology 1 Medical Center Drive Lebanon, NH 03756 Office (603) 653-9312; Fax (603) 650-0902 Elisabeth.A.Erekson@hitchcock.org.

Keywords

activities of daily living; dependence; functional status; mobility; urinary incontinence

INTRODUCTION

Urinary incontinence (UI) is a common condition that can have a profound impact on women's lives. The prevalence of urinary incontinence increases dramatically with age.(1, 2) Incontinence is associated with decreased quality of life, poor self-rated health and depression in older women. (3-5) Incontinence can result from disease-specific processes such as detrusor overactivity or pelvic floor dysfunction. However, incontinence also can result "from physical or cognitive limitations that prevent a person from reaching or using the toilet."(6) Inability to reach the toilet due to these functional limitations is termed functional UI.(6)

Functional status is commonly measured in community-dwelling adults by assessing the ability to perform activities of daily living (ADLs) without assistance. (7) Functional disability and dependence on other people to perform ADLs is an important predictor in older adults of developing adverse outcomes of aging (long-term nursing home (NH) stay, injurious falls, and death) independent of medical comorbidities and age.(8) Tinetti et al demonstrated that both UI and functional dependence share common risk factors predisposing older adults to both conditions.(8) While we know that UI and functional dependence are inter-related conditions, the burden of disability among women with UI is not well described. Knowledge of the burden of disability specifically related to toileting and the relationship with UI is also not well described. Finally, the prevalence of compromised mobility (which would decrease the ability to reach the toilet without leakage) in women with UI is also unknown.

We propose that UI resulting from or exacerbated by functional limitations and compromised mobility may coexist with etiologies for UI that are specifically related to bladder and/or pelvic floor function. In this work, we used a nationally representative sample of community-dwelling older women to determine the prevalence of functional disability in women with UI. We then estimated the prevalence of older women with UI specifically reporting functional disability related to using the toilet. Our secondary aim was to estimate the prevalence of compromised mobility in older women with UI.

METHODS

We conducted a secondary database analysis of the National Social Life, Health and Aging Project (NSHAP), a cross-sectional cohort of community-dwelling men and women in the United States between the ages of 57-85 years surveyed in 2005-2006.(9) The NSHAP was conducted to examine social networks, overall health, and sexual practices of older adults. Adults were targeted for participation in the NHSAP study if they participated in a prior population-based study, the Health and Retirement Study, of community-dwelling older Americans.(10) The overall survey response rate of the NSHAP was 75.5%. Information in the NSHAP was obtained from a single in-home interview conducted by trained professional

interviewers in both English and Spanish using computer-assisted personal interview (CAPI) methods(11). Written exemption for this study was obtained from the Yale University Institutional Review Board as this work involved research of an existing dataset from a public source.

For this analysis, we included all women in the NSHAP (n = 1,510). Women were excluded if they had missing data for questions on incontinence (n=98). Women were categorized as having daily UI if they answered “daily” to the question, “How frequently...have you had difficulty controlling your bladder, including leaking small amounts of urine, leaking when you cough or sneeze, or not being able to make it to the bathroom on time?” Women could answer, daily, weekly, monthly, yearly, or never. UI was categorized in three categories: “daily”, “some” which included women reporting weekly, monthly, or yearly UI, and “none”. These three categories represent increasing frequency of UI.

We then categorized functional status. Women were asked previously validated questions about seven ADLs including walking across a room, walking one block, dressing, bathing, eating, toileting, and getting in and out of bed.(12) Women's status for each ADL was defined as belonging to one of three categories: independent, independent with difficulty if they reported difficulty with performing any of the ADLs but did not require assistance and dependent if they reported inability to perform the ADL without assistance.(13) Overall functional status was defined according to single variable combining the responses of all 7 ADLs. Women were placed into one of three categories for overall functional status: independent, independent with difficulty, and dependent as proposed by Gill et al. (13) Women who could not to perform one or more ADL without assistance were categorized as dependent. Women, who reported difficulty in performing one or more ADLs, without reporting dependence, were categorized as independent with difficulty. Women who were categorized as independent reported no difficulty or dependence in performing any of the seven ADLs.

