Lower Urinary Tract Symptoms in Thai Women Attending the Menopause Clinic: Prevalence and Associated Factors

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Objective : *To determine the prevalence of lower urinary tract symptoms and associated factors in women attending the menopause clinic.*
Method : *Nine hundred and fifty-six women attending the menopause clinic, Ramathibodi Hospital were interviewed regarding their general health issues and lower urinary tract symptoms by means of an anonymous questionnaire. Demographic data, obstetric history, and underlying diseases were analysed by using Student t-test, Chi-square and Fisher exact test. $P < 0.05$ was considered as a level of significance.*
Results : *A total of 956 women, mean age 52.89 $\pm$ 5.80 years, completed the questionnaire. The prevalence of stress incontinence, nocturia, urgency, frequency, and urge incontinence were 58.3%, 40.3%, 33.9%, 22.7%, and 6.6%, respectively. Lower urinary tract symptoms was found to be associated with marital status, coexisting medical diseases, menopausal status, previous term delivery, and vaginal delivery ($P < 0.05$).*
Conclusions : *Lower urinary tract symptoms was a common problem among women attending the menopause clinic. Marital status, coexisting medical diseases, menopausal status, parity, and mode of delivery were associated with this problem.*

Keywords : *Lower urinary tract symptoms, Prevalence, Associated factors*

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The definition of lower urinary tract symptoms (LUTS) defined by the Standardisation Subcommittee of the International Continence Society is the subjective indicator of a disease or change in condition as perceived by the patient, carer or partner and may lead him/her to seek help from health care professionals[1]. Lower urinary tract symptoms such as nocturia, urgency, urge and stress incontinence, are one of the most important health problems which not only cause considerable personal suffering for the individual afflicted but it is also of immense economic importance for the health service. Previous studies have demonstrated that approximately 10%-55% of women suffer from LUTS all over the world[2-5]. LUTS occur across all ages, but particularly in older age and postmenopausal women[6-11]. The significant associated factors are advancing age, menopausal status, duration of menopause, pregnancy and delivery, obesity, and coexisting chronic disorders[2,10-13]. Since this problem is so common and burdens physically, psychosocially and economically but little is known about the epidemiology and associated factors of lower urinary tract symptoms in climacteric women particularly in Thailand. The objective of the present study was to determine the prevalence of lower urinary tract symptoms and associated factors in women attending the menopause clinic.

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Material and Method

The study was a cross-sectional investigation. The anonymous written questionnaires were administered to 956 women attending the menopausal

clinic, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand who agreed to participate in the present study. Written informed consent were obtained before their participation. The first part of the questionnaire included questions on demographics such as age, marital status, occupation, menopausal status, hormone replacement therapy, coexisting medical diseases (i.e. diabetes mellitus, hypertension, and chronic lung diseases that were diagnosed and treated by physicians), parity, mode of delivery, their offspring birth weight. The second part of the questionnaire focused on lower urinary tract symptoms; frequency, nocturia, urgency, stress incontinence, and urge incontinence as defined by the International Continence Society[14]. Frequency is defined as the number of times a woman voids during her waking hours (more than 8 times). Nocturia is defined as rising from sleep to void more than once a night. Urgency is a strong and sudden desire to void that is inappropriate and which, if not relieved, can result in urge incontinence. Stress incontinence is the involuntary loss of urine with an increase in intra-abdominal pressure such as coughing, sneezing, running and lifting. Urge incontinence is the involuntary loss of urine associated with a strong desire to void. The terminology used in the questionnaire was the language which was understandable for every Thai women. The questionnaire was validated by three gynecologists with special interest in urogynecology. They were asked to critically assess the questionnaire in terms of specificity and sensitivity of the questions in the Thai language. For each symptom the women perceived they were asked to indicate the degree of discomfort: no discomfort, little discomfort, moderate discomfort, and severe discomfort. No further physical examination and investigation was carried out. The term "prevalence" in the present study indicates the presence of one or more lower urinary tract symptoms during the last 1 month and reported in percentage. The clinical characteristics of women who have and do not have LUTS were compared by means of Student's t-test for continuous variables and by Chi-square or Fisher exact test for categorical variables. Odds ratio and its 95 percent confidence interval were calculated. A p value of 0.05 was considered as a level of significance.

Results

A total of 956 women, mean age was 52.89 $\pm$ 5.80 years (range 40-81 years), completed the questionnaire. Sixty-six percent, 20% and 14% were postmenopausal women, perimenopausal and premenopausal women, respectively. Among the postmenopausal women, the median menopausal time was 5 years (range 1-35 years) and 32.2% had been using hormone replacement therapy. Seventy-five percent were natural menopause and 25% were surgically induced menopause. The majority of the women in the present study were parous women, the median parity was 2 (range 1-7). The prevalence of lower urinary tract symptoms in women attending the menopause clinic was 80.2%. The symptoms of stress incontinence, nocturia, urgency, frequency, and urge incontinence were experienced in 58.3%, 40.3%, 33.9%, 22.7%, and 6.6%, respectively. The majority of these women indicated a little discomfort of lower urinary tract symptoms.

