



# LUND UNIVERSITY

## Lower urinary tract symptoms in middle-aged women - prevalence and attitude towards mild urinary incontinence. A community-based population study.

Teleman, Pia; Lidfeldt, Jonas; Nerbrand, Christina; Samsioe, Göran; Mattiasson, Anders

*Published in:*

Acta Obstetricia et Gynecologica Scandinavica

*DOI:*

[10.1111/j.0001-6349.2005.00770.x](https://doi.org/10.1111/j.0001-6349.2005.00770.x)

2005

[Link to publication](#)

*Citation for published version (APA):*

Teleman, P., Lidfeldt, J., Nerbrand, C., Samsioe, G., & Mattiasson, A. (2005). Lower urinary tract symptoms in middle-aged women - prevalence and attitude towards mild urinary incontinence. A community-based population study. *Acta Obstetricia et Gynecologica Scandinavica*, 84(11), 1108-1112. <https://doi.org/10.1111/j.0001-6349.2005.00770.x>

*Total number of authors:*

5

### General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117  
221 00 Lund  
+46 46-222 00 00

This is an author produced version of a paper published in *Acta Obstetricia et Gynecologica Scandinavica*. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the published paper:

Teleman, Pia and Lidfeldt, Jonas and Nerbrand, Christina  
and Samsioe, Goran and Mattiasson, Anders

"Lower urinary tract symptoms in middle-aged women – prevalence and attitude towards mild urinary incontinence. A community-based population study."

*Acta Obstet Gynecol Scand.* 2005 Nov;84(11):1108-12.

<http://dx.doi.org/10.1111/j.0001-6349.2005.00770.x>

Access to the published version may require journal subscription.

Published with permission from: Blackwell

Lower urinary tract symptoms in middle-aged women –  
prevalence and attitude towards mild urinary incontinence.

A community-based population study.

Pia Teleman<sup>1</sup> MD PhD, Jonas Lidfeldt<sup>\*3</sup> MD PhD, Christina Nerbrand<sup>\*4</sup> MD PhD, Göran Samsioe<sup>\*1</sup> Prof, Anders Mattiasson<sup>2</sup> Prof . From <sup>1</sup>Department of Obstetrics and Gynecology and <sup>2</sup>Department of Urology, University Hospital, Lund, Sweden; <sup>\*</sup>the WHILA study group: <sup>3</sup>Department of Community Medicine and <sup>4</sup>Department of Medicine, University Hospital Lund

Correspondence and reprints to:

Dr Pia Teleman

Dept of Obstetrics and Gynecology

University Hospital

S- 221 85 Lund

e-mail: [pia.teleman@telia.com](mailto:pia.teleman@telia.com)

Running headline: LUTS in middle-aged women.

Lower urinary tract symptoms in middle-aged women – prevalence and attitude towards mild urinary incontinence. A community-based population study.

## ABSTRACT

### Objectives

To investigate the prevalence and perceived bother of lower urinary tract symptoms in middle aged women with and without self-reported urinary incontinence.

### Design

In the Women's Health in the Lund Area study (WHILA 1995-2000), 32% of the participating 6917 women, 50-59 years old, reported urinary incontinence defined as involuntary urinary leakage causing a social and/or hygienic problem. Out of these, 1500 women with (INCONT) and 1500 without incontinence (CONT) received the Bristol Female Lower Urinary Tract Symptoms questionnaire in January 2001.

### Results

A total of 2682 (89%) women were included. Most common lower urinary tract symptoms in the INCONT and CONT groups respectively were any urinary leakage (93.8% vs 53.3%,  $p<0.001$ ), urgency (86.2% vs 62.5%,  $p<0.001$ ), stress incontinence (85.1% vs 41%,  $p<0.001$ ) and frequency (86.9% vs 35.6%,  $p<0.001$ ). The two groups differed significantly in the degree of reported bother by infrequently occurring stress and urge incontinence. Urinary leakage more than once a week was reported as bothersome by 97.5%. The prevalence of self-reported urinary incontinence increased from 32% to estimated 66% if the demand for social and/or hygienic bother was omitted from the definition.

