ETHNIC DIFFERENCES IN URINARY INCONTINENCE AMONG WOMEN AGED 55 YEARS AND OVER: RESULTS FROM THE MALAYSIAN ELDERS LONGITUDINAL RESEARCH (MELOR)

Gayaithiri[1], Su Yen K[1], Sumaiyah M[2], Shahrul Bahyah K[2,3], Ai-Vyrn C[2,3], Teng Aik O[4], Azad Hassan AR[4], Maw Pin T[2,3,5,6].

[1] Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Malaya
[2] Ageing and Age-Associated Disorders Research Group, Faculty of Medicine, University of Malaya
[3] Geriatric Division, Department of Medicine, Faculty of Medicine, University of Malaya
[4] Department of Surgery, Faculty of Medicine, University of Malaya
[5] Centre for Innovation in Medical Engineering, University of Malaya
[6] Department of Medical Sciences, School of Healthcare and Medical Sciences, Sunway University, Bandar Sunway, Malaysia

Correspondence:
Professor Dr Tan Maw Pin
Division of Geriatric Medicine,
Department of Medicine,
Faculty of Medicine,
University of Malaya,
50603 Kuala Lumpur, Malaysia
Email: mptan@ummc.edu.my

Abstract

Background: Urinary incontinence is a common problem among older women. The objective of this study was to determine the prevalence of urinary incontinence among older women aged 55 years and over in the Klang valley, the most densely populated urban area in Malaysia, and to determine any potential ethnic differences.

Methods: This study used cross-sectional data from the Malaysian Elders Longitudinal Research (MELoR) study. A total of 863 participants were included, with a mean age of 67.97 ± 7.50 (S.D.). They were selected by simple random sampling from the electoral rolls of three parliamentary constituencies.

Results: The prevalence of urinary incontinence was 30.8%. Mixed urinary incontinence (UI) was present in 44.7%, stress UI in 39.1% and urge UI in 16.2%. Ethnic Malays (38%) were more likely than ethnic Indians (32.3%) and Chinese (29.7%) to have UI. Ethnic Malays were also more likely to have stress UI and Indians were more likely to have urge UI .

Conclusion: The prevalence of UI in this study was comparable to other Asian and worldwide studies. The significant association between ethnicity and UI, however, has not been reported in any previous studies. Further studies should identify factors which may determine these ethnic differences in UI.

Keywords: *Urinary Incontinence, Aged, Older Persons, Lower Urinary Tract Symptoms, Ethnicity*

Introduction

Urinary incontinence (UI) is common among older persons. The International Continence Society (ICS) defines incontinence as any involuntary leakage of urine. There are three main subtypes of incontinence; stress incontinence (SUI), urge incontinence (UUI) and mixed urinary incontinence (MUI). Stress urinary incontinence (SUI) is defined as a complaint of any involuntary loss of urine on effort, physical exertion, sneezing or coughing. Urge urinary incontinence (UUI) is the complaint of involuntary leakage accompanied or immediately preceded by urgency. Mixed Urinary Incontinence is therefore considered present if involuntary leakage occurs with urgency as well as physical exertion, effort, sneezing or coughing (1).

The Scientific Committee of the ICS has estimated that about 200 million adults worldwide have experienced symptoms of UI (2). While the prevalence of UI has been published in several previous studies, the world-wide prevalence data is currently difficult to determine. It is not

possible to generalize available population estimates to the global population since large variations currently exist in prevalence reported to date (3). Furthermore, variations appear to exist not just between communities but also in studies conducted within single communities, which may have occurred with variations in sampling methods as well as definitions employed by the different studies. The prevalence of UI among women aged 18 years and above was estimated to be between 25 to 45% worldwide in 2003 (4,5).

The Asia Pacific Continence Advisory Board conducted an Asia-wide epidemiologic cross sectional survey in 2001 involving 11 Asian countries, consisting of 5502 females aged 18 years and above, attending outpatient clinics with no history of urologic or gynaecological problems. Malaysian women accounted for 6.4% of the total participants. This study reported the prevalence of UI in Malaysian women to be 13.1% (6), while a prospective study conducted in Terengganu, a state in the east coast of Peninsular Malaysia, among 480 married women aged 20-60 years was as high as 44.1% (7). A subsequent cross-sectional study consisting of 223 older men and women aged 60 years and over, residing in Selangor reported a prevalence of 9.9% which was consistent with the findings by Poi et al conducted a 14 years prior (8,9). Most of the studies reported the prevalence of SUI to be high in individuals up to the age of 60 years at 40 to 58% of total cases of UI (10-12), compared to MUI and UUI (13) while MUI and UUI become more common after the age of 60 years. To date, ethnic comparisons in the prevalence of UI have not been reported.

