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Epidemiological Study on Urinary Incontinence and Overactive Bladder in Primary Care, and the Prevalence of Risk Factors (URO-RISK Study)

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ABSTRACT

Introduction: The assessment of risk factors for urinary incontinence (UI) can help the physician detect patients with UI. Apart from traditional risk factors, specifically related to stress UI, other factors such as medications and drinking habits can influence urge micturition. The present study analyzed the prevalence of risk factors for UI in a population treated in primary care centers, with at least 2 urinary symptoms.

Methods: This is an epidemiological, cross-sectional, multicenter, nonprobabilistic study with a consecutive inclusion of cases. For our case, 2 276 physicians recruited primary care patients over 18 years old with at least 2 urinary symptoms, excluding those with urethral catheters.

Results: In the 4 674 patients, with a mean age of 64.7 years, most were women (72.6%), and the most prevalent urinary symptoms were frequent urination, urgency, and nocturia. More than 90% of patients had 3 or more symptoms of UI. The most important risk habits were the intake of coffee or tea (32.3%), followed by liquid intake such as water, juice, or soft drinks (29.9%). Of our patients, 73% were taking medication, which could affect micturition. The most prevalent pathological antecedents were those linked to gender, followed by recurrent urinary infections, and diabetes.

Conclusion: Despite a high prevalence of UI in the adult population, there's a low demand for health care. Moreover, the majority of these patients have habits and risk pathologies that could be solved or at least eased with medical advice that could result in improved quality of life.

INTRODUCTION

One of the major problems in carrying out an epidemiological study focused on a disease defined by symptoms is the disparity between the definitions and the criteria of the pathology; i.e., urinary incontinence (UI). The International Continence Society defined UI as "the condition in which the involuntary loss of urine is objectively demonstrable and is a social or hygiene problem." This definition is totally acceptable theoretically speaking; however, it poses serious problems in its practical application as it neither establishes different types of UI nor takes into account different quantities of loss [1].

Poor social awareness of this problem, together with a lack of conceptual uniformity and great clinical variations, make it difficult to ascertain UI prevalence in the general population.

KEYWORDS: Epidemiological study, health care demand, overactive bladder, quality of life, urinary incontinence

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The embarrassment and social taboo associated with this problem, as well as the idea that UI is inherent to aging [2,3], are the main causes for the lack of demand for health care. There is a suspicion that less than 50% of patients with UI consult their family doctors.

Although, in general, UI is not a serious clinical problem, its high prevalence, symptoms, and socioeconomic connotations [4-6] are the cause of an important decline of quality of life [7] by reducing autonomy and self-esteem [8,9]. It is the doctor's task to detect the problem, determine its intensity and importance, and offer the best therapeutic options.

Although exact figures are not available, the high occurrence of UI is well known. Some studies [10] observed a UI prevalence of nearly 25% in populations over 40 years old.

Despite having a great impact on patients' quality of life, most UI remains undiagnosed. Social embarrassment is one of the causes; patients do not easily comment on this problem with their family doctors. Many people also think UI is usually an age-related problem and therefore it cannot be solved. Thus, doctors must be proactive in searching for UI among their patients [11].

The assessment of risk factors for UI can help the physician detect people with UI. Apart from traditional risk factors, especially related to stress UI (age, deliveries, abdominal surgery), other factors, such as medications and drinking habits, can influence urge micturition [12].

The present study analyzed the prevalence of risk factors for UI in a population treated in primary care centers, with at least 2 urinary symptoms.

METHODS

This is an epidemiological, cross-sectional, multicenter, nonprobabilistic study with the consecutive inclusion of cases. During a 6-month period, 2 276 physicians in primary care units included the first 2 patients over 18 years old, with at least 2 UI/OAB symptoms. Those patients with a urethral catheter or without signed informed consent were not included in the study. The following symptoms were selected in order to clinically detect UI/OAB [13]: frequent micturition (the need to urinate more than 8 times in 24 hours [polyuria] or with intervals of less than 2 hours [low periodicity]), nocturia (waking up to urinate more than once at night), urgency (an uncontrollable and urgent sense of needing to urinate), urgency incontinence (sudden urine leakage preceded by urgent sensation), stress incontinence (urine leakage when doing physical exercise such as lifting weight, jumping, or running, or physical exertion such as sneezing, coughing, or laughing), and nocturnal enuresis (bedwetting or urine leakage when sleeping).

