

Urinary incontinence: an unexpected large problem among young females. Results from a population-based study

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Background. The International Continence Society has defined urinary incontinence as a condition in which involuntary loss of urine is objectively demonstrable and is a social or hygiene problem. Urinary incontinence is presumably a common health problem among women even in younger ages.

Objectives. The primary aim was to investigate the prevalence of urinary incontinence (UI) in a female population with a special focus on younger women (18–30 years old). The secondary aim was to investigate the association between UI and number of deliveries, use of contraceptives or oestrogen substitutions, and urinary tract infections (UTIs).

Methods. A population-based study with a self-administered questionnaire was set in the community of Surahammar, Sweden. Subjects were all women (3493) aged 18–70 years living in Surahammar during 1995. The main outcome measures were the prevalence of UI and variables such as number of deliveries, use of contraceptives or oestrogen substitutions, and UTIs.

Results. Twenty-six per cent of the women reported problems of UI. The prevalence of UI in younger women was 12%. The number of reported complaints of UTIs was significantly higher in the women with UI compared with women without urinary incontinence (wUI). In the younger women UTI, nulliparous or having given birth to one or two children were most frequent in those with UI. The use of contraceptives was more common in younger women without UI ($P < 0.05$). However, the use of oestrogen was more common in older women in the age group 51–70 years with UI ($P < 0.01$).

Conclusion. Our findings have shown that 26% of the women who took part in the survey reported problems of UI. Among women below 30 years of age, 12% reported complaints of UI. We found a high prevalence of UI in younger women with a UTI, not taking oestrogen, nulliparous or having given birth to one or two children. There are needs for further investigations with a special focus on younger women.

Keywords. Nulliparous women, prevalence, questionnaire, urinary incontinence, urinary tract infection.

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Introduction

The International Continence Society has defined urinary incontinence (UI) as a condition in which involuntary loss of urine is objectively demonstrable and is a social or hygiene problem.¹ Problems of odour, hygiene, embarrassment, social isolation and skin irritation have been reported in previous studies.^{2,3} UI has serious negative consequences on the quality of life in women.^{2,3} The causes underlying UI are many and include urinary tract

infection (UTI), faecal impaction, drug therapy, detrusor muscle instability, immobility, endocrine disorder and pelvic floor incompetence.⁴

UI is a common health problem among women, with the prevalence of incontinence varying from 8 to 45% in different studies.^{5–12} The wide variation may be due to different factors such as the definitions used, the age groups studied, different data collection methods, under-reporting caused by shame and embarrassment, and the belief that UI is a natural consequence of ageing and that its treatment will not be helpful.^{13,14}

There is already a significant body of research into the prevalence of UI in middle-aged and elderly women, and a possible association between UI and increasing age, childbirth, menopause, old age, UTIs and other symptoms of genito-urinary tract systems.^{6–12,14–20} When UI in women 18–30 years (younger women) is highlighted, previous studies showed an overall prevalence of 5–20%.^{11,17,21,22} To our knowledge, there is a lack of population-based studies focused on the issues of prevalence in younger women and a possible relationship to UTIs, number of deliveries and oestrogen use in the form of the contraceptive pill or hormone therapy.

The purposes of this paper are (i) to investigate the prevalence of UI in women aged 18–70 years with special focus on younger women, and (ii) to investigate the associations between UI and age, number of deliveries, use of contraceptives or oestrogen substitutions, and UTIs.

Method

Study population

The study was conducted in the community of Surahammar, which is situated in the middle of Sweden with a population of about 11 200 inhabitants. Surahammar is an old, discontinued iron works community with a mixture of rural and urban inhabitants from the neighbouring cities. All women (3493) between the ages of 18 and 70 years in the population register of the community of Surahammar were mailed a questionnaire. Women aged 18–30 years were defined as younger women. The regional ethics committee approved the study.

Data collection, questionnaire and procedure

A questionnaire was tested in a pilot study, which included 20 consecutive women who visited a primary health care centre during one day. The pilot study took place 2 months before the final questionnaire was mailed. The questionnaire contained nine dichotomous questions concerning age, number of deliveries, employment status, use of contraceptives or oestrogen substitutions (e.g. contraceptive pill/injection and hormone spiral), physical exercise, smoking habits, UTIs (e.g. Have you had a urinary tract infection/s during the last 6 months?) and UI.

The question on UI was defined in the questionnaire as “For the present time do you have a problem with involuntary loss of urine (for example, when you laugh, jump, cough or sneeze)?” After 3 and 6 weeks, a postal reminder was sent to the non-responders, accompanied by the questionnaire.

Statistical methods

Chi-square tests were used to analyse the differences in number of deliveries, employment status, use of contraceptives or oestrogen substitutions, physical exercise, smoking habits and urinary tract infections. The significance level was set at $P < 0.05$.

Results

A total of 3076 responders answered the questionnaire. The response rate was 88%, with the lowest figure (83%) among youngest women and the highest among women in age group 61–70 years (92%). There were no significant differences between women in the UI group and those in the wUI group regarding such variables as employment status, physical exercise and smoking habits.