As previous studies have involved relatively small numbers of Malaysian subjects, yielding highly variable results, it is vital that a more accurate estimate of UI is provided using a standardized definition, in order to inform public health policies to tackle this common condition. There is a need to understand a substantial economic burden on UI in increasing aging population. Awareness amongst public and healthcare professionals needs to be improved that UI is a condition affecting a significant number of women which negatively impacts quality of life (QOL) and facilitate early screening and management. Thus, this cross sectional study aims to provide an estimate of the prevalence of UI and its subtypes in the different ethnic groups among Malaysian women aged 55 years and above.

Material and Methods

Study Population

This cross-sectional study included participants from the Malaysian Elders Longitudinal Research (MELoR) study. The MELoR study is a longitudinal cohort study based in Kuala Lumpur and its surrounding suburbs (Klang Valley). Individuals age 55 years and above, who were able to provide informed consent, and belonging to one of the three major ethnic groups of Malays, Chinese or Indian were selected through simple random sampling via the electoral rolls of the Parliamentary constituencies of Petaling Jaya North, Petaling Jaya South, and Lembah Pantai, stratified by age decile and the three ethnic groups. A small number of individuals who were not selected through the random sampling processes but wanted to be included in the study were also included as a 'volunteer' group. Institutionalized older adults and those with communication difficulties, including cognitive impairment, affecting their ability to respond to the questionnaire were excluded. This study was approved by the University of Malaya Medical Centre Medical Ethics Committee (IRB No.943.6) in May 2015 and complied with the Helsinki Declaration of 1975, revised in 1983. Written informed consent was obtained from all study participants prior to their inclusion. A more detailed description of the MELoR cohort study has been published elsewhere (14).

Data Collection

Participants were contacted and visited at their own homes initially to recruit them into the study. A structured interview using a computer-aided questionnaire was completed during this encounter. Participants were then requested to attend the hospital for a detailed health check. Information on basic demographics (including age, sex and ethnicity) was collected during the initial home visit. The presence of urinary incontinence was determined with the questions: "Do you ever wet yourself when you cough or strain?" and "Do you ever wet yourself before you reach the toilet?" Participants who responded 'yes' to the first question were considered to have SUI, while participants who responded 'yes' to the second question were considered to have UUI. Individuals who responded 'yes' to both question were considered to have MUI.

Statistical Analysis

SPSS 23.0 (IBM SPSS Statistics) statistical software package was used for statistical analysis. Continuous data were expressed as mean (±standard deviation) or median (interquartile range). *Chi-square* test was used for comparison of categorical variables. It was necessary to weight the data to take into account disproportionate sampling for the ethnic groups and age groups. We reported crude and standardized prevalence for the age and ethnic distribution of the population, as well as in the five-year age groups.

Results

A total of 919 participants were involved in this study. However, data on urinary incontinence were available for 863 women consisting of 278 ethnic Malays, 312 Chinese and 275 Indians. The mean age of the participants in this study was 67.97 ± 7.50 (S.D.) years. Sixty-eight percent of participants were selected randomly. Subsequent analysis was conducted using the combined results of both randomly selected and volunteer samples. Out of 863 participants, 266 reported the presence of UI. Urinary incontinence was more common among Malay

ethnic group (38%). Women who were married or had a partner and were multiparous were reported to have more UI compared to single women. Table 1 shows the basic characteristics of the sample population with UI and its subtypes.