We also analyzed compromised mobility using multiple measurements. We first examined a timed “Get up and Go” test as this test is a preferred measurement of mobility by the American Geriatric Society.(14) The timed “Get up and Go” test was conducted at the time of the single in-home NSHAP interview. This measurement is the total time it takes a woman to rise from a seated position without using an armrest, walk 3 meters, turn around, return, and sit-down. A total “Get up and Go” test time of more than 12 seconds indicates compromised mobility.(12, 15) Additionally, we analyzed if a woman was observed to walk unsteadily or use an assistive walking device, such as a cane. We also analyzed frequency of physical activity and self-report of falls in the last 12 months.

Demographics including age category (57 to 64 years, 65 to 74 years, and 75 to 85 years), race/ethnicity, education level, self-reported health status relative to peers overall health, parity, body mass index (BMI, kg/m^2), number of medical comorbidities and depressive symptoms measured by the modified Center for Epidemiological Studies-Depression (CES-D) scale were examined. The modified CES-D scale is an 11 question screening test for depressive symptoms.(16, 17) Scores for the CES-D range from 0-33 and higher scores indicating more depressive symptoms. The use of the CES-D scale is not intended to be

diagnostic for depression. The CES-D is intended to be used as a screening tool with increased CES-D scores indicating more depressive symptoms.(16-18) Self-reported health status questions on the NSHAP comprised two modified questions that have been demonstrated reflect a wide array of more specific health measures and also demonstrated to be a useful indicator of both health and mortality.(12)

Statistical analyses, including descriptive and inferential statistics with percentage estimates and 95% confidence intervals (CI), were performed as appropriate. P-values of <.05 were considered statistically significant. The NSHAP dataset allowed data to be weighted to provide an estimate of population characteristics representative of community-dwelling older Americans aged 57 to 85 years. Survey weights were applied to crude frequency estimates to account for the differential probability of inclusion in the sample. Percentage estimates and 95% CI were reported as weighted frequencies. Model fitting and variance estimates used in the construction of CI account for the stratified and clustered nature of the design to produce unbiased estimates of standard errors.

A logistic regression analysis was then performed to examine the independent relationship between UI and functional disability. Potential confounders were included in the final model based on their significance in univariate analysis ($p \leq .1$). Both BMI and CES-D scores were considered as continuous variables in the final regression model. Statistical analyses were performed using SAS 9.2 (*SAS Institute, Inc., Cary, NC*) and STATA 11.0 (*StataCorp, College Station, TX*).

RESULTS

A total of 1,412 women were included in our analysis. UI was reported by 52.8% (n/N = 745/1,412) of older women. Daily UI was reported by 12.5% of women and 40.2% of women reported some UI (weekly, monthly, or yearly). (Table 1) Mean number of medical comorbidities increased with increased incontinence frequency ($p < .0001$). Women with increasing incontinence frequency were less likely to report their health status somewhat or much better than their peers ($p=.04$).

Women with increasing frequency of UI were more likely to report difficulty or dependence with each of the 7 ADLs, including the ADL specifically examining the ability to use the toilet independently ($p < .001$ for all). (Table 2). Among women with daily UI, 62.1% (95% CI 54.2%, 70.1%) reported composite functional disability. (Table 2) Among women with daily UI, 23.6% (95% CI 16.8%, 30.5%) reported difficulty or dependence with using the toilet.

After adjusting for age category, race/ethnicity, education level, and parity, women with daily UI had 3.31 increased odds of functional difficulty or dependence compared with older women without UI. (Table 3) Other significant risk factors for increased functional difficulty were perceived health status relative to peers, BMI, number of medical comorbidities and depressive symptoms. (Table 3)

Women with daily UI were not significantly more likely to have compromised mobility, defined as performance on the timed “Get up and Go” test, compared to women with less

frequent UI. (Table 4) Women with daily UI were more likely to report not being physically active in the last month compared with women with less frequent UI and no UI [26.2% (95% CI 16.9, 35.5 vs.20.1% (95% CI 16.2, 24) vs. 14.3% (95% CI 11.5, 17.2); p=.004]. Women with daily UI were more likely to report falling at least once in the last 12 months compared with other women [33.2% (95% CI 23.6, 42.9) vs. 25.9% (95% CI 21.3, 30.5) vs. 22.6 (18.7, 26.4), p =.04].