We studied triggering and aggravating factors of UI symptoms including an increased intake of liquid or diuretic substances and smoking, pathological antecedents that could be responsible for bladder disorders, and medical treatments, both pharmacological and nonpharmacological, that could alter diuresis.

Descriptive statistics were carried out with the statistical package SPSS version 11. The χ^2 test was used to determine the existence of statistically significant gender differences in previous consultations for UI, and the Mann-Whitney test was used to establish gender differences in urinary infection (UTI) frequency and the duration of diabetes.

RESULTS

From a total of 4 853 recruited patients, 179 did not meet the inclusion criteria. The final number of participants was 4 674. Of those, 72.6% women, had a mean age of 64.7 years (SD 10.4), and a mean body mass index (BMI) of 27.6 kg/m^2 (SD 3.7 kg/m^2).

The frequency of urinary symptoms is shown in Figure 1. The most repeated symptom was micturition frequency, followed by micturition urgency, nocturia, and urgency incontinence. Stress incontinence and enuresis were less prevalent. Over 90% of the patients showed more than 2 UI symptoms: 32.9% had 4 symptoms, 25.3% 3 symptoms, 21.1% 5 symptoms, and finally 11.2% had 6 symptoms. Of those, 23.4% had never visited their physician for UI, of which 810 were women (24.2% of the women in the study) and 269 were men (21.2% of the men in the study). This difference is statistically significant (χ^2 test; $p < 0.05$) (Figure 2).

To study the UI associated risk factors, the clinical antecedents were divided into 4 categories: risk habits, pharmacological treatments, related illnesses that could be the cause of secondary UI/OAB, and risk factors related to gender. Among the risk habits, the intake of 3 or more cups of coffee a day in 32.3% of patients was noteworthy; furthermore, 29.9% did not limit their intake of liquids (water, juice, non-cola soft drinks) and were drinking 6 or more glasses a day. These results are shown in Figure 3.

The frequency of risk treatments in patients with urinary symptoms is shown in Table 1. Of our patients, 73.2% had a

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Figure 1. Frequency of micturition dysfunction systems.
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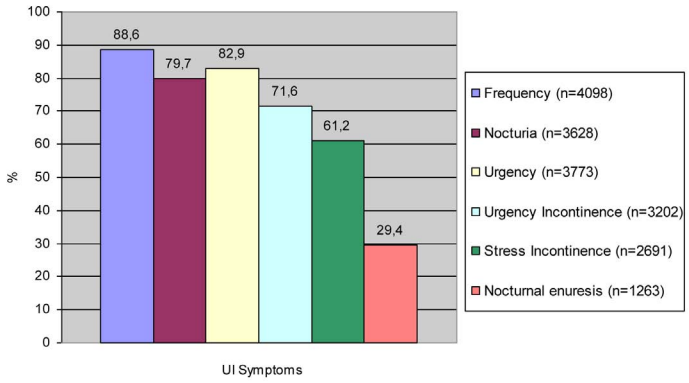

Figure 2. Patients who asked for health care for urinary incontinence and patients who did not, according to gender.
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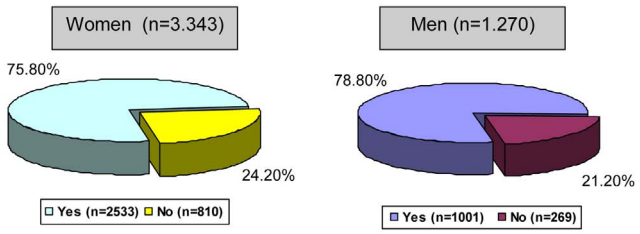

*We found statistically significant differences (χ^2 test ; $p < 0.05$).

pharmacological treatment that could alter diuresis. With respect to diseases that could cause secondary UI/OAB, the most frequent ones were recurrent urinary tract infection (UTI) (34.6%, mean 3.1 infection/year; SD 1.7), with a significantly higher frequency in women (Mann-Whitney test, $p < 0.05$), and diabetes mellitus (23.1%). According to the Mann-Whitney test ($p > 0.05$) there were no statistically significant differences in gender with regard to the duration of diabetes (Table 2). Of our patients, 13.2% had digestive pathologies and 12.4% had undergone a urological or gynecological operation. The less prevalent risk pathologies were neurological diseases (7.3%) and digestive surgery (5%) (Figure 4). Pathological antecedents related to gender were noteworthy; 52.5% of women had had 3 or more pregnancies while 61.7% of men had been diagnosed with benign prostatic hyperplasia.