Occurrence of UI

About 26% (787) of the women reported having problems with involuntary loss of urine.

Age distribution of UI

See Table 1. The number of reported UI cases increased with age, with the highest frequency in the age group 51–60 years.

Number of deliveries in younger women with and without UI

See Table 2. UI was more common among younger women who had given birth to one child (27%) compared with women who had not given birth (23%, $P < 0.001$), and also when we compared women who had given birth to two children (42%) with women who had not given birth (23%, $P < 0.001$). However, UI was reported by 23% of younger, nulliparous women and most frequently in the UI group.

Use of contraceptives

The use of contraceptives was less common in the group of women with UI. It was mostly younger women who used contraceptives; 38% in the UI group in comparison with 53% in the wUI group ($P < 0.05$).

Use of oestrogen substitutions

In the age range 51–60 years, 36% of the women in the UI group and 25% in the wUI group reported using oestrogen ($P < 0.01$). In the interval 61–70 years, 30 and 17% in the UI and wUI group, respectively, reported using oestrogen substitutes ($P < 0.01$).

TABLE 1 The number of women who reported urinary incontinence (UI) in relation to the number of women without urinary incontinence (wUI) according to age groups (data missing from five of the participants)

Age group (years)	UI		wUI		Total No. of responders
	<i>n</i>	(%)	<i>n</i>	(%)	
18–30	79	(12)	574	(88)	653
31–40	124	(20)	502	(80)	626
41–50	237	(32)	499	(68)	736
51–60	211	(36)	367	(64)	578
61–70	136	(28)	342	(72)	478
Total	787	(26)	2284	(74)	3071

TABLE 2 The number of deliveries (D) in women with (UI) and without urinary incontinence (wUI) in the age group 18–30 years

No. of D	UI		wUI	
	<i>n</i>	(%)	<i>n</i>	(%)
0	18	(23)	317	(55)
1	21	(27)	101	(18)
2	33	(42)	111	(19)
3 or more	7	(8)	45	(8)
Total	79	(100)	574	(100)

Association between UI and UTIs

The number of women who reported UTIs was twice as frequent in the UI group as in the wUI group ($P < 0.01$) and most frequent in the youngest UI women (16%).

Discussion

The main finding in the present study was that about one-eighth of the women below 30 years of age reported a problem of UI. We found a high prevalence of UI in younger women with a UTI, not taking oestrogen, nulliparous or having given birth to one or two children.

Another important finding is establishing the fact that UI was present in 26% of the women in our study. The most prevalence studies were performed in patients from general practices or other outpatient clinics. In a recent study the questionnaire was mailed to all women in a single community and because the participation rate was very high and the sensitivity and specificity of the

questionnaire was satisfactory, we consider this level of prevalence of UI to be representative of the whole population. However, since our results were based on subjective evaluation, supplementary measurement is required before a definitive diagnosis may be considered. The questionnaire was easy to administer and contained only nine questions.

The primary question regarding UI was ongoing UI without any investigation of the identification or treatment of UI, which influence the true prevalence of UI.

In this study, UI was more prevalent in age groups over 40 years, though it was already 12% in the younger women. The finding of a high prevalence of UI in younger women, in accordance with other studies,^{11,17} raises the question of whether a history of enuresis during childhood may be a key feature, and this question was not investigated.

Although there is evidence to indicate that the prevalence of UI increases with age,^{6,8,11,17} there are different views concerning when UI no longer increases as a function of age. In the present study, UI was most frequent in women between 51 and 60 years of age. The decrease in the prevalence of UI could possibly be explained by a decline in regular physical activity that may result in less frequent involuntary loss of urine. On the other hand, previous investigations have shown that UI increased again in elderly women aged 65–84 years.¹⁹ It is uncertain, however, whether the recurrent increase in the prevalence of UI is due to the reduction of oestrogen levels, a part of the natural ageing process,¹⁹ or to the younger affected women not consulting a doctor.^{6,10,14}

In the present study, we found that use of the contraceptive pill or hormone therapy was less common in younger UI women, compared with younger women without UI. Do the younger UI women use other contraceptives? This was not investigated.

However, the use of oestrogen substitutions was more common in women ranging in age between 51 and 70 years. Oestrogen substitution is a common treatment in postmenopausal women with problems of UI. Studies have shown that oestrogen treatment has improved or even completely cured the female incontinence disorder, and is known to have a positive effect on postmenopausal urogenital symptoms such as UTI.¹⁹

Urogenital symptoms, including UI and UTIs, are well described symptoms in elderly women^{7,15,16,18–20} but, to our knowledge, are poorly described in younger women. In the present study, a high prevalence of UI in younger women with a UTI and not taking the contraceptive pill or hormone therapy were found. However, a UTI diagnosis was based on the womans' subjective evaluation and did not need to be confirmed by a visit to the doctor. Moreover, we did not investigate the prevalent experience of UI during sexual intercourse in women, as was found by Lam and co-workers.²³ There may be a relationship between the prevalence of UTIs and sexual activity among younger women. In the present study we did

not ask about sexual activity, and therefore this question remains unanswered.

