

# Urinary symptoms and incontinence in women: relationships between occurrence, age, and perceived impact

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## SUMMARY

**Background.** The prevalence of urinary symptoms that impact on quality-of-life will be important in determining resource allocation in primary care groups.

**Aim.** To determine the prevalence of urinary symptoms and their perceived impact in a community population of women.

**Method.** A postal survey using a validated self-completed questionnaire among all women aged over 18 years and registered with one general practice in a major British city. The prevalence rates and perceived impact of a wide range of urinary symptoms and their relationship with age was determined. Data were analysed using the chi-squared test and the chi-squared test for trend. Spearman's rank correlation was used to assess the relationship between symptom severity and perceived impact.

**Results.** The number of completed questionnaires returned was 2075, giving an 80% response rate. Of these, the number of women who reported some degree of incontinence in the previous month was 1414 (69%), although only 578 (30%) indicated that it had social or hygienic impact. Other lower urinary tract symptoms reported included nocturia (19%), poor stream (19%), urgency (61%), and dysuria (23%). The most troublesome symptoms were incontinence for no obvious reason, nocturnal incontinence, and nocturia, with 73%, 69%, and 63% of sufferers, respectively, finding these symptoms troublesome.

**Conclusions.** Incontinence and other urinary symptoms are more common than previously thought. These symptoms are not always perceived as bothersome or as having a social or hygienic impact, and therefore many women who report urinary leakage do not require treatment. Nocturnal symptoms in women are commoner than might have been supposed and are extremely troublesome to sufferers.

*Keywords: urinary symptoms; incontinence; quality-of-life.*

## Introduction

MANY studies have been published estimating the prevalence of incontinence among women,<sup>1-5</sup> with prevalences varying from 5% to 25% for women aged 15 to 64 years, and 12% to 38% for women over 60 years, with women twice as likely to experience incontinence as men.<sup>2</sup> Wide ranges are given because of difficulties in comparing studies with diverse definitions of incontinence, differing research designs and population samples, and a variety of often unvalidated measurement instruments.<sup>2,5-9</sup> A small number of validated self-completion questionnaires are now available (for example, Urogenital Distress Inventory [UDI],<sup>10</sup> and the Bristol Female Lower Urinary Tract Symptoms questionnaire [BFLUTS]<sup>11</sup>).

The International Continence Society (ICS) has suggested that incontinence should be defined as 'a condition in which involuntary loss of urine is a social or hygienic problem and is objectively demonstrable'.<sup>12</sup> The implementation of this definition is problematic owing to the difficulty in defining what constitutes a social or hygienic problem; prevalence studies of incontinence have therefore employed definitions based on the frequency of incontinence.<sup>3-5,13-16</sup> While most prevalence studies have focused on incontinence, symptoms such as nocturia, diurnal frequency, and urgency have also been shown to be common.<sup>4,17,18</sup>

There is an acknowledged discrepancy between the number of women who admit to incontinence and the number who seek treatment,<sup>16</sup> and, while the absolute prevalence of incontinence may be of academic interest, it is the prevalence of incontinence that impacts on daily life that will determine the need for health services. This can be measured by assessing how much an individual is troubled by a particular symptom. The UDI and BFLUTS questionnaires both measure this, and the BFLUTS questionnaire also provides a detailed assessment of symptom occurrence.<sup>11</sup>

In this study, we have set out to examine the relationships that exist between the prevalence of a variety of urinary symptoms in women and their perceived impact using the BFLUTS questionnaire.<sup>11</sup> It has been estimated that the cost of incontinence in the community in the United States was approximately \$6 billion per annum in 1986.<sup>19</sup> Determining the prevalence of problematic incontinence (and other urinary symptoms) could prove useful in assessing the need for continence services with the advent of primary care groups.

## Method

All women aged 19 years and over, registered with one group general practice of 7000 patients, consisting of four doctors (three male and one female), and located on the outskirts of a large British city, were invited to participate in the study ( $n = 2641$ ). The Townsend score for the practice was 0.14 for 1996-1997, showing it to be near average for the local health authority area for levels of material deprivation. The annual consultation rate for the practice was 2.97 in 1996-1997, compared

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with a mean of 2.80 for the local health authority. Each woman was sent a copy of the BFLUTS questionnaire with an accompanying letter signed by her GP; there was a second mailing to non-responders six weeks later.

The BFLUTS questionnaire consists of 34 questions, including nine relating to incontinence (for example, stress incontinence, urge incontinence, incontinence for no obvious reason, nocturnal incontinence, and pad usage), 12 relating to other urinary symptoms, four relating to sexual function, and nine questions concerning aspects of quality-of-life.<sup>11</sup> Each question has two parts: the first relating to symptom occurrence during the previous month with a five-point Likert scale; and the second part describes the degree to which the symptom causes a problem, on a four-point scale. The BFLUTS questionnaire has been shown to be psychometrically robust, with good reliability and validity.<sup>16</sup> The acceptability of the questionnaire and accompanying letter was tested in an initial successful pilot study among 50 women registered with a different practice that had similar social groupings.

