

Low B Y<sup>1</sup>, Liong M L<sup>2</sup>, Yuen K H<sup>3</sup>, Chong W L<sup>4</sup>, Chee C<sup>5</sup>, Leong W S<sup>2</sup>, Mohan M<sup>6</sup>, Krishnan S<sup>7</sup>, Teh C L<sup>8</sup>, Karim Khan N<sup>1</sup>, Yap H W<sup>9</sup>, Khor T<sup>10</sup>

1. SCHOOL OF PHARMACEUTICAL SCIENCES, UNIVERSITI SAINS MALAYSIA, 2. UROLOGY DEPARTMENT, LAM WAH EE HOSPITAL, PENANG, 3. SCHOOL OF PHARMACEUTICAL SCIENCES, UNIVERSITI SAINS MALAYSIA, 4. UROLOGY DEPARTMENT, METRO HOSPITAL, KEDAH, 5. UROLOGY DEPARTMENT, PANTAI MUTIARA HOSPITAL, PENANG, 6. UROLOGY DEPARTMENT, ALOR SETAR GENERAL HOSPITAL, KEDAH, 7. O & G DEPARTMENT, PENANG GENERAL HOSPITAL, PENANG, 8. UROLOGY DEPARTMENT, ADVENTIST HOSPITAL, PENANG, 9. UROLOGY DEPARTMENT, ISLAND HOSPITAL, PENANG, 10. UROLOGY DEPARTMENT, GLENEAGLES HOSPITAL, PENANG

## RELATIONSHIP BETWEEN SOCIAL DEMOGRAPHIC CHARACTERISTICS AND FEMALES HAVING LOWER URINARY TRACT SYMPTOMS (FLUTS): RESULTS FROM A COMMUNITY BASED SURVEY IN NORTHERN PENINSULAR MALAYSIA

### Hypothesis / aims of study

Many factors, such as age, childbirth, fecal difficulties, obstetric complications, obesity, pelvic surgery, medications, functional impairment, chronic diseases, menstrual cycle, race and family story are associated with urinary incontinence and other lower urinary tract symptoms. Studies so far included only females of peri-menopausal age group (1). Our aim was to describe the relationship between social demographic characteristics and females having lower urinary tract symptoms (FLUTS) in a community-based sample of 2732 females aged over 19 years old in Northern Peninsular Malaysia.

### Study design, materials and methods

From January to August 2004, an interview based survey was conducted in Northern Peninsular Malaysia among a community based sample of 2732 females, constituting 0.3% of females aged >19 years old. FLUTS is defined as females with International Prostate Symptom Score (IPSS)  $\geq 8$  and symptoms duration of  $\geq 1$  month. The control group consisted females who scored 0 on IPSS. IPSS  $\geq 8$  was chosen because females of this group experienced significant QOL impact. Based on the definitions, 519 FLUTS and 531 controls completed the survey instrument to collect information on social demographic characteristics, IPSS and urinary incontinence. The relationships between FLUTS prevalence and social demographic characteristics were analyzed using the chi-square test for independence. The strength of association was further quantified using odds ratio (OR) for those with a statistical significant association.

### Result

Of the nine social demographic characteristics studied, BMI ( $p=0.129$ ) and household income ( $p=0.078$ ) were two characteristics found to have no association with FLUTS prevalence. However, BMI had a statistical significant association with prevalence of urinary incontinence.

The seven social demographic characteristics that had statistical significant association with FLUTS prevalence were age, race, parity, marital status, education level, menopausal status and concomitant illness. The strength of the association further quantified by OR was shown in the table below:

Social Demographics Characteristics	P value	Odds Ratio, OR (95% confidence interval)
Age	0.000	1.599 ( $\geq 30$ vs $< 30$ ) 1.806 ( $\geq 40$ vs $< 40$ ) 2.856 ( $\geq 50$ vs $< 50$ ) 2.887 ( $\geq 60$ vs $< 60$ ) 4.057 ( $\geq 70$ vs $< 70$ )

Race	0.003	0.645 (Malay vs non-malay) 1.314 (Chinese vs non-chinese) 1.452 (Indian vs non-indian)
Parity	0.000	1.216 ( $\geq 1$ vs 0) 2.229 ( $\geq 4$ vs $< 4$ )
Marital status	0.002	1.238 (Married vs single)
Education level	0.000	2.488 (Illiterate vs literate)
Menopausal status	0.000	2.768 (Postmenopause vs premenopause)
Concomitant chronic illness	0.000	4.030 ( $\geq 1$ concomitant chronic illness vs no concomitant chronic illness)

### Interpretation of results

#### FLUTS prevalence and age

Increasing age was found to be significantly associated to an increase risk of having FLUTS. At the age of 30, the risk was found to 1.6x, which progressively increased up to 4.1x by the age of 70.

#### FLUTS prevalence and race

The odds of a malay women, a Chinese women and an Indian women afflicted with FLUTS are 0.6x, 1.3x and 1.4x respectively as compare to others. We are not aware of any previous study addressing this aspect.

#### FLUTS prevalence and parity

Multiparous women were 1.2x more at risk of having FLUTS than the nulliparous women. Unfortunately, the risk for the occurrence of FLUTS increases to double if parity is more or equal to 4.

#### FLUTS prevalence and marital status

A married woman is 1.2x more at risk of having FLUTS than a single woman.

#### FLUTS prevalence and education level

The odds of having FLUTS is 2.5x higher in those illiterate than in those literate women.

#### FLUTS prevalence and menopausal status

A postmenopausal woman is 2.8x more at risk of having FLUTS than those pre menopause women.

#### FLUTS prevalence and concomitant chronic illness

The odds of a women with other concomitant chronic illness and associated with FLUTS is 4.0x higher than those without. The high OR of 4 indicates that health care providers should proactively look into the presence of FLUTS when treating patients with chronic illness such as heart disease, diabetes mellitus, hypertension and hypercholesterolemia.

#### FLUTS prevalence and household income

There was no association between household income and FLUTS prevalence.

#### FLUTS prevalence and body mass index (BMI)

Interestingly, body mass index (BMI) is not associated with FLUTS prevalence but it is associated with urinary incontinence. Obesity is well established risk factors for urinary incontinence. The association between urinary incontinence and obesity was probably a consequence of comparatively higher intrapelvic pressure. Mechanisms that link obesity and other type of lower urinary tract symptoms are less evident (1). The similar result had been reported by the VIVA Study Group where the risk of all types of urinary incontinence was increased in women with higher BMI, with a history of hysterectomy, urinary infection and perineal traumas. These factors were not related to the risk of overactive bladder (2).

### Concluding message

Females at higher risk of having FLUTS (defined as OR  $\geq 2$ ) include those of age  $\geq 50$ , parity  $\geq 4$ , illiterate, postmenopausal and having  $\geq 1$  concomitant illness. Unfortunately, in the same epidemiological study, treatment seeking behaviour revealed that only 23.1% of the FLUTS

patients actively sought treatment. Therefore, public health service provider should implement strategies targeted at this group to create the awareness among them.

References:

1. Risk factors for lower urinary tract symptoms in women 40 to 60 years of age. *Obstetrics & Gynecology* 2000; 96(3): 446-451
2. Risk factors for stress, urge or mixed urinary incontinence in Italy. *BJOG: an International Journal of Obstetrics and Gynaecology* 2003; 110: 927-933