In a recent population-based study, we found a high prevalence of UI in younger women who had given birth to one or two children. Childbirth is one risk factor for developing UI.^{15,17} However, UI was reported by 23% of nulliparous women below 30 years of age, which is comparable with previous findings.⁸ Our finding raises the question of whether UI is genetically based.

In conclusion, we found that almost every eighth woman below 30 years of age reported problems of UI and that UI was an unexpectedly large problem among young females. There is a need for further investigations, especially studies focusing on younger women.

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References

- Abrams P, Blaivas JG, Stanton SL, Anderson JT. The standardisation of terminology of lower urinary tract function. *Scand J Urol Nephrol* 1988; **114** (suppl): 5–19.
- Sandvik H, Kveine E, Hunskaar S. Female urinary incontinence. Psychosocial impact, self care and consultations. *Scand J Caring Sci* 1993; **7**: 53–56.
- Grimby A, Milsom I, Molander U, Wiklund I, Ekelund P. The influence of urinary incontinence on the quality of life of elderly women. *Age Aging* 1993; **22**: 82–89.
- Norton C. *Nursing for Continence*. Beaconsfield, Bucks, England: Beaconsfield Publishers Ltd, 1986.
- Thomas TM, Plymat KR, Blannin J, Meade TW. Prevalence of urinary incontinence. *Br Med J* 1980; **281**: 1243–1245.
- Fall M, Frankenberg S, Frisé M, Larsson B, Petré M. 456.000 svenskar kan ha urininkontinens. Endast var fjärde söker hjälp för besvären. (In Swedish; '456.000 Swedes may have urinary incontinence, only every fourth subject seeks help'). *Läkartidningen* 1985; **82**: 2054–2056.
- Diokno A, Brock BM, Brown MB, Herzog AR. Prevalence of urinary incontinence and other urological symptoms in the non-institutionalized elderly. *J Urol* 1986; **36**: 1022–1025.
- Jolleys JV. Reported prevalence of urinary incontinence in women in a general practice. *Br Med J* 1988; **296**: 1300–1302.
- Sommer P, Bauer T, Nielsen KK *et al*. Voiding patterns and prevalence of incontinence in women. A questionnaire survey. *Br J Urol* 1990; **66**: 12–15.
- Reckers H, Drogendijk AC, Valkenburg H, Riphagen F. Urinary incontinence in women from 35 to 79 years of age: prevalence and consequences. *Eur J Obstet Gynecol Reprod Biol* 1992; **43**: 229–234.
- Sandvik H, Hunskaar S, Seim A, Hermstad R, Vanvik A, Bratt H. Validation of a severity index in female urinary incontinence and its implementation in an epidemiological survey. *J Epidemiol Commun Health* 1993; **47**: 497–499.
- Samuelsson E, Victor A, Tibblin G. A population study of urinary incontinence and nocturia among women aged 20–59 years. *Acta Obstet Gynecol* 1997; **76**: 74–80.
- Mittenes L. Knowledge and beliefs about urinary incontinence in adulthood and old age. *J Am Geriatr Soc* 1990; **38**: 374–378.
- Holst K, Wilson PD. The prevalence of female urinary incontinence and reasons for not seeking treatment. *N Z Med J* 1988; **101**: 756–758.
- Iosif S, Henriksson L, Ulmsten U. The frequency of disorders of the lower urinary tract, urinary incontinence in particular, as evaluated by a questionnaire survey in a gynecological health control population. *Acta Obstet Gynecol Scand* 1981; **60**: 71–76.
- Iosif S, Bekassy Z. Prevalence of genito-urinary symptoms in the late menopause. *Acta Obstet Gynecol Scand* 1984; **63**: 257–260.
- Simeonova Z, Bengtsson C. Prevalence of urinary incontinence among women at a Swedish Primary Health Care Centre. *Scand J Prim Health Care* 1990; **8**: 203–206.
- Rekers H, Drogendijk AC, Valkenburg HA, Riphagen F. The menopause, urinary incontinence and other symptoms of the genito-urinary tract. *Maturitas* 1992; **15**: 101–111.
- Molander U. *Urinary incontinence and related urogenital symptoms in elderly women*. (Doctoral dissertation) Department of Geriatric Medicine, Vasa Hospital and the Department of Obstetrics & Gynaecology, East Hospital, University of Gothenburg, Gothenburg, Sweden, 1992.
- Johansson C, Molander U, Milsom I, Ekelund P. Association between urinary incontinence and urinary tract infections, and fractures in postmenopausal women. *Maturitas* 1996; **23**: 265–271.
- Nemir A, Middleton RP. Stress incontinence in young nulliparous women; statistical study. *Am J Obst Gyn* 1954; **68**: 1166–1168.
- Wolin LH. Stress incontinence in young, healthy nulliparous female subjects. *J Urol* 1969; **101**: 545–549.
- Lam GW, Foldspang A, Elving L, Mommsen S. Social context, social abstention and problem recognition correlated with adult female urinary incontinence. *Dan Med Bull* 1992; **39**: 565–570.