It should be noted that the results could be biased as patients were recruited from primary care only; therefore, these results may not be representative of the general population.

DISCUSSION

Urinary continence is the result of the urinary bladder and urethra working in perfect coordination, as micturition and continence are the result of 2 opposing forces: intravesical and intraurethral pressure. The neurological mechanisms that make continence possible are still not understood, which makes controlling incontinence all the more complex [10]. Anything that affects the process at any point can lead to a dysfunction resulting in urinary incontinence (UI).

There are multiple sets of symptoms depending on the underlying disorder. Clinical disparity together with great variability in its intensity and lack of awareness among some patients is responsible for the unknown prevalence of UI. Current medical literature offers a wide range of levels of prevalence. For example, in Spain it is estimated that between 25 and 45% of women over 20 years old and between 7 and 11% of men of the same age suffer from UI. American guidelines indicate a prevalence of 15 to 35% among those over 60 [11]. In the present study, the number of women who had never before visited their doctors (24.2%) in comparison with men (21.4%) is notable (Figure 2). Moreover, this figure varies in gender depending on age. The study UrEpik showed that young men had less prevalence of UI symptoms while the proportion was reversed in the elderly [12]. But there are other factors that influence UI such as treatments, pathological antecedents, and lifestyle choices (smoking, alcohol intake, dietary habits).

The prevalence of UI in women varies according to different studies. The cause seems to be a lack of homogeneity in populations, with differences in age range, type of UI, and the patient. In the most recent works, we found a mean prevalence of 25 or 26% according to Hannestad [14] and Temml [15], respectively, but also much lower estimations by Bortolotti (11%) [16] or notably higher by Moller (72%) (17). The main types of UI, mostly associated with women, are stress UI, urgency incontinence or mixed urgency-frequency, and mixed UI, which includes all the aforementioned.

Among all women with incontinence, stress UI had a mean prevalence of 49% (range between 24 to 75%), urgency UI

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Table 1. Risk habits in patients with micturition dysfunction symptoms.

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	n	%
Sedatives/hypnotics	1568	33.5%
Antidepressants	1245	26.6%
Calcium antagonists	995	21.3%
Diuretics	796	17%
Anticholinergics	694	14.8%
Alpha-blockers	418	8.9%
Beta-blockers	315	6.7%
Antipsychotics	177	3.8%
Chemotherapy	55	1.2%
Radiotherapy	50	1.2%
Total patients with risk treatments	**3422**	**73.2%**
Total patients in study	**4674**	**100%**

Figure 3. Risk habits in patients with micturition dysfunction symptoms.

http://dx.doi.org/10.3834/uij.1944-5784.2012.06.10f3

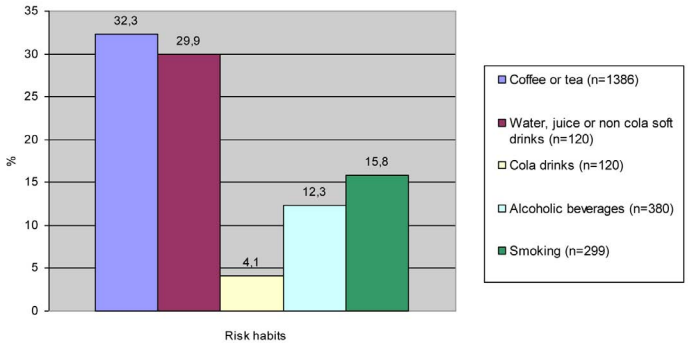

Figure 4. Risk pathologies in patients with symptoms of micturition dysfunction.