Regarding associated factors, lower urinary tract symptoms was found to be associated with marital status, coexisting medical diseases, menopausal status, previous term delivery and vaginal delivery significantly ($P < 0.05$) as shown in Table 1. There were no associations between lower urinary tract symptoms and age, occupation, the use of hormone replacement therapy, menopausal time, number of parity, and fetal birth weight $\geq$ 3,500 grams.

Table 2 shows that coexisting medical diseases (diabetes mellitus, hypertension, and chronic lung diseases) was the strongest correlate of lower urinary tract symptoms among all the factors studied (Odds ratio 2.8, 95%CI 1.7, 4.6, $P < 0.05$). The perimenopausal and postmenopausal status was found to be significantly related to an increasing prevalence of LUTS (Odds ratio 1.6, 95%CI 1.1, 2.3, $P < 0.05$). Parity was significantly related to lower urinary tract symptoms, there was an increased prevalence of LUTS among women who had one or more childbirth, but the association between number of parity and LUTS was not observed in the present study. Moreover, the prevalence of LUTS was influenced by the mode of delivery. From the present study, there was a statistically significant difference between women who had had cesarean deliveries and nulliparous women. Women who have had vaginal deliveries experienced more lower urinary tract symptoms than women who had delivered all their children by cesarean section (Odds ratio 1.8, 95%CI 1.2, 2.8, $P < 0.05$).

Discussion

The present study showed that the prevalence of lower urinary tract symptoms among climacteric women attending the menopause clinic was relatively high, especially compared to previous studies which were surveyed in the primary care clinic, the

Table 1. Percentage of women attending the menopause clinic reporting lower urinary tract symptoms according to various characteristics

Characteristics	Lower urinary tract symptoms (%)	p value
Age		
40-49	77.2	
50-59	81.1	
> 60	83.6	0.220
Marital status*		
Unmarried	71.9	
Married	81.9	
Divorced / Widowed	84.1	0.004
Occupation		
Civil servant	78.6	
Employee	75.9	
Businesswoman	85.5	
Housewife	85.9	0.110
Coexisting medical diseases*		
None	76.0	
Hypertension	89.2	
Diabetes	85.7	
Respiratory diseases	94.7	0.001
Menopausal status*		
Premenopause	73.9	
Perimenopause	87.3	
Postmenopause	80.2	0.013
Menopausal time (years)		
1-5	77.8	
6-10	80.0	
11-15	85.5	0.331
Delivery*		
No	73.7	
Yes	83.2	0.001
Parity		
≤ 2	80.8	
> 2	86.5	0.056
Mode of delivery*		
Vaginal	85.3	
Cesarean	76.3	0.010
Fetal birth weight		
< 3,500 grams	83.1	
≥ 3,500 grams	86.6	0.260
Hormone replacement therapy		
No	79.9	
Yes	79.8	0.977

* $p < 0.05$

obstetrics and gynecology clinic and communities [2,4,8-12]. It could be explained that the women in the present study were biasly recruited. They were a selected population who had been seeking medical treatment and advice for their menopausal problems. Gynecologists and family physicians should raise the issue of lower urinary tract symptoms as part of the routine general health check-up in menopausal clinics.

Table 2. Associated factors of lower urinary tract symptoms

Factors	Odds ratio	95% CI	p value
Marital status			
Single	1.0		
Non-single*	1.8	1.3,2.6	0.001
Coexisting medical diseases			
No	1.0		
Yes*	2.8	1.7,4.6	0.000
Menopausal status			
Premenopause	1.0		
Peri/Postmenopause*	1.6	1.1,2.3	0.023
Previous term delivery			
No	1.0		
Yes*	1.8	1.3,2.5	0.001
Mode of delivery			
Cesarean	1.0		
Vaginal*	1.8	1.2,2.8	0.010
Delivery			
No	1.0		
Cesarean section	1.2	0.7, 1.8	1.520
Vaginal delivery*	2.1	1.5, 3.0	0.000

* $p < 0.05$

It is generally thought that prevalence estimates for urinary incontinence and other lower urinary tract symptoms increase with increasing age. The present study was not able to demonstrate a significant difference between different age groups. Some studies indicated that the highest prevalence estimates are found in the fifties. Thereafter, prevalence rates actually decrease until the age of 70[1,15,16]. The present findings among middle aged and elderly Thai women were similar to them. However, the influence of advancing age on different severity and different types of incontinence should be further studied.

It is clear from the present study that coexisting medical diseases were the main determinant for lower urinary tract symptoms. A variety of medical conditions may provoke LUTS. All forms of diabetes mellitus are characterized by polyuria and polydipsia. Moreover, about 1% of the neuropathic consequences of diabetes involve the bladder and the urethra. In women suffering from hypertensive disorders, certain medications such as diuretics, calcium-channel blockers, beta-adrenergic blockers, and alpha-adrenergic blocker may cause or contribute to urgency, frequency, and urinary incontinence[17]. Chronic lung diseases may be associated with a repetitive increase of intraabdominal pressure produced from chronic coughing that causes failure of the normal anatomic supports of the bladder neck. When poor anatomical support allows the bladder neck to be displaced outside the abdominal

cavity, a disproportionate rise in bladder pressure over urethral pressure results in urine loss.