### Conclusion

The prevalence of self-reported urinary incontinence increased from 32% to estimated 66% if the demand for social and/or hygienic bother was omitted from the definition. Lower urinary tract symptoms other than incontinence are common in middle-aged women, with a

significantly higher prevalence in women with self-reported incontinence than in continent women. The attitude towards stress- and urge incontinence varied widely when the symptoms occurred infrequently. Urinary leakage more than once a week was considered bothersome by 97.5%.

*Keywords:* lower urinary tract symptoms; urinary incontinence; BFLUTS; population based study

## ABBREVIATIONS

LUTS: lower urinary tract symptoms

BFLUTS: Bristol Female Lower Urinary Tract Symptoms questionnaire

WHILA: Women's Health In the Lund Area study

HRT: Hormonal replacement therapy

## INTRODUCTION

The prevalence of female urinary incontinence varies between 5.5 to 69 % in different surveys. These extensive variations can only partly be attributed to differences in parity, demographics, prevalence of diabetes, obesity etc in the study population. The variations in prevalence of other lower urinary tract symptoms (LUTS) are also large [1-9]. The design and wording of the questionnaire, whether the questions are put in an interview situation or through a postal survey are also of importance[10]. In addition, the definition of urinary incontinence used has an influence on the result of a survey. [11,12].

In this part of an observational community-based population study in middle-aged women, the Women's Health In the Lund Area (WHILA) study [13], our aim was to investigate the prevalence of storage- and emptying-related lower urinary tract symptoms (LUTS) in women reporting urinary incontinence or continence. We also wanted to investigate the perceived bother induced by urinary incontinence and investigate a possible cutoff above which most women perceive their leakage frequency as bothersome.

## PATIENTS AND METHODS

### Subjects

Our basis was an observational study, Women's Health In the Lund Area, WHILA [13], in which all women (n=10766; 96% being Caucasian) living in the Lund area of southern Sweden by December 1, 1995, and who were born between December 2, 1935, and December 1, 1945, were invited to a screening procedure that took place from December 2, 1995 until February 3, 2000. The health screening program included physical and laboratory examinations and a questionnaire concerning physical activity, dietary habits, medical history, pharmacological treatment, family history of diabetes and hypertension (parents or siblings), menopausal status, smoking and alcohol habits, education, household and working status, physical-, social- and mental well-being (quality of life) and subjective physical- and mental symptoms. The women were identified by a population register comprising all inhabitants in the community, community-dwelling as well as institutionalized.

Sixty-four percent (n=6917) visited the screening where the questionnaire was double-checked with a trained research nurse-midwife. One of the questions in the WHILA generic questionnaire was "Do you have urinary leakage?". The urinary leakage should cause a social and/or hygienic problem in order to be classified as urinary incontinence. Thirty-two percent of the women were incontinent according to this definition.

### BFLUTS

Two groups were selected by computerized randomization from the WHILA material; one that admitted (INCONT) and one that denied urinary incontinence (CONT) according to the above mentioned definition. Each of the two groups comprised 1500 women. All 3000 women received the Bristol Female Lower Urinary Tract Symptoms questionnaire, BFLUTS

during January 2001. The BFLUTS questionnaire has been thoroughly validated by interviews, test-retest analyses and comparisons between clinical and non-clinical populations [14].

The BFLUTS comprises 34 questions related to lower urinary tract symptoms (LUTS), sexual functions and quality of life. Each question concerning a specific symptom experienced during the last month is linked to a second question describing the degree of bother the symptom is causing (Fig 1). While most of the questions concerned detailed symptoms, two were more comprehensive, one being “how often do you leak urine“, the other “how much urinary leakage occurs”. In this study we analyzed the questions related to incontinence and other lower urinary tract symptoms. We also asked the women about the use of hormonal replacement therapy (HRT) during the preceding 4 months, or longer.

The protocols of the WHILA and the BFLUTS studies were approved by the local ethics committee at Lund University.