### Statistical methods

Data were analysed using the SAS statistical package.<sup>20</sup> The chi-squared test was used to test for an association between symptom occurrence and age, and the chi-squared test for trend to test for a linear trend across age groups. The Bonferroni correction was applied to maintain an overall significance level of 0.05. Spearman's rank correlation, after adjustment for age, was used to assess the strength of the relationship between symptom severity and perceived trouble.

### Results

Of the original sample of 2641, one woman was found to have died and 40 had moved away. The number of questionnaires returned after the first mailing was 1638, with a further 437 returned after the second mailing, giving a total of 2075 completed questionnaires; a response rate of 80%. The mean age of responders was 52 years (range 19 to 97 years). The practice area included two residential homes, and residents were equally represented among responders and non-responders. Levels of missing data were low, ranging from 0.6% to 4.1% (mean = 1.3%) for symptom questions and 0.5% to 13.7% (mean = 4.3%) for problems caused. The return rate varied significantly between age groups, as did the level of missing data in the questionnaires returned. The bias owing to these variable return rates was assessed and, in all cases, the revised prevalence estimates remained within the 95% confidence intervals quoted.

Urgency, stress and urge incontinence, and incomplete emptying were the most commonly reported symptoms, experienced by 61%, 60%, 46%, and 43% respectively (Table 1). Several symptoms, more commonly thought of as suggestive of voiding problems in men, were reported by more than 20% of women, including interrupted stream and hesitancy. Dysuria and bladder pain were also reported by similar numbers. Excessive diurnal frequency of voiding (more than eight times per day) was reported by 15%, and nocturia (twice or more per night) by 18%.

The prevalences of all symptoms, apart from straining and hesitancy, were associated with age ( $P < 0.05$ ), although not all associations were linear. Reduced stream, nocturia, urgency, urge, and incontinence for no obvious reason and intermittency increased with age, while dysuria and bladder pain decreased with age.

The most prevalent symptoms were not necessarily the ones reported as causing the greatest problems. For example, incontinence for no obvious reason and nocturnal incontinence were

reported relatively rarely but were perceived to be problematic by more than 70% of those who experienced them. Nocturia, urge and stress incontinence, and frequency were also reported to cause at least 'a bit of a problem' in more than half of those who reported the symptom (Table 1).

Moderate correlations were observed between symptom severity and associated perceived trouble for all urinary symptoms (Table 1, where partial correlation coefficients, adjusted for age, are shown).

The prevalence of incontinence in this sample can be portrayed in a number of ways. The number of women who reported any incontinence in the past month was 1414, representing 69% of those where age and incontinence status was known (95% CI = 67% to 71%;  $n = 2047$ ). However, only 364 women reported using pads or changing their underwear to cope with incontinence (29% of the 1277 women reporting incontinence with complete data for pad usage and incontinence status [95% CI = 26% to 31%]). Pad usage was more common among elderly women, with 35 out of 71 (49%) women aged over 80 years with incontinence using pads compared with 191 out of 589 (32%) aged 40 to 59 years.

The ICS definition of incontinence<sup>12</sup> can be applied to our data by determining the number of women whose incontinence interfered with their social life or caused a hygienic problem. Incontinence was regarded as having social impact if it interfered with meeting friends or going out, and as a hygienic problem if women needed to change their underwear or wear pads because of their incontinence. The number of women who fulfilled the ICS definition of incontinence was 578 of the 1936 women with sufficient data analysis, giving an overall prevalence of 30% (95% CI = 28% to 32%).

The prevalence of incontinence varied with age, with 55% (288 out of 528; 19 to 39 years), 76% (632 out of 834; 40 to 59 years), 71% (407 out of 571; 60 to 79 years), and 76% (87 out of 114; over 80 years) reporting some incontinence ( $P < 0.001$  for linear trend). There was a similar relationship between age and women finding their incontinence a social or hygienic problem.

All women were asked to what degree their incontinence caused them problems. Of the 1220 women, 745 (61%) reporting incontinence with complete data found their incontinence problematic. Overall, 40% (95% CI = 38% to 43%) of the women had some incontinence that they described as problematic. There were again significant differences in perceived trouble between age groups ( $P < 0.001$ ).

### Discussion

This large study with its high response rate has allowed us to investigate the prevalence and perceived impact of lower urinary tract symptoms, including incontinence, among women in the general population. The most common symptoms were those of daytime incontinence and urgency. Voiding symptoms were less common, as were nocturia and nocturnal incontinence, although these latter two symptoms were more common than might have been supposed from clinical impression (19% and 6% respectively), and were particularly common in the elderly.