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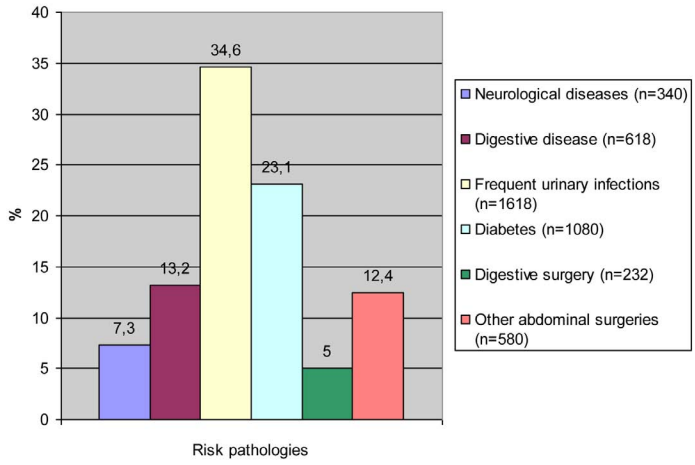

21%, (7 to 49%), and mixed UI of 29% (11 to 61%) [18]. In this study, which included patients with 2 or more symptoms of UI/OAB, the prevalence of stress UI was 61.2%, with no difference in gender.

Different types of UI in women had different age distributions. Stress UI is frequent in young and middle-aged women but decreases at about 50 to 59 years of age, while urgency and mixed UI gradually increase with age [15]. Also, UI severity varies according to different types. In the EPICONT study [14], mild UI accounted for 53% of stress, 39% of urgency, and 31% of mixed UI. In all types, severity increases with aging.

UI epidemiology in men has been much less researched. All studies have confirmed a lower prevalence of UI compared to women, at a rate of 1:2. Besides, the age distribution, types of UI, and the associated risk factors are completely different due to anatomical and etiopathogenic differences. As with women, the UI prevalence in men varies according to different studies but the differences are milder. Values range from 3% in Feneley [19], 5% in Schulman [20], 9% in Thomas [4] and Malmsten [21], and 11% in Yarnell [22]. The most prevalent UI in men is urgency UI (40 to 80%), followed by mixed UI (10 to 30%), and stress UI (less than 10%) [18]. There is an increase of UI with aging but the rise is more gradual than in women, and most new cases are urgency UI.

Ueda [23] shows an increase in prevalence from 0.7% in the 50- to 59-year age range, 2.7% in 60 to 69 years, and up to 3.4% in those older than 70. In relation to stress UI, the same author established prevalence levels of 0.5%, 0.5%, and 0.1% for the same age ranges, respectively. In the present study, the most important urinary symptoms were micturition urgency

Table 2. Characteristics of risk pathologies according to gender.
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	Men			Women			Total			p*
	Mean	SD	n	Mean	SD	n	Mean	SD	n	
Number of urinary infections a year	2.8	2.1	298	3.2	1.6	1160	3.1	1.7	1458	< 0.001
Duration of diabetes (years)	6.1	5.5	204	5.8	5.2	514	5.9	5.3	718	0.469

* Mann-Whitney test

(82.9%), frequency (88.6%), urgency UI (71.6%), and nocturia (79.7%). These high percentages were due to the fact that they were present in almost all men of the study, but they were also found in women because one of the inclusion criteria was to have at least 2 urinary symptoms.

UI symptoms are especially frequent in the elderly. It is estimated that 15% of those over 65 suffer from UI. This percentage increases to 30 to 40% in case of hospital admission due to acute process, and it reaches its maximum (50 to 60%) in geriatric patients. Such high prevalence has reinforced the idea that UI symptoms are a normal part of the aging process. However, nowadays urinary continence is a basic function that healthy elderly people should maintain, independent of age, and its loss has to be taken as a symptom of a dysfunction and not as a normal consequence of the aging process [24]. Physiological alterations associated with aging do not have enough impact to cause UI. The high UI prevalence in the elderly is better explained in relation to multiple pathologies and combined therapies, which, together with mental and physical deterioration, are the most directly related factors to UI in the elderly [25].
Along with aging, other risk factors are associated with incontinence. Some habits can increase micturition volume in different ways.