DISCUSSION

In a nationally representative cohort of community-dwelling women age 57 to 85, 12.5% of women report daily UI. We found the prevalence of functional disability increased in all ADLs with increasing frequency of UI. Women with both daily UI and functional disability tended to be older, have a higher BMI, and have more medical comorbidities. After adjusting for age category, race, education level, health status, parity, BMI, medical comorbidities, and depressive symptoms, women with daily UI had a significantly increased odds functional disability and dependence compared with older women without UI. Over 60% of women with daily UI reported functional difficulty or dependence with any ADL and 1/4 of women with daily UI specifically reported difficulty or dependence with using the toilet. Although not specifically examined in this study, we hypothesize that due to the high prevalence of both UI and functional disability in community-dwelling older women in the United States, evaluation and treatment of women presenting for symptoms of UI may be improved by considering functional status.

Compromised mobility has also been shown to have the strong and consistent associations with adverse outcomes of aging.(19) We expected compromised mobility to play a role in women with UI due to limitations preventing them from reaching the toilet on time. However, we did not show a significant difference in mobility measured by the “Get Up and Go” test in women with and without UI. We hypothesize that we did not find significant differences in mobility because we did not have information on the specific types of UI, namely urgency UI and stress UI. Fritel et al. explored the association of mobility and UI in 1,942 community-dwelling older women in France.(20) An association between slow walking speed and urgency UI (Adjusted OR 2.17 (95% CI 1.36, 3.45) was demonstrated. Interestingly, Fritel et al did not demonstrate a significant association between stress UI and mobility.(20) Unfortunately, one limitation of the NSHAP is that does not contain information on certain variables. Specifically, we do not have information on either type of urinary incontinence (stress UI, urgency UI, or mixed UI) or severity of UI, although information on UI frequency was available. We did find that women with daily UI had other indicators of compromised mobility as measured by reported physical activity and falls in the last 12 months. Also, when we examined reports of difficulty with ADLs, 453 women reported difficulty or dependence for walking more than one block with increasing disability with increasing urinary incontinence frequency (p<.001). Although walking one block is considered an ADL, this self-reported question also reflects mobility to some extent as well. There is a growing body of evidence demonstrating that compromised mobility, gait disturbances and falls result from decreased muscle strength, balance disorders and cognitive impairments.(21, 22) Another reason we may not have found an association

between mobility and UI could be related to the lack of complex measurements of balance and cognitive function in the NSHAP.

Our study is limited by its cross-sectional design, preventing causality from being determined. Women may reduce physical activity due to fear of accidental urine leakage while other women may have reduce physical activity and increased functional limitations that cause them more difficulty getting to the toilet on time. Women have reported limiting physical activity to avoid the embarrassment of urine leakage.(23) Likely, as suggested by Sung et al., the relationship between UI and mobility is “complex and...birectional”.(24) However, from this nationally-representative sample we have been able to estimate the prevalence of both daily UI and functional disability in community-dwelling older women and demonstrate a significant association. Additional limitations of this study include that it was a secondary analysis of an existing dataset and the NHSAP was not specifically designed to evaluate this question. Finally, we were limited by the questions asked on UI to NSHAP participants. Although not validated, the UI question used in this analysis was asked consistently on all women and information on both the presence of UI and frequency was obtained.

Both functional status and mobility are dynamic conditions. Targeted interventions, especially interventions aimed at increasing physical activity, can improve mobility and thereby decrease adverse outcomes of aging.(25) A pilot program of weekly supervised group sessions of pelvic floor muscle exercises (PFME) and physical therapy for 6 months in female nursing home residents has been shown to improve physical performance women who participated in PFME sessions compared to women given incontinence pads prescription and increased toileting assistance.(26) Mean UI episodes were reduced for both the PFME participants (baseline 9.0 (±12.2) to follow-up 4.4 (±7.4)) and women given incontinence pads prescription and increased toileting assistance (baseline 9.3 (±11.3) to follow-up 5.4 (±8.5)). The finding of improved physical performance with supervised PFME are especially positive given that the nursing home population often experiences more severe urine leakage than community-dwelling older women.(26)

In summary, we found a high concurrent prevalence of functional disability among women with UI. Women with UI were more likely to report falls in the last 12 months and less likely to report physical activity. In women with functional limitations preventing them from reaching the toilet, treatments targeting mobility may prove to be more beneficial than focusing treatments specifically on the pelvic floor or detrusor muscle.