#### Statistical analysis

Comparisons between the two groups were carried out by the chi square test and when applicable Fischer’s exact test. Because of the large amount of comparisons, a probability level of less than 1 % was chosen. Data were analyzed using computer software SPSS 10.0 system (SPSS Inc, Chicago, Illinois, USA).

## RESULTS

A total of 2682 (89%) women, 1336 and 1346 in the INCONT and CONT groups respectively, responded and were included in the BFLUTS study. Due to change of address, death and similar circumstances 38 questionnaires did not reach the persons intended, another twelve were returned incomplete or unidentified. Missing answers in the symptom questions were 1.2%-2.0%, and more frequently missing in the linked question of perceived bother (3.1-17.5%). The subjects were premenopausal in 2.25% (n=27) and 1.45% (n=18) of the INCONT and CONT groups respectively (NS). In the INCONT group 711 (59.3%) of the women had used some kind of hormonal replacement therapy (HRT) continuously during the last 4 months or longer, in the CONT group 657 (52.9%),  $p<0.01$ .

The prevalence of different lower urinary tract symptoms is presented in Table I. The two groups differed significantly in all but two symptoms, hesitancy and retention. This means that symptoms from the lower urinary tract that do not per se involve leakage were significantly more often reported by those women who also reported urinary leakage causing a social or hygienic problem.

In the INCONT and CONT groups urgency was the most common symptom, (86.2% vs 62.5%,  $p<0.001$ ), followed by stress incontinence (85.1% vs 41%,  $p<0.001$ ) and frequency (86.9% vs 35.6%,  $p<0.001$ ). The prevalence of one or more voiding related symptoms (hesitancy, straining, intermittent stream, abnormal strength of stream, incomplete emptying, retention) were 64.9% and 50.7% in the INCONT and CONT group respectively ( $p<0.001$ ). There was a tendency towards a larger amount of leakage with increasing leakage frequency ( $p<0.001$ , Table II).

In the group of CONT women, 53.3% reported one or more specific symptoms of urinary leakage (urge or stress incontinence, nocturnal incontinence or leakage for no obvious

reason), compared to 93.8% in the INCONT group ( $p < 0.001$ ). If these results were to be applied to the whole WHILA material, where the INCONT group represents 32% and the CONT women 68% of the population, it would translate to an estimated prevalence of self-reported urinary incontinence, regardless of perceived bother, of 66% . The prevalence of stress- and urge incontinence in the BFLUTS part of our study shows a similar pattern as urinary incontinence as a whole. The INCONT group reported a significantly higher degree of bother by infrequently appearing stress and urge incontinence than the women of the CONT group that reported urinary leakage in the BFLUTS. With more frequent urinary leakage, the difference in perceived bother between the groups disappears (Table III).

There was a clear cut-off at a leakage frequency of once weekly above which more than 90% of the women regardless of WHILA group stated that their leakage was at least a bit of a problem (Table IV).

## DISCUSSION

Lower urinary tract symptoms, LUTS, are common in women in their early menopause. Our findings coincide with other European studies [3, 15-18].

The women who reported incontinence causing bother in the WHILA study also reported a significantly higher prevalence of LUTS other than urinary leakage, including symptoms occurring during the emptying phase. The prevalence of LUTS was however high also in the continent group, especially urgency. Many of lower urinary tract symptoms are rather vague and could be experienced by a large part of the population at infrequent occasions. The BFLUTS questionnaire could be too a sensitive instrument, recording symptoms occurring so infrequently that they just as well could represent normality.

