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# Prevalence of Urinary Incontinence among Spanish Older People Living at Home



## Abstract

**Objective:** To estimate the prevalence and characteristics of urinary incontinence (UI) in the noninstitutionalized elderly population of Madrid, Spain. **Methods:** We carried out a cross-sectional study in a representative sample of all community-dwelling people aged 65 or over. Subjects were interviewed in their homes. The question: *Do you currently experience any difficulty in controlling your urine? ... In other words, does your urine escape involuntarily?* was used to identify UI. Type of UI, use of absorbents and specific drugs were also assessed, as well as consultation behavior. **Results:** 589 persons were interviewed (response rate: 71.2%). The prevalence of UI was 15.5%. No significant difference was observed between men and women. Urge UI was the main type for men and mixed UI for women. Use of pads was referred by 20.2%. A total of 34.3% of subjects never went to the doctor for their problem (25.2% of men and 39.4% of women). **Conclusion:** Compared to other populations the overall prevalence of UI in Spanish elders living at home is relatively high. A very small difference by gender was found, although a lower response rate in women could in part explain this unexpected finding.

## Key Words

Urinary incontinence  
Prevalence  
Epidemiology  
Aged

## Introduction

Urinary incontinence (UI) is becoming a high priority problem due to its magnitude, time trends and costs, especially in developed countries where the elderly population is growing and the prevalence of this problem is clearly higher. Although UI cannot be considered a life-threatening condition, its consequences in terms of morbidity, quality of life, and costs are extremely important [1, 2] and, in our opinion, should be judged as a high priority public health problem.

Many studies have been carried out in middle-aged women and among institutionalized populations; however, studies on the prevalence of UI in older people living at home are relatively scarce. To our knowledge this is the first study in Spain that offers data on the prevalence of UI in the community. At present, surveys aimed at measuring the prevalence of UI are of huge importance for the particular health administrations, but international comparisons could also help to identify relevant issues in terms of causes and management of the problem.

**Table 1.** Prevalence of UI

	%	Male	Female
Current	15.5	35.8	64.2
Past			
Several times in adult life	1.2	85.4	14.6
Just once in adult life	8.2	27.6	72.4
Never in adult life	75.1	39.3	60.7

The main objective of the present study was to estimate the prevalence and characteristics of UI in the non-institutionalized elderly population of Madrid, Spain, and also to evaluate the consequences of the condition in terms of palliative treatments and health services use.

### Methods

We carried out a cross-sectional study in the city of Madrid in the period March 1996–May 1996. The sampling frame comprised all noninstitutionalized persons aged 65 or over and registered on the Madrid City Roll. A nonproportional stratified random sample was obtained, with six strata by gender and age group (65–74, 75–84, and 85 years and over).

A letter was sent to the selected subjects emphasizing the characteristics and importance of the survey. Study subjects were interviewed at home by trained and gender-matched professional interviewers. Proxy answers were allowed, but certain questions were not permitted to be answered by proxies, such as self-rated health, the seven questions of the International Prostate Symptom Score (I-PSS) and questions about UI-triggering situations.

The questionnaire gathered information on sociodemographic data (age, sex, marital status, education and occupation), on health issues (self-rated health, UI-related chronic conditions), the I-PSS [3] (we used a cultural and linguistic validated version [4]), body weight and height (self-reported), and general mobility. This information was collected for the entire sample. The following questions were used to identify persons with possible UI: *Do you currently experience any difficulty in controlling your urine? ... In other words, does your urine escape involuntarily? (Yes/No)*

The UI-specific questionnaire was administered to those answering *Yes*, while subjects answering *No* were made the following question: *At some point in your adult life have you suffered involuntary urine loss? (1. Never, 2. Just once, 3. On several occasions, but not recently, 4. On several occasions, including recently)*