Acknowledgments

This research was supported by a grant from the American Urogynecologic Society (AUGS) Foundation. Dr. Erekson was supported in part through a grant from the Claude D. Pepper Older Americans Independence Center at Yale University School of Medicine (NIH/NIA #P30AG021342). The National Social Life, Health and Aging Project was conducted by a grant from the National Institute on Aging (NIH/NIA #R01 AG021487).

References

1. Rortveit G, Hannestad YS, Daltveit AK, Hunskaar S. Age- and type-dependent effects of parity on urinary incontinence: The norwegian EPINCONT study. Obstet Gynecol. Dec; 2001 98(6):1004–10. [PubMed: 11755545]
2. Hannestad YS, Rortveit G, Sandvik H, Hunskaar S. Norwegian EPINCONT study. Epidemiology of Incontinence in the County of Nord-Trondelag. 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. Nov; 2000 53(11):1150–7. [PubMed: 11106889]
3. Yip SO, Dick MA, McPencow AM, Martin DK, Ciarleglio MM, Erekson EA. The association between urinary and fecal incontinence and social isolation in older women. Am J Obstet Gynecol. Feb.2013 208(2):146.e1, 146.e7. [PubMed: 23159696]
4. Melville JL, Delaney K, Newton K, Katon W. Incontinence severity and major depression in incontinent women. Obstet Gynecol. Sep; 2005 106(3):585–92. [PubMed: 16135592]
5. Sung VW, West DS, Hernandez AL, Wheeler TL 2nd, Myers DL, Subak LL, et al. Association between urinary incontinence and depressive symptoms in overweight and obese women. Am J Obstet Gynecol. May.2009 200(5):557.e1, 557.e5. [PubMed: 19236869]
6. Elkadry E. Functional urinary incontinence in women. Female Pelvic Medicine & Reconstructive Surgery. 2006; 12(1):1–13.
7. Spitzer WO. State of science 1986: Quality of life and functional status as target variables for research. J Chronic Dis. 1987; 40(6):465–71. [PubMed: 3597652]
8. Tinetti ME, Inouye SK, Gill TM, Doucette JT. Shared risk factors for falls, incontinence, and functional dependence. unifying the approach to geriatric syndromes. JAMA. May 3; 1995 273(17): 1348–53. [PubMed: 7715059]
9. Suzman R. The national social life, health, and aging project: An introduction. J Gerontol B Psychol Sci Soc Sci. Nov; 2009 64(Suppl 1):i5–11. [PubMed: 19837963]
10. Juster F, Suzman R. An overview of the health and retirement study. J of Human Resources. 1995; 30:s7–s56.
11. Smith S, Jaszczak A, Graber J, Lundeen K, Leitsch S, Wargo E, et al. Instrument development, study design implementation, and survey conduct for the national social life, health, and aging project. J Gerontol B Psychol Sci Soc Sci. Nov; 2009 64(Suppl 1):i20–9. [PubMed: 19357076]
12. Williams SR, Pham-Kanter G, Leitsch SA. Measures of chronic conditions and diseases associated with aging in the national social life, health, and aging project. J Gerontol B Psychol Sci Soc Sci. Nov; 2009 64(Suppl 1):i67–75. [PubMed: 19204070]
13. Gill TM, Robison JT, Tinetti ME. Difficulty and dependence: Two components of the disability continuum among community-living older persons. Ann Intern Med. Jan 15; 1998 128(2):96–101. [PubMed: 9441588]
14. Ferrucci L, Guralnik JM, Studenski S, Fried LP, Cutler GB Jr, Walston JD, et al. Designing randomized, controlled trials aimed at preventing or delaying functional decline and disability in frail, older persons: A consensus report. J Am Geriatr Soc. Apr; 2004 52(4):625–34. [PubMed: 15066083]
15. Bischoff HA, Stahelin HB, Monsch AU, Iversen MD, Weyh A, von Dechend M, et al. Identifying a cut-off point for normal mobility: A comparison of the timed ‘up and go’ test in community-dwelling and institutionalised elderly women. Age Ageing. May; 2003 32(3):315–20. [PubMed: 12720619]
16. Roberts RE. Reliability of the CES-D scale in different ethnic contexts. Psychiatry Res. May; 1980 2(2):125–34. [PubMed: 6932058]
17. Orme JG, Reis J, Herz EJ. Factorial and discriminant validity of the center for epidemiological studies depression (CES-D) scale. J Clin Psychol. Jan; 1986 42(1):28–33. [PubMed: 3950011]
18. Shiovitz-Ezra S, Leitsch S, Graber J, Karraker A. Quality of life and psychological health indicators in the national social life, health, and aging project. J Gerontol B Psychol Sci Soc Sci. Nov; 2009 64(Suppl 1):i30–7. [PubMed: 19204071]