Bother related to urinary leakage and other LUTS was dependent on the frequency of the symptoms. However, the women who were classified as incontinent in the WHILA study and also reported urinary leakage in the BFLUTS experienced significantly more bother by occasionally occurring leakage than the women who were classified as continent in WHILA but reported urinary leakage in the BFLUTS. The individual attitude and tolerance level seemed to be decisive for whether a woman experiencing infrequent leakage should be classified as incontinent or not. This is interesting in relation to what makes women actively seek medical help for their symptoms. Women in their fifties-sixties live more active lives including physical activity than previous generations; this could in itself lead to a higher prevalence of urinary incontinence [19-21]. With an increasing flow of information more women with bothering urinary incontinence become aware of the possibility of getting help for their problem, and seek the medical care they need and should have. However, it seems that there might also be a growing number of women who, due to massive commercial advertising from companies introducing new (and expensive) treatments for incontinence, are

“redefining” their symptom, previously experienced as natural and causing no bother, into an unnatural and unacceptable condition that they feel needs to be treated. Many of these women have quite infrequent symptomatology and could benefit from information regarding “normality”, i.e. how commonly urinary incontinence and other LUTS occur in the population.

There was a clear cutoff at leakage more than once weekly where nearly all women reported bother by urinary leakage. This coincides with Alling-Möllers population-based study from Denmark [15]. This information could possibly be used as a simple marker exploring the expected need and costs for medical care due to urinary incontinence. A cost analysis would also demand knowledge of the consultation rate for urinary incontinence. The EPINCONT study in Norway reported that only 26% of the incontinent women had seen a doctor for their symptoms. Consultation was associated with increasing age, impact and severity based on leakage frequency, amount and duration [22].

The BFLUTS resulted in an estimated prevalence of urinary incontinence twice the one reported in the WHILA study. This could partly be explained by increased incidence due to the time, approximately three years, elapsed between the WHILA study and the BFLUTS questionnaire. The annual incidence including the remission rate are reported to be between 2.9-5.9% in different studies [18,23]. Sandvik et al [24] showed in the EPINCONT study a prevalence peak of urinary incontinence around 50-54 years of 30.2% compared to 26.2% in women aged 60-64. If the incidence figures from Sandvik et al were true also for southern Sweden, the incidence during the three years that elapsed between the WHILA and BFLUTS parts of our study, would account for a maximum of a third of the observed difference.

Another explanation of the rise in prevalence is that, in the WHILA study, the women gave their answers in an interview situation, the BFLUTS questionnaire was completed in private at home [10]. We believe, however, that the main reason for the doubled prevalence was that

the demand for the urinary leakage to be perceived as “a social and hygienic problem” to be classified as urinary incontinence had been omitted. Thus, it is of great importance when comparing different studies that the definitions used are taken into consideration.

### Conclusion

The prevalence of lower urinary tract symptoms in middle aged women is high. Other symptoms than urinary incontinence are significantly more frequent in incontinent than in continent women. Urinary leakage more than once a week seemed to be a useful marker for urinary incontinence causing bother. The attitude towards urinary leakage varied more widely in women with infrequent leakage compared to those with more frequent symptoms.

## REFERENCES

1. Samsioe G, Heraib F, Lidfeldt J, Nerbrand C, Lindholm L, Agardh C, Scherstén B: Urogenital symptoms in women aged 50-59 years. *Gynecol Endocrinol* 1999;13:113-117
2. Milsom, Ekelund, Molander, Arvidsson, Areskoug: The influence of parity, oral contraception, hysterectomy and menopause on the prevalence of urinary incontinence in women. *J Urol* 1993;149:1459-1462
3. Samuelsson E, Victor A, Tibblin G: A population study of urinary incontinence and nocturia among women aged 20-59 years. *Acta Obstet Gynecol Scand* 1997;76:74-80
4. Swithinbank L, Donovan J, du Heaume J, Rogers C, James M, Yang Q, Abrams P: Urinary symptoms and incontinence in women: relationships between occurrence, age, and perceived impact. *Br J Gen Pract* 1999;49:897-900
5. 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 gynaecological health control population. *Acta Obstet Gynecol Scand* 1981;60:71-6

