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

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Running headline: LUTS in middle-aged women.

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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.

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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

	Prevalence (%)	
Symptom	INCONT n=1336	CONT n=1346
Frequency of micturition >=9/day	249 (19)	138 (10.3)**
Nocturia >=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	<=1/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.

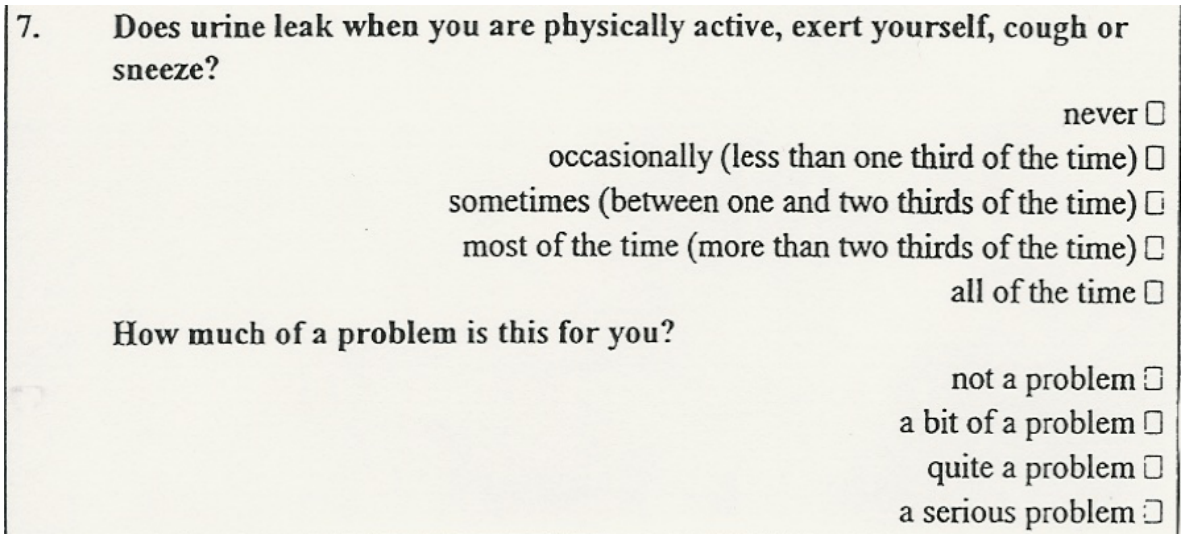
	INCONT (n=1010)		CONT (n=460)		P values
	No problem	Problem	No problem	Problem	
Occasionally	186 (18.4%)	390 (38.6%)	206 (44.8%)	166 (36.1%)	P<0.001
Sometimes	6 (5.9%)	353 (35.0%)	4 (0.9%)	74 (16.1%)	N.S.
Most of the time	0	58 (5.7%)	1 (0.2%)	8 (1.7%)	N.S.
All of the time	1 (0.01%)	16 (1.6%)	0	1 (0.2%)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