19. Fallah N, Mitnitski A, Searle SD, Gahbauer EA, Gill TM, Rockwood K. Transitions in frailty status in older adults in relation to mobility: A multistate modeling approach employing a deficit count. J Am Geriatr Soc. Mar; 2011 59(3):524–9. [PubMed: 21391943]
20. Fritel X, Lachal L, Cassou B, Fauconnier A, Dargent-Molina P. Mobility impairment is associated with urge but not stress urinary incontinence in community-dwelling older women: Results from the ossebo study. BJOG. Jun 10.2013
21. Montero-Odasso M, Verghese J, Beauchet O, Hausdorff JM. Gait and cognition: A complementary approach to understanding brain function and the risk of falling. J Am Geriatr Soc. Nov; 2012 60(11):2127–36. [PubMed: 23110433]
22. de Bruin ED, van Het Reve E, Murer K. A randomized controlled pilot study assessing the feasibility of combined motor-cognitive training and its effect on gait characteristics in the elderly. Clin Rehabil. Mar; 2013 27(3):215–25. [PubMed: 22865831]
23. Brown WJ, Miller YD. Too wet to exercise? leaking urine as a barrier to physical activity in women. J Sci Med Sport. Dec; 2001 4(4):373–8. [PubMed: 11905931]
24. Sung VW, Kassis N, Raker CA. Improvements in physical activity and functioning after undergoing midurethral sling procedure for urinary incontinence. Obstet Gynecol. Sep; 2012 120(3):573–80. [PubMed: 22914466]
25. Gill TM, Allore HG, Hardy SE, Guo Z. The dynamic nature of mobility disability in older persons. J Am Geriatr Soc. Feb; 2006 54(2):248–54. [PubMed: 16460375]
26. Tak EC, van Hespen A, van Dommelen P, Hopman-Rock M. Does improved functional performance help to reduce urinary incontinence in institutionalized older women? A multicenter randomized clinical trial. BMC Geriatr. Sep 6.2012 12:51. 2318-12-51. [PubMed: 22953994]

Table 1

Demographics of community-dwelling older women from NSHAP database by urinary incontinence category. Weighted.