6. Burgio K, Matthews K, Engel B: Prevalence, incidence and correlates of urinary incontinence in healthy, middle-aged women. *J Urol* 1991;146:1255-1259
7. Rekers 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(3):229-234
8. Thomas TM, Plymat KR, Blannin J, Meade TW: Prevalence of urinary incontinence. *Br Med J* 1980;281(6250):1243-1245
9. Temml C, Haidinger G, Schmidbauer J, Schatzl G, Maderbacher S: Urinary incontinence in both sexes: prevalence rates and impact on quality of life and sexual life. *Neurourol Urodyn* 2000;19(2):259-271
10. Graham CW, Dmochowski RR: Questionnaires for women with urinary symptoms. *Neurourol Urodyn* 2001;21:473-81
11. Abrams P, Blaivas JG, Stanton SL, Anderson JT: The standardisation of terminology of lower urinary tract function. *Scand J Urol Nephrol (Suppl)* 1988;114:17
12. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, van Kerrebroeck P, Victor A, Wein A: The standardisation of terminology of lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167-168

13. Lidfeldt J, Holmdahl L, Samsioe G, Nerbrand C, Nyberg P, Schersten B, Agardh CD: The influence of hormonal status and the features of the metabolic syndrome on bone density: A population-based study of Swedish women aged 50 to 59 years. *Metabolism* 2002;51(2):267-70
14. Jackson S, Donovan J, Brookes S, Eckford L, Swithinbank L, Abrams P: The Bristol Female Lower Urinary Tract Symptoms questionnaire: development and psychometric testing. *Br J Urol* 1996;77:805-812
15. Alling Möller L, Lose G, Jörgensen T: The prevalence and bothersomeness of lower urinary tract symptoms in women 40-60 years of age. *Acta Obstet Gynecol Scand* 2000;79:298-305
16. Swithinbank L, Donovan J, Rogers C, Abrams P: Nocturnal incontinence in women: a hidden problem. *J Urol* 2000;164:764-766
17. Swithinbank L, Abrams P: Lower urinary tract symptoms in community-dwelling women: defining diurnal and nocturnal frequency and "the incontinence case". *BJU Int* 2001;88 suppl:18-22
18. Schatzl G, Temml C, Waldmueller J, Thuerridl T, Haidinger G, Maderbacher S: A comparative cross-sectional study of lower urinary tract symptoms in both sexes. *Eur Urol* 2001;40:213-219

19. Bö K, Stien R, Kulseng-Hanssen S, Kristofferson M: Clinical and urodynamical assessment of nulliparous women with and without stress incontinence symptoms: a case-control study. *Obstet Gynecol* 1994;84(6):1028-1032
20. Thyssen HH, Clevin L, Olesen S, Lose G: Urinary incontinence in elite female athletes and dancers. *Int Urogyn J Pelvic Floor Dysfunct* 2002;13(1):15-17
21. Bö K, Borgen JS: Prevalence of stress and urge urinary incontinence in elite athletes and controls. *Med Sci Sports Exerc* 2001 Nov;33(11):1797-1802
22. Hannestad Y, Rortveit G, Hunskaar S: Help-seeking and associated factors in female urinary incontinence. The Norwegian EPINCONT study. *Scand J Prim Health Care* 2002;20:102-107
23. Samuelsson EC, Victor FT, Svardsudd KF: Five-year incidence and remission rates of female urinary incontinence in a Swedish population less than 65 years old. *Am J Obstet Gynecol* 2000 Sep;183(3):568-574
24. Hannestad YS, Rortveit G, Sanvik H, Hunskaar S: A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. *J Clin Epidemiol* 2000 Nov;53(11):1150-1157

## LEGENDS

Fig 1.

Design of question in BFLUTS.

Table I.

Prevalence of LUTS in women aged 55-64 years with (INCONT) or without (CONT) urinary leakage in the WHILA study. Nocturnal incontinence is defined as urinary leakage during sleep. Comparisons between groups are made by chi square test.