Table 1: Basic characteristic of women with and without UI and its subtype

	Total n =863(%)	Urinary incontinence		P value	Types of UI (n=266)			P value
		No n=597 (%)	Yes n=266 (%)		SUI n=104 (%)	UUI n=43 (%)	MUI n=119 (%)	
Age group (Years)				0.467				**0.001**
55-59	129 (14.9)	89 (14.9)	40 (15.0)		24 (23.1)	5 (11.6)	11 (9.2)	
60-64	197 (22.8)	146 (24.5)	51(19.2)		23 (22.1)	5 (11.6)	23 (19.3)	
65-69	200 (23.2)	136 (22.8)	64 (24.1)		20 (19.2)	11 (25.6)	33 (27.7)	
70-74	182 (21.1)	125 (20.9)	57 (21.4)		22 (21.2)	4 (9.3)	31 (26.1)	
75+	155 (18.0)	101 (16.9)	54 (20.3)		15 (14.4)	18 (41.9)	21 (17.6)	
Ethnicity				**0.012**				**0.007**
Malay	276 (32.0)	175 (29.3)	101 (38.0)		51 (49.0)	8 (18.6)	42 (35.3)	
Chinese	312 (36.2)	233 (39.0)	79 (29.7)		29 (27.9)	17 (39.5)	33 (27.7)	
Indian	275 (31.9)	189 (31.7)	86 (32.3)		24 (23.1)	18 (41.9)	44 (37.0)	
Marital status				0.163				**0.036**
Single	72 (8.3)	54 (9.0)	18 (6.8)		2 (1.9)	5 (11.6)	11 (9.2)	
Married/Partner	791 (91.7)	543 (91.0)	248 (93.2)		102 (98.1)	38 (88.4)	108 (90.8)	
Education level				0.655				0.795
No formal education	46 (5.3)	31 (5.2)	15 (5.6)		4 (3.8)	2 (4.7)	9 (7.6)	
primary	231 (26.8)	155 (26)	76 (28.6)		28 (26.9)	10 (23.3)	38 (31.9)	
Secondary	390 (45.2)	269 (45.1)	121 (45.5)		51 (49.0)	19 (44.2)	51 (42.9)	
Certificate/ skills	45 (5.2)	30 (5.0)	15 (5.6)		6 (5.8)	3 (7.0)	6 (5.0)	
College/ university	151 (17.5)	112(18.8)	39(14.7)		15 (14.4)	9 (20.9)	15 (12.6)	
Parity				0.231				0.212
nulliparous	102 (11.8)	74 (13.1)	24 (9.0)		4 (3.8)	5 (11.6)	15 (12.6)	
primiparous	78 (9.0)	54 (9.0)	24 (9.0)		10 (9.6)	3 (7.0)	11 (9.2)	
Multiparous (>2 child)	683 (79.1)	465 (77.9)	218 (82)		90 (86.5)	35 (81.4)	93 (78.2)	

Bolded fonts indicate significant at p-value<0.05

There was no statistical significance between age groups for UI overall. Differences were, however, present for age groups and UI subtypes (p=0.001). There were differences in ethnicity in both overall presence of UI (p=0.01) as well as UI subtypes (p=0.007). There was no significant difference in overall UI or UI subtypes with parity. While marital status did not influence the overall presence of UI, it did affect UI subtype. The overall presence of UI and UI subtypes were not affected by parity.

The crude prevalence of urinary incontinence in this study was 30.8%. MUI was present in 44.7%, SUI in 39.1% and UUI in 16.2% of those with UI. The standardized prevalence, weight-adjusted to the population of Kuala Lumpur determined during the 2010 national population census, was 30.1%. The standardized prevalence of SUI, MUI and UUI for the overall Malaysian female population aged 55 years and over was 14.7%, 11.1% and 4.3% respective.

Table 2 further summarizes the prevalence of overall UI according to age-group and ethnicity. There was no difference in prevalence of UI with increasing age among the ethnic Chinese and Indians. The prevalence of overall UI in the ethnic Malays peaked at the 65 to 69 year age group (p=0.046).