Variable	Unweighted Respondents N=1,412	Daily urinary incontinence N=177	Some urinary incontinence N=568	No urinary incontinence N=667	*P*
Age Category:					0.0124
57-64	463	36.7 (28.1-45.3)	43.9 (39.1-48.7)	37.6 (33.2-42)	
65-74	495	29 (22.1-35.8)	33.1 (29.1-37)	37.8 (33.1-42.5)	
75-85	454	34.4 (25.2-43.5)	23 (19.5-26.6)	24.6 (21.4-27.8)	
Race/Ethnicity					0.0016
White	991	84.5 (76.8-92.3)	84.3 (81.1-87.5)	77.3 (72.4-82.2)	
Black	261	8.3 (4.3-12.4)	8.4 (5.9-10.9)	13.6 (9.6-17.7)	
Hispanic, non-black	126	6.2 (0-12.9)	6.2 (3.5-8.9)	6 (2.7-9.2)	
Other	26	0.9 (0-2.2)	1.1 (0.4-1.8)	3.1 (0.9-5.3)	
Health Insurance					0.0209
Medicaid or Medicare	302	30.9 (20.6-41.2)	18.3 (13.4-23.1)	22.1 (18.2-26.1)	
Private Insurance	662	50.4 (39.1-61.7)	65.5 (59.8-71.2)	61 (56.1-65.8)	
Other	187	18.7 (12.2-25.3)	16.3 (12.5-20)	16.9 (14-19.9)	
Education					0.6986
Less than high school	319	19.9 (12.2-27.5)	16.7 (13.3-20.1)	19.7 (15.9-23.6)	
High school or equiv.	418	32.2 (24-40.5)	28.2 (23.8-32.5)	30.8 (25.8-35.8)	
Some college	432	30.2 (21.4-39.1)	35.5 (29.9-41.1)	31.3 (27.3-35.3)	
Bachelor's degree or higher	243	17.6 (9.5-25.8)	19.7 (15.3-24.1)	18.1 (13.8-22.5)	
Health Status Relative to Age Peers					0.0404
Much worse/Somewhat worse/about the same	460	49.7 (40.6-58.7)	39.2 (33.9-44.5)	35.5 (29.5-41.4)	
Somewhat/Much better	725	50.3 (41.3-59.4)	60.8 (55.5-66.1)	64.5 (58.6-70.5)	
Parity					0.5399
No live births	32	2.2 (0.1-4.4)	1.6 (0.6-2.7)	2.6 (0.9-4.3)	
≥ 1 live births	1273	97.8 (95.6-99.9)	98.4 (97.3-99.4)	97.4 (95.7-99.1)	
BMI (kg/m^2, Mean 95% CI)	1310	31 (29.7-32.2)	29.4 (28.8-30.1)	28.1 (27.5-28.7)	0.0002
Medical Comorbidities (Median 95% CI)	1412	2.3 (1.9-2.7)	1.6 (1.5-1.8)	1.3 (1.1-1.4)	<.0001
CES-D Score (Mean 95% CI)	1385	6.7 (5.7-7.8)	6 (5.5-6.5)	5 (4.6-5.4)	0.0014

All values listed as a weighted estimate (95% Confidence Interval) unless otherwise specified.

P-values < .05 were considered statistically significant.

BMI: Body Mass Index

CES-D: Center for Epidemiological Studies-Depression Scale. Range 0–33; higher score indicates greater depressive symptomology

Table 2

Activities of daily living in community-dwelling older women by urinary incontinence category. Weighted.

Variable	Unweighted Respondents N= 1,412	Daily urinary incontinence N=177	Some urinary incontinence N=568	No urinary incontinence N=667	*P*
Walking across the room					<.0001
Independent	1201	76.7 (69.2-84.3)	86.4 (83.4-89.4)	90.9 (88.6-93.3)	
Independent with difficulty	199	21.5 (14.3-28.7)	13.3 (10.3-16.3)	8.5 (6.2-10.8)	
Dependent	12	1.8 (0-3.5)	0.3 (0-0.7)	0.5 (0-1)	
Walking one block					<.0001
Independent	958	54.9 (46.7-63.1)	70.9 (66.7-75)	78.6 (75.3-81.8)	
Independent with difficulty	365	33.5 (26.7-40.2)	24.1 (20.7-27.5)	18.3 (15.3-21.3)	
Dependent	88	11.6 (5.8-17.5)	5 (3.3-6.7)	3.1 (1.8-4.4)	
Dressing					<.0001
Independent	1193	70.3 (62.8-77.8)	84.8 (82-87.6)	90.1 (86.9-93.2)	
Independent with difficulty	211	28.3 (21-35.6)	14.8 (12-17.6)	9.6 (6.6-12.7)	
Dependent	8	1.4 (0-3)	0.4 (0-1)	0.3 (0-0.8)	
Bathing or showering					<.0001
Independent	1259	79.2 (73.4-85)	90.9 (88.4-93.4)	94 (92-96)	
Independent with difficulty	141	20.5 (14.7-26.3)	8.3 (5.8-10.9)	5.4 (3.6-7.2)	
Dependent	11	0.4 (0-0.9)	0.8 (0-1.5)	0.6 (0-1.2)	
Eating					<.0001
Independent	1339	90.7 (85.4-95.9)	95.1 (93.6-96.7)	97.1 (95.8-98.4)	
Independent with difficulty	71	9.3 (4.1-14.6)	4.9 (3.3-6.4)	2.7 (1.5-3.9)	
Dependent	2	0	0	0.2 (0-0.5)	
Getting in and out of bed					<.0001
Independent	1210	75.3 (68.3-82.2)	85.6 (82.6-88.7)	91.1 (88.8-93.4)	
Independent with difficulty	197	24.4 (17.4-31.3)	14.4 (11.3-17.4)	8.5 (6.4-10.6)	
Dependent	5	0.4 (0-0.9)	0	0.4 (0-1.1)	
Using the toilet					<.0001
Independent	1214	76.4 (69.5-83.2)	84.2 (81.3-87.2)	92.1 (90.2-94.1)	
Independent with difficulty	196	23.5 (16.7-30.2)	15.8 (12.8-18.7)	7.8 (5.8-9.7)	
Dependent	2	0.2 (0-0.5)	0	0.1 (0-0.3)	
Composite functional status[a]					<.0001
Independent	836	37.9 (29.9-45.8)	59.7 (55.4-64.1)	72.7 (68.6-76.8)	
Independent with difficulty	484	50 (41.4-58.6)	35.1 (31.4-38.8)	24 (20.1-27.9)	
Dependent	92	12.1 (6.8-17.5)	5.2 (3.6-6.7)	3.3 (1.9-4.7)	