Estrogen receptors are consistently demonstrated in the squamous epithelium of the proximal and distal urethra and the trigone of the bladder[18,19]. It has been suggested that estrogen has an important physiologic effect on the female lower urinary tract and its deficiency is often an etiological factors in lower urinary tract dysfunction[20]. The present study showed that lower urinary tract symptoms were a common complaint among perimenopausal and postmenopausal women that was similar to findings in other studies[4,6,7,10]. Systemic hormone replacement therapy is effective in treating vasomotor complaints, vaginal dryness and other urogenital symptoms[21], its role in the treatment of urinary incontinence is still unclear[20,22]. This underlines the multifactorial etiology of this condition. The present study could not demonstrate the beneficial effect of systemic hormone replacement therapy on lower urinary tract symptoms in postmenopausal women. The detail of type and dose of estrogen, regimen of hormone replacement therapy, and duration of use were not analysed. Further studies are required to determine the effect of estrogen including type, dose, route of administration and duration of therapy on lower urinary tract symptoms.

The association of pregnancy, childbirth, and the mode of delivery with lower urinary tract symptoms has been shown in previous reports[2,5,13,23]. The present study confirmed the strong association between lower urinary tract symptoms and childbirth, in particular vaginal delivery. In pregnancy and following childbirth, there are a number of factors that often cause women to experience bladder control problems and urine leakages. During pregnancy, the added weight and pressure of the conceptive products can weaken pelvic floor muscles. Vaginal delivery has been shown to cause direct damage to the pelvic fascial support, urethral muscles and peripheral nerves in the pelvis, leading to the further weakening of the pelvic floor muscles[24,25]. Although there was a significant difference of lower urinary tract symptoms between women who had had cesarean deliveries and nulliparous women. The authors could not conclude that cesarean section had a protective effect on these symptoms. In conclusion, lower urinary tract symptoms were prevalent to a significant extent among women attending the menopause clinic in a large urban hospital. Marital status, coexisting medical diseases, menopausal status, parity and mode of delivery were associated with this problem. From a public health perspective the estimate of the prevalence of lower urinary tract symptoms in women presented in the present study may provide an incentive for public health information and health promotion program including the need of incontinence-specific health care provider.

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ความชุกและปัจจัยที่เกี่ยวข้องกับอาการของระบบทางเดินปัสสาวะส่วนล่างในสตรีที่มาตรวจในคลินิกวัยหมดประจำเดือน

จิตติมา มโนนัย, อภิชาติ จิตต์เจริญ, ศิริรัตน์ สฤษดิ์อภิรักษ์, อุมาพร อุดมทรัพยกุล, อัจฉรา คณะเจริญ, อรุษา เทพพิสัย

วัตถุประสงค์ *: เพื่อศึกษาความชุกและปัจจัยที่เกี่ยวข้องกับอาการทางระบบทางเดินปัสสาวะในสตรีที่มาตรวจในคลินิกวัยหมดประจำเดือน*

วิธีการ *: สตรีจำนวน 956 รายที่มารับการตรวจที่คลินิกวัยหมดประจำเดือน ภาควิชาสูติศาสตร์-นรีเวชวิทยา คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี ได้ตอบแบบสอบถามเกี่ยวกับสุขภาพโดยทั่วไป และอาการของระบบทางเดินปัสสาวะส่วนล่างโดยวิเคราะห์ข้อมูลทางสถิติของข้อมูลพื้นฐาน การคลอด และโรคประจำตัวด้วย Student t-test, Chi-square หรือ Fisher exact test และใช้ค่านัยสำคัญทางสถิติที่ 0.05*

ผลการศึกษา *: สตรีที่ตอบแบบสอบถามทั้งหมด 956 ราย มีอายุเฉลี่ย 52.89 $\pm$ 5.80 ปี ความชุกของอาการปัสสาวะเล็ดเวลาไอ หรือ จาม ปัสสาวะบ่อยตอนกลางคืน ปัสสาวะเร่งรีบ ปัสสาวะบ่อยตลอดทั้งวัน และปัสสาวะราดไปห้องน้ำไม่ทันเท่ากับ 58.3%, 40.3%, 33.9%, 22.7% และ 6.6% ตามลำดับ และมีความเกี่ยวข้องกับสถานภาพสมรส โรคประจำตัว ภาวะหมดประจำเดือน การคลอดบุตร และการคลอดทางช่องคลอดอย่างมีนัยสำคัญทางสถิติ*

สรุป*: อาการของระบบทางเดินปัสสาวะส่วนล่างเป็นอาการที่พบได้บ่อยในสตรีที่มาตรวจในคลินิกวัยหมดประจำเดือน ปัจจัยที่เกี่ยวข้อง ได้แก่ สถานภาพสมรส โรคประจำตัว ภาวะหมดประจำเดือน การคลอดและช่องทางคลอด*