The occurrence of symptoms alone does not, however, tell the whole story. When the perceived impact of individual symptoms was considered, nocturia (which is associated with falls in the elderly<sup>22</sup>), incontinence for no obvious reason, and nocturnal incontinence were perceived to be more troublesome than stress or urge incontinence. Incontinence for no obvious reason was associated with co-existing severe stress or urge incontinence ( $P < 0.001$ ) and may represent a more severe form of these types of incontinence.

**Table 1.** The prevalence of urinary symptoms among women in descending order of overall amount of perceived problem caused by each symptom and rank correlation of symptom severity with perceived impact.

Symptom	Number of women experiencing symptom (%)	95% CI (%)	Number of symptomatic women experiencing symptoms as a problem			Spearman's $r^a$
			'No problem' (%)	'A bit of a problem' (%)	At least 'quite a problem' (%)	
Urgency	1251 (61)	59–63	767 (63)	355 (29)	91 (8)	0.59
Stress incontinence	1229 (60)	58–62	594 (49)	500 (42)	103 (9)	0.57
Urge incontinence	947 (46)	44–48	407 (44)	426 (46)	83 (10)	0.49
Incomplete emptying	886 (43)	41–45	526 (64)	265 (32)	32 (4)	0.53
Intermittent stream	531 (26)	24–28	442 (89)	51 (10)	4 (1)	0.40
Hesitancy	487 (24)	22–26	393 (84)	69 (15)	3 (1)	0.43
Dysuria	479 (23)	22–25	249 (53)	201 (43)	16 (3)	0.29
Bladder pain	462 (23)	21–24	243 (54)	195 (43)	14 (3)	0.38
Poor stream	379 (19)	17–21	278 (85)	45 (14)	4 (1)	0.35
Incontinence for no reason	254 (12)	11–14	66 (27)	144 (60)	30 (13)	0.48
Straining	163 (8)	7–9	111 (71)	42 (27)	3 (2)	0.50
Nocturnal incontinence	120 (6)	5–7	35 (31)	63 (56)	15 (14)	0.48
Frequency >8	312 (15)	14–17	151 (50)	108 (35)	44 (14)	0.42
Nocturia >2	382 (19)	17–20	142 (37)	183 (48)	55 (15)	0.51

<sup>a</sup> Rank correlation of symptom severity and degree of associated trouble adjusted for age.

As already described, there is no standard definition of incontinence. The results from this study give a prevalence of 69% for women reporting some incontinence during the previous month, mirroring other studies where prevalence rates of 41% and 53% were reported.<sup>3,21</sup> However, a smaller proportion (30%) of women indicated that they needed to wear protection or that urinary leakage caused a social problem, reflecting in turn the lower prevalence figures reported by others.<sup>2,22</sup> 'Problematic leakage' could also be defined: 40% of women described their leakage as 'a bit of a problem', although their leakage did not necessarily obligate wearing protection or altering lifestyles.

These results, and the discrepancy between the findings of different population studies, underline the need for the redefinition of normality as regards female urinary incontinence. It may be 'normal' for women to experience some leakage of urine with stress provocation, particularly around the menopause. What is more informative is the prevalence of incontinence that has become problematic hygienically or socially, which may correspond to when treatment is sought; this concept is consistent with the ICS definition of incontinence.<sup>12</sup> The difference in prevalence of leakage regarded as 'normal' and 'problematic' could account for some of the discrepancy between reported leakage and the number of women who seek treatment.<sup>21</sup> The impact that urinary symptoms have on an individual should be taken into account before referring for treatment, as many women do not perceive their incontinence as troublesome and warranting treatment.

It is important to acknowledge the limitations of the study. The study was conducted in one practice and therefore caution should be used in extrapolating the findings to a wider population, although the practice was chosen because its social and demographic patterns were near average for the city. Permission was not sought, for example, to access patient records, and so we are unable to comment on the relationship between urinary symptoms and other factors such as hysterectomy and parity. The aim of the study was to assess the occurrence and troublesomeness of incontinence and other urinary symptoms in women, and, to achieve this, we relied on patient reporting of symptoms. A disadvantage of this approach is that we were not able to collect objective clinical data; for example, by pad tests or urodynamic studies. Using the BFLUTS<sup>16</sup> questionnaire, however, ensured that we achieved a high response rate and collected valid and

reliable data relating to the women's perceptions of the occurrence and perceived impact of their urinary symptoms.

This study shows that urinary symptoms, including incontinence, are common among women, although they are not always perceived to be problematic. While prevalence studies should continue to evaluate the occurrence of lower urinary tract symptoms and incontinence, this study suggests that taking into account the perceived impact caused by symptoms may be much more useful in assessing the desire or need for treatment.

We were unable to obtain information concerning the relationship between impact and consultation rates for the reasons outlined above. Clearly, this would be an interesting area for future research that was beyond the scope of this study.

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