All values listed a weighted estimate (95% Confidence Interval) unless otherwise specified.

P-values < .05 were considered statistically significant.

Composite functional status Independent = no difficulty or dependence on any activity of daily living. Independent with difficulty = difficulty on any activity of daily living (but no dependence for any ADLs) Dependent = dependence on any activity of daily living

Table 3

Multivariate Logistic Regression Model for composite functional disability among all community-dwelling older women (N= 1412)

Variable	Adjusted OR	95% CI		p-value
Urinary incontinence frequency				<.0001
No urinary incontinence	1			
Some urinary incontinence	1.61	1.14	2.23	
Daily urinary incontinence	3.31	1.80	6.08	
Age Group, years				0.006
57-64	1			
65-74	0.87	0.61	1.25	
75-85	1.71	1.11	2.64	
Race/Ethnicity				0.345
White	1			
Black	1.57	0.93	2.66	
Hispanic, non-black	0.91	0.50	1.64	
Other	0.88	0.31	2.52	
Education				0.010
Less than High School	1			
High School or Equivalent	0.51	0.31	0.86	
Some College	0.55	0.34	0.89	
Bachelor's Degree or Higher	0.37	0.20	0.66	
Health Status Relative to Age Peers				
Somewhat better/Much better	1			
Much worse/Somewhat worse/About the same	2.09	1.47	2.99	<.0001
Parity (No live births= referent)	1			
≥1 live birth	0.62	0.30	1.28	0.199
BMI (kg/m^2)	1.09	1.05	1.12	<.0001
Number of Medical Comorbidities	1.50	1.30	1.71	<.0001
CES-D Score	1.10	1.06	1.14	<.0001

CI = confidence interval

BMI = body mass index

CES-D = Center for Epidemiological Studies-Depression Scale

Table 4

Mobility in community-dwelling older women by urinary incontinence category. Weighted

	Daily urinary incontinence N= 177	Some urinary incontinence N = 568	No urinary incontinence N= 667	*P*
*Compromised mobility	52.5 (37.1-68)	51.7 (43.7-59.6)	51.3 (43.7-58.9)	0.99
Walked unsteadily	11 (3.3-18.7)	10.4 (6.5-14.4)	7.5 (3.6-11.5)	0.46
Used cane or walker	6.1 (0.3-11.8)	2.9 (0.4-5.4)	1.5 (0.2-2.8)	0.12
Frequency of physical activity				
Never or < 1 time per month	26.2 (16.9-35.5)	20.1 (16.2-24)	14.3 (11.5-17.2)	0.004
Fallen in the past 12 months	33.2 (23.6-42.9)	25.9 (21.3-30.5)	22.6 (18.7-26.4)	0.046
Number of falls in past 12 months (Mean, 95% Confidence Interval)	3.9 (1.7-6.1)	2.2 (1.8-2.5)	1.9 (1.6-2.2)	0.111

All values listed as a weighted estimate (95% Confidence Interval) unless otherwise specified.

*Compromised mobility was determined based on performance of the “Get Up and Go” test. Women were categorized as having compromised mobility if total time ≥ 12 seconds to complete.