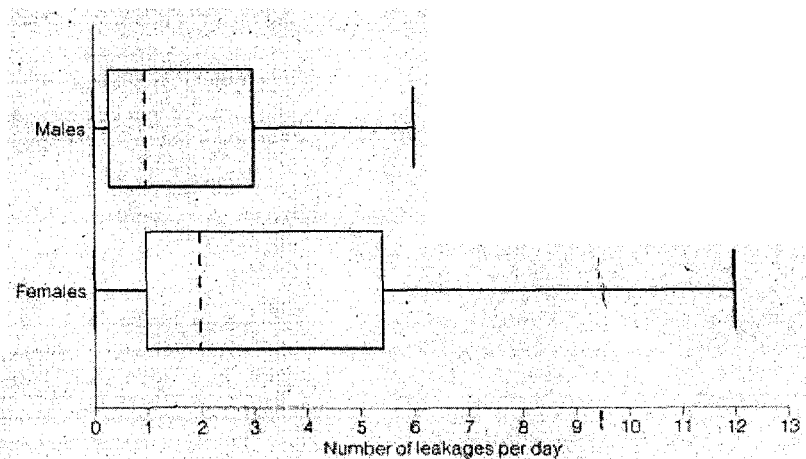
In this paper we only consider current UI. Thus, a person was considered incontinent if he/she answered *Yes* to the first question, or alternatively *4. On several occasions, including recently*, to the second question.

The UI-specific questionnaire included questions about some features of the condition. Subjects were asked if it was frequent that the escapes were connected with exertion movements such as standing up, coughing, walking or laughing (typical of stress incontinence), or with specific triggering situations such as the sound of running water or contact with water, cold weather, ascending in lift or open-

**Table 2.** Association of UI with selected variables (shown are percentages with UI, means, and p values)

Gender			
Men		14.5	
Women		16.1	p = 0.59
Age			
65–74		13.3	
75–84		16.0	
85+		26.3	p = 0.04
Living alone			
Yes		22.3	
No		13.5	p = 0.03
Self-rated health			
Very good		7.6	
Good		9.4	
Fair		15.1	
Bad		33.8	
Very bad		54.4	P <sub>trend</sub> < 0.001
Mobility (main living realm)			
Bedroom		67.1	
Home		17.5	
Neighborhood		17.9	
Total mobility		11.5	P <sub>trend</sub> < 0.001
Urinary tract infections (prevalence: 13.2%)			
Yes		53.1	
No		12.3	p < 0.0001
High blood pressure (prevalence: 33.4%)			
Yes		19.2	
No		13.5	p = 0.07
Diabetes (prevalence: 13.4%)			
Yes		17.5	
No		14.7	p = 0.52
Stroke (prevalence: 6.4%)			
Yes		34.6	
No		14.1	p = 0.001
Parkinson's disease (prevalence: 3.4%)			
Yes		15.7	
No		15.4	p = 0.96
Prostate disorders (prevalence: 24.0%)			
Yes		35.0	
No		9.0	p < 0.001
Prolapse of uterus (prevalence: 7.5%)			
Yes		18.9	
No		16.4	p = 0.78
I-PSS (mean (SD): 4.88 (5.72))			
UI yes (mean)		12.11	
UI no (mean)		3.75	p < 0.001
Number of children + miscarriages (mean (SD): 3.14 (2.40))			
UI yes (mean)		3.58	
UI no (mean)		3.04	p = 0.02
Body mass index (mean (SD): 26.24 (3.91))			
UI yes (mean)		26.64	
UI no (mean)		26.16	p = 0.36

Damián/Martín-Moreno/Lobo/Bonache/  
Cerviño/Redondo-Marquez/  
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**Fig. 1.** Distribution of number of leakages per day by gender. Box limits represent the 25th and 75th percentiles. The dotted line represents the 50th percentile.

ing front-door lock, insufficient time due to physical barriers (typical of urge incontinence). The following scheme was used to assign the type of incontinence:

		At least one stress situation	
		Yes	No
At least one urge situation	Yes	Mixed	Urge
	No	Stress	Other

The questionnaire also included questions on the frequency of leakages, control procedures (like use of mechanical and absorbent methods, and taking of UI-specific drugs) and use of health-care services: specific medical visits (and usual frequency of visits), specific surgical intervention, rehabilitation services, and main type of health-care assistance for UI (National Health System, other medical insurance coverage, or private medical visits paid out of pocket).

#### Statistical Analysis

Due to the sampling format used, a weighting variable was created to re-establish proportionality. All analyses were then run weighted by said variable. For the purposes of calculating the I-PSS score, all subjects with missing values in more than one of the seven questions were assigned a missing value for the score. Body mass index was calculated as weight (kg)/height (m<sup>2</sup>). Proportions were compared by using Pearson's  $\chi^2$  test and, when required, Fisher's exact test. The t test was used to compare means. All p values were two-tailed. Analyses were performed using the SPSS/PC+ package.