Liquid, coffee, tea, and alcohol intake, as well as smoking, can alter the micturition volume and aggravate or rush UI. One of the most frequent habits is coffee/tea intake, present in 32.3% of patients at elevated doses (> 3 cups a day), and it highlights the room for improvement in many patients merely with dietary advice. Somewhat similar is the problem with pharmacological treatments, which can affect diuresis. The most frequent ones were sedatives/hypnotics (33.5% of patients in the study), antidepressants (26.6%), calcium antagonists (21.3%), and diuretics (17%). The combination of several pharmacological treatments, each of them able to affect micturition, can exponentially increase urinary symptoms. This is one of the key points where the intervention of the physician, by leaving out unnecessary treatments, substituting drugs or reducing doses, can improve not only the patients' quality of life but also possible urological complications [25].

The most important pathological antecedents associated with UI are those related to gender. Many studies have shown the relation between UI and childbirth, increasing the severity of UI with the number of deliveries [4,26]. In our study, 52.5% of women had had 3 or more pregnancies. Childbirth may weaken and loosen pelvic floor muscles or harm perineal muscles or nerves. Other antecedents associated with female UI are menopause, due to genital trophic changes secondary to oestrogen depletion, and hysterectomy, due to possible nerve lesions and alterations to the bladder muscular fascia and pelvic wall [18].

Almost ⅔ of men in the study had antecedents of benign prostatic hyperplasia. The blockage of the lower urinary tract generates, over time, a hypertrophy of the detrusor urinae that can aggravate urgency UI [5]. Once the blockage is present, urine retention increases the risk of infection, which might aggravate symptoms and even lead to acute retention, sometimes clinically shown as overflow UI [18].

Among risk factors not related to gender, UTI was the most frequent (34.6%), suffered to a greater extent by women (Mann-Whitney test, $p < 0.05$). Thus, micturition disorder is, in many patients, the main cause for infections, generally because of traces of urine. These infections aggravate symptoms because of an increase in urgency symptoms and pollakiuria. This condition is usually associated with genital dystrophia secondary to hypoestrogenism during menopause in women. The frequency of urinary infections is 3.1 episodes a year (TD 1.6)

and they are favored by the concurrence of other alterations that can act as risk factors (neurological disorders, abdominal surgery, and especially diabetes). Lesions of the urological structures are the main cause of UI in patients undergoing abdominal surgery, and more frequently in gynecological and urological surgery. Radical prostatectomy is the operation with the highest rate of micturition dysfunction (5 to 60%), although it usually subsides in intensity during the first 2 years after surgery [27,28]. Due to the neurological complexity of micturition, neurological lesions are normally involved in UI, both central (neurovascular accidents, Parkinson's disease, etc.) and peripheral, among which the most frequent is diabetes-related neurogenic bladder [18].

Therefore, diabetes is, after urinary infections, the most prevalent (23.1%) pathological risk factor in the present study, with a mean duration of 5.9 years with no differences in regards to gender. With these patients, the physician has another line of action through the strict control of glycemia and proper monitoring of the diabetic patient, which will allow the prevention, or at least early detection, of possible urological complications that can result from long-term diabetes.

CONCLUSION

Disparity of UI definitions, clinical varieties, and, most important, the low rate of consultation for this problem are all factors that make it difficult to accurately determine UI prevalence in the general population. In the present study, the most relevant urinary symptoms have been frequency and urgency. Most patients had 3 or more symptoms related to this dysfunction. In spite of the symptoms, almost a third of patients do not limit their liquid intake and even claim to regularly take diuretic substances. One explanation of this fact could be that patients are unaware of the impact that fluid intake has on their symptoms. This indicates that education and behavioral modification would have a potential impact on the urinary symptoms of these patients. The most important aggravating or triggering factors in this study have been pharmacological treatments, present in up to 73% of patients, and gender-related factors, such as childbirth in women—more than half of whom had had 3 or more pregnancies—and benign prostatic hyperplasia in men, with more than 60%.

The physicians' task to ease or eliminate UI symptoms can be carried out on different levels: the detection of patients who have the problem but do not consult, advice on changing risk habits, the adjustment of pharmacological treatments, and the control of associated pathologies and specific treatments depending on the type of symptoms. All the above should lead to the most important goal, namely to increase the quality of life of these patients.

Doctors should adopt a proactive attitude to find and help patients with urinary incontinence and overactive bladder because most micturition habits, treatments, and risk pathologies could be solved with the doctor's advice, thus improving quality of life.

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