\* p=0.003

\*\* p<0.001

Symptom	Prevalence (%)	
	INCONT n=1336	CONT n=1346
Frequency of micturition $\geq$ 9/day	249 (19)	138 (10.3)**
Nocturia $\geq$ 2/night	278 (20.8)	200 (14.8)**
Urgency	1151 (86.2)	841 (62.5)**
Urge incontinence	1058 (79.2)	487 (36.2)**
Bladder pain	260 (19.5)	140 (10.4)**
Frequency of incontinence episodes	1161 (86.9)	479 (35.6)**
Stress incontinence	1137 (85.1)	552 (41)**
Incontinence with no obvious cause	454 (34)	100 (7.4)**
Hesitancy	349 (26.1)	326 (24.2)
Straining	230 (17.2)	176 (13.1)*
Intermittent stream	391 (29.3)	297 (22.1)**
Nocturnal incontinence	175 (13.1)	40 (3)**
Abnormal strength of stream	345 (25.8)	199 (14.8)**
Feeling of incomplete emptying	686 (51.3)	440 (32.7)**
Urinary retention	21 (1.6)	23 (1.7)
Dysuria	62 (22.8)	23 (14.1)**
Inability to stop midstream	671 (50.2)	300 (22.2)**

Table II.

The amount of urinary leakage seemed to increase with increasing frequency of leakage episodes in the whole BFLUTS material . Chi square test for trend  $p < 0.001$ .

Leakage amount	Leakage frequency				
	Never	$\leq 1/\text{week}$	2-3 times/week	Once a day	Several times a day
No leakage	409 (93.6%)	205 (23.3%)	15 (4.5%)	7 (4.5%)	1 (0.5%)
Drops	28 (6.4%)	652 (74.2%)	292 (87.2%)	129 (82.2%)	128 (65.3%)
Dribble	0	17 (1.9%)	23 (6.9%)	18 (11.5%)	38 (19.4%)
Soaking through	0	3 (0.3%)	4 (1.2%)	1 (0.6%)	23 (11.7%)
Running down legs	0	2 (0.2%)	1 (0.3%)	2 (1.3%)	6 (3.1%)
Total	437 (100%)	879 (100%)	335 (100%)	157 (100%)	196 (100%)

Table III

Prevalence of and bother perceived by stress incontinence and urge incontinence related to symptom frequency in the INCONT and CONT groups. Comparisons between the groups are made by chi square test.

a. Stress incontinence.

	INCONT (n= 1108)		CONT (n=530)		P values
	No problem	Problem	No problem	Problem	
Occasionally	137 (12.4%)	274 (24.7%)	209 (39.4%)	157 (29.6%)	p<0.001
Sometimes	11 (1.0%)	399 (36%)	13 (2.5%)	118 (22.3%)	p<0.001
Most of the time	1 (0.01%)	205 (18.5%)	0	20 (3.8%)	N.S
All of the time	0	81 (7.3%)	0	13 (2.5%)	N.S.

b. Urge incontinence.

	INCONT (n=1010)		CONT (n=460)		P values
	No problem	Problem	No problem	Problem	
Occasionally	186 (18.4%)	390 (38.6%)	206 (44.8%)	166 (36.1%)	P<0.001
Sometimes	6 (5.9%)	353 (35.0%)	4 (0.9%)	74 (16.1%)	N.S.
Most of the time	0	58 (5.7%)	1 (0.2%)	8 (1.7%)	N.S.
All of the time	1 (0.01%)	16 (1.6%)	0	1 (0.2%)	N.S.

Table IV.

Bother perceived by urinary leakage related to leakage frequency in the INCONT and CONT groups.

Number of women who report their urinary leakage to be of no problem/at least a bit of a problem at a certain leakage frequency n(%)				
Leakage frequency	INCONT n=1110		CONT n=453	
	No problem	Problem	No problem	Problem
Once or less per week	178 (34.1)	344 (65.9)	191 (54.1)	162 (45.9)
2-3 times per week	4 (1.5)	265 (98.5)	5 (8.3)	55 (91.7)
Once daily	2 (1.6)	127 (98.4)	4 (13.8)	25 (86.2)
Several times per day	1 (0.5)	189 (99.5)	1 (9.1)	10 (90.9)

Fig 1.

7. **Does urine leak when you are physically active, exert yourself, cough or sneeze?**

never

occasionally (less than one third of the time)

sometimes (between one and two thirds of the time)

most of the time (more than two thirds of the time)

all of the time

**How much of a problem is this for you?**

not a problem

a bit of a problem

quite a problem

a serious problem