## Results

Of the 1,000 eligible subjects, 238 refused participation and 173 were not located (after three visits in different hours), making the final number of subjects studied 589. The overall response rate was 71.2% (computed as number of interviews over number of real contacts). The

**Table 3.** Types of UI (percentages)

	Men	Women	Total
Urge	52.2	12.3	26.6
Stress	10.6	13.5	12.5
Mixed	16.1	61.8	45.4
Other	21.1	12.3	15.5

response rate by age group was: 71.4, 73.1, and 67.1% for the 65–74, 75–84, and 85 and over age group, respectively. The response rate was 78.0% among males and 64.5% among females.

The overall prevalence of current UI was 15.5% (95% confidence interval (CI): 12.2–18.0%) (table 1). Table 2 shows the association of UI with certain variables and conditions. The prevalence among males did not differ significantly from that of females. Strong associations were observed for self-rated health, mobility, urinary tract infections and prostate disorders.

The main types of UI are displayed in table 3. Mixed incontinence was the most frequent type among women while urge incontinence was the main among men. A high proportion of males could not be assigned a defined type (21.1%). When asked about the frequency of the leakages, 7.4% reported constant dribbling and were ascribed to the 'other type of UI' no matter if they reported any urge or stress symptom. The mean number of leakages per day was 2.7 (2.0 for men and 3.0 for women), but the distribution of this variable was highly asymmetrical. Figure 1 shows the distribution of the frequency of leakages by sex.

**Table 4.** Control methods (percentages)

Mechanical	
Catheter	3.4
Urine collector	0.7
Penis clamp	1.6
Absorbents	
Sanitary pads (female only)	33.2
Small-sized sanitary pads (female only)	11.3
Pads	20.2
Consumption of specific drugs	
Oxybutynin	5.6
Flavoxate	3.6
Clomipramine	1.3
Specific surgery	9.3

Females not only suffered from a greater frequency of escapes (the 25th percentile of the female distribution coincides with the median for males) but also exhibited more variability.

The use of absorbents was the main method of control (table 4). A total of 91.5% of all incontinent subjects did not take any of the three specific drugs that were included in the questionnaire (oxybutynin, flavoxate, or clomipramine). 6.6% consumed one of these drugs and 1.9% consumed two of them. There were no subjects following rehabilitation programs or performing specific exercises. With regard to the use of health services, 34.3% of the incontinent subjects never went to the doctor for their problem (25.2% of men and 39.4% of women). Of those who did, 30.8% made only one visit. A total of 38.5% referred that they did not use any medical assistance due to their problem.

## Discussion

In this study carried out in a representative sample of Spanish elderly living in the community, we have estimated an overall prevalence of regular urinary incontinence of 15.5%. We did not find any significant difference by gender, whereas a clear increase in the prevalence with advancing age was observed. If we include those referring that they suffered several episodes but not recently, the prevalence of the condition rises to 16.7%. When compared with similar studies (i.e. carried out in community-dwelling elderly) and irrespective of the definition used in each study, these figures can be considered of a relatively high magnitude. Diokno et al. [5] reported a prevalence of 30% in American elderly (18.9% among males and 37.7%

among females), but the definition used in this study (any urine loss with a minimum frequency of 6 days within the last 12 months) was more liberal than in the present work. Brocklehurst [6] found a prevalence of 7.3% for men and 11.7% for women. In this study of people aged 60 or over, carried out in Great Britain, a person was considered incontinent if he/she suffered from 'bladder problems, e.g. leaking, wet pants, damp pants' in the previous year. Another British study, run by Thomas et al. [7], showed almost the same figures (6.9% for males and 11.4% for females). This study was a postal survey in which regular UI was defined as a frequency of leakage of urine, in inappropriate place or at inappropriate times, twice or more a month (regardless of the quantity of urine lost). Ju et al. [8] reported a lower prevalence (4.6%) in a survey developed in Singapore, showing no difference between males (4.4%) and females (4.8%). Finally, Nakanishi et al. [9] found a prevalence of 9.8% (any degree of UI) in Japanese elderly, showing no difference by gender. Other studies focussed only in older women but also showed remarkable disparities [10–12]. It is a rather difficult challenge trying to explain the sources of this heterogeneity without additional information. In our opinion the different definitions of UI used in each study can only account for a small part of the observed differences. Probably the actual divergences in the magnitude of the condition are smaller than observed and could be explained by meaningful differences in the prevalence of conditions associated with UI (functional impairment, stroke, hypertension, diabetes, etc.).