Table 2: Urinary incontinence among women aged 55 and above from the Klang Valley by ethnicity and age group

Age (years)	Ethnicity, n (%)		
	Malay (n=276)	**Chinese (n=312)**	**Indian (n=275)**
55-59	18 (34.0)	9 (27.2)	13 (30.2)
60-64	19 (25.6)	14 (20.9)	18 (32.1)
65-69	32 (50.8)	13 (16.9)	19 (31.7)
70-74	19 (35.2)	21 (29.6)	17 (29.8)
75+	13 (40.6)	22 (34.4)	19 (32.2)
p-value	**0.046**	0.130	0.998

Bolded fonts indicate significant at p-value<0.05

Discussion

Prevalence of urinary incontinence in women seems to vary widely globally. The weighted prevalence of UI among women aged 55 years and over residing in this urban area in Malaysia was 30.0%. Most previous studies reported a lower prevalence for UI among Malaysian women. In the overall study population, there was no increase in prevalence of UI with increasing age. The presence of SUI, however, reduced with increasing age while the prevalence of UUI increased with increasing age. These findings were compatible with that reported in other population-based studies (3). The seemingly higher prevalence in our study compared to previous Malaysian studies are therefore likely to be attributable to under-reporting in previous studies, as acknowledged by previous authors who admitted that their measured prevalence was lower than that reported in international studies citing the reserved culture of our majority Muslim population. The MELoR study team had consulted with stakeholders and community leaders, as well as conducted numerous public engagement activities in order to earn the trust of the local residents. In addition, the research team had received extensive training on interviewing older adults, and the pertinent, potentially sensitive questions were strategically placed near the end of the interview, once the interviewers were able to establish a good rapport with the participants. Participants were also given the option not to answer the question, but at the same time reminded that their confidentiality would be maintained at all times. The additional rigour in ensuring that participants responded accurately has therefore aided in establishing that the prevalence of UI in community dwelling older adults in an urban Malaysian population matches the published prevalence in other geographical regions.

To the best of our knowledge, this is the first study to report the ethnic differences in prevalence of UI within an Asian population conducted within the geographical region of Asia. Racial differences were reported in a study conducted in the United States (US) in which the prevalence of UI among white women was higher compared to black women and Asian women resident within the US had a lower prevalence compared to white, Hispanic and black women at 18% (15). Stress UI for white women was 2.5 times higher than for Hispanic women and almost four times higher than black women. UUI were similar between white and Hispanic women and less frequent among black women, and MUI was more frequently reported by black and Hispanic women, and less by white women (15).

Within this study, the ethnic Malays were more likely to report UI compared to the ethnic Chinese. The rationales underlying these ethnic differences were not identified within this study. Plausible explanations for these differences could be that the older ethnic Malays have more children compared to the other ethnic groups (16). This is further justified by the finding that SUI was the predominant UI subtype among the ethnic Malays.

While a previous study has reported higher prevalence of UI among married women (7), this was not found in our study population which comprised mainly of married women. The increase in prevalence of UI among married women has mainly been attributed to the higher prevalence of SUI, with single women reporting mainly UUI. Increased SUI in married women, in turn, is attributed to parity (17). This is likely to be as nearly all our participants were married and multiparous.

This study was carried out in an urban area which may not be representative of rural region in Malaysia. It is difficult to know whether the observed racial differences in the prevalence of UI are due to real differences or to differences in reporting the urinary symptoms among the various ethnic groups, since the UI can be reported differently by ethnic and racial groups according to the accepted cultural norms. Further studies need to be considered to look into factors such as occupation, cultural habits, medical illness, genetic predisposition (18) and autoimmune diseases (19) in different ethnics which are predisposing to UI. The presence of UI was established with only two questions enquiring about SUI or UUI. Nevertheless, these screening questions are usually the approach taken in large population based studies since longer, validated questionnaires are not practical which may conversely lead to participant fatigue and potentially inaccurate responses (20,21).

Conclusion

The estimated overall prevalence of UI among women aged 55 years and older in an urban area in Malaysia is higher than most previously reported study. The standardized prevalence of SUI is higher followed by MUI and UUI. The prevalence of UI was significantly higher among ethnic Malays. Future studies should, therefore, seek to unravel the potential predisposing factors between the ethnic groups which could lead to novel therapeutic targets for this common and disabling condition.

Competing interests

The authors declare that there is no conflict of interests

Financial Support

The authors declare that they have no financial support

Informed Consent

Written informed consent was obtained from all study participants prior to their inclusion.

Ethical Clearance

This study was approved by the University of Malaya Medical Centre Medical Ethics Committee (IRB No.943.6) in May 2015 and complied with the Helsinki Declaration of 1975, revised in 1983.

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