We have not detected a significant difference by gender. Except for the case of Singapore and Japan, the prevalence of UI used to be clearly higher in women. In our opinion two possible explanations to this fact could apply. One reason could be related to the lower response rate in women (64.5%), but the real impact of nonresponse bias is difficult to weigh. It is conceivable that, due to the particular characteristics of the condition, some people with the problem tend to avoid talking about this issue. The other likely reason could be related with the high prevalence of prostate disorders in our population. Twenty-four percent declared that they suffered from prostate disorders, and 20.9% scored 8 or more in the I-PSS. With respect to the types of incontinence we found that more than half of the incontinent men presented only urge symptoms. A relatively high proportion of unclassified incontinence (21.1%) was also observed in men. In women 61.8% presented mixed incontinence. Compared with the study of Diokno et al. [5] (the only one that permits a direct comparison), the general pattern is fairly similar;

but some apparent differences are worth mentioning. We report a clearly lower proportion of mixed incontinence in men (16.1 vs. 28.9%) and also a lower proportion of stress incontinence in women (13.5 vs. 26.7%). Assuming that the actual differences cannot be so high, we believe that the discrepancies are due to the method used to assign the type of UI. Diokno et al. [5] seem to present to the participants a set of situations that characterize the different types of UI and the subjects choose the one that best fits. In our study we asked four questions typical of urge incontinence and four questions typical of stress incontinence. If someone answered (affirmatively) at least to one stress question and did not answer to any of the urge questions, this person was ascribed to the stress type. Urge incontinence was determined in the same fashion. A priori our method confers a low sensitivity and a high specificity in detecting genuine types. The opposite applies in detecting mixed types. The method of Diokno et al. [5] is more balanced, but we believe that our method is rather more flexible in the sense that it allows the use of other alternative algorithms that can optimize the sensitivity and specificity of methods based on self-reports, but this approach would require a specific design with an adequate gold standard. Recently, Cundiff et al. [13], in a study based on records of women with UI, reported low sensitivities, especially for stress incontinence, when diagnoses were based on pure symptoms (as registered in the patient history) and taking comprehensive urodynamic evaluation and physical examination as the gold standard. Although such inaccuracies are less important in surveys than in the clinical setting (where decisions are to be taken with regard to the need for additional tests or with a specific treatment), efforts should be made for improving the validity and reliability in measuring types of incontinence. This can be of a great interest either to health administrators and to researchers.

Our study is in accordance with the widely reported fact that more than one third of the incontinent subjects never consulted a doctor about their condition [2]. In our population, regardless of the responses about consulting a doctor, a high fraction stated that they do not make use of medical services for this condition (38.5%). It is also worth mentioning that none of the persons followed any rehabilitation program or special exercises.

The main limitation of this survey could arise from the nonresponse rate, particularly that related to women and the oldest old. This could lead to a slight underestimation in these groups, although we do not think the overall prevalence of UI among the nonresponders is significantly different to that of responders. On the other hand, it should

be noted that, irrespective of the objective of the study, nonresponse is a common problem in surveys carried out in elderly [14]. Moreover, some of the people without urinary problems refuse participation due precisely to this fact. In any case we were aware about this challenge and several measures were taken to minimize nonresponse and underreporting. A letter with the logos of two official organizations was sent to the selected subjects. In this letter the magnitude of the problem, the general objectives of the study, and a guarantee on confidentiality were clearly expressed. Furthermore, the interviewers (who showed an identification card) were of the same gender as the interviewees and were properly trained in this field.

In conclusion, we have detected a prevalence of urinary incontinence in Spanish community-dwelling elders of a moderately high magnitude compared to that observed in other populations. In practical terms, this condition could be considered as a major public health problem taking into account that most cases can improve their situation in terms of morbidity and quality of life with adequate management, leading also to important reductions on the associated costs. Finally, we believe that international comparisons of surveys on the prevalence of UI could be very useful but efforts in the standardization of certain features are needed to assure sensible conclusions.

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