

ORIGINAL ARTICLE

Prevalence and Awareness of Lower Urinary Tract Symptoms among Males in the Outpatient Clinics of Universiti Kebangsaan Malaysia Medical Centre

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ABSTRAK

Kajian ini bertujuan menentukan prevalens simptom trek urinari bawahan (LUTS) dan tahap kesedaran di klinik pesakit luar lelaki di Pusat Perubatan Universiti Kebangsaan Malaysia. Borang soal selidik yang mengandungi data demografi, soalan berkaitan pengetahuan, sikap dan praktis terhadap penyakit pembesaran kelenjar prostat (BPH) dan skor simptom prostat antarabangsa (IPSS) telah digunakan. Alat pengukuran kelajuan kencing dan imbasan pundi kencing digunakan untuk menggambarkan fungsi sistem urinari dan keterukan BPH. "Dipstick" air kencing digunakan untuk menentukan kandungan gula, protein dan darah dalam air kencing. Sejumlah 220 pesakit dikaji. Prevalens LUTS yang sederhana dan teruk adalah 42.7%. Simptom paling kerap ialah kerap kencing waktu malam (78.2%), kerap kencing (58.2%) dan ketidakbolehan mengosongkan pundi kencing sepenuhnya (44.6%). Prevalens gula, protein dan darah dalam kencing ialah 23.6%, 11.4% dan 1.8%. Terdapat hubungan yang signifikan antara peningkatan umur dan keterukan LUTS ($p=0.005$). Daripada 102 pesakit dengan jumlah air kencing melebihi 150ml, terdapat pengurangan yang signifikan dalam kelajuan maksimum (Q_{\max}) ($p=0.039$) dan purata kelajuan (Q_{ave}) air kencing untuk setiap peningkatan 10 tahun dalam umur ($p=0.001$). Kebanyakan pesakit (59.5%) pernah dengar tentang BPH. Seramai 78.2% pesakit akan mendapatkan rawatan jika mengidap LUTS sementara 15.9% pula berkata mereka akan mendapatkan rawatan tradisional. Kesimpulannya, prevalens LUTS adalah tinggi dan tahap kesedaran memuaskan.

Kata kunci: simptom trek urinari bawahan, prostat, prevalens, kesedaran, Malaysia

ABSTRACT

This study aims to determine the prevalence of lower urinary tract symptoms (LUTS) and level of awareness among male outpatients in Universiti Kebangsaan Malaysia Medical Centre (UKMMC). A questionnaire consisting of demographic data, questions related to knowledge, attitude and practice on BPH and the International Prostate Symptom Score (IPSS) was used for this study. Uroflowmetry and bladder scan were

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used to evaluate the function of the urinary tract and severity of BPH. Urine dipstick was done for glycosuria, proteinuria and haematuria. A total of 220 respondents were surveyed. The prevalence of moderately and severely symptomatic LUTS was 42.7%. The most commonly reported LUTS were nocturia (78.2%), frequency (58.2%) and incomplete emptying (44.6%). The prevalence of glycosuria, proteinuria and haematuria were 23.6%, 11.4% and 1.8% respectively. There was a significant association between increasing age with the severity of LUTS ($p=0.005$). Out of 102 respondents with voided urine volume greater than 150 mL, there was a significant decrease in maximum (Q_{\max}) ($p=0.039$) and average (Q_{ave}) urine flow rates with every 10 years increase of age ($p=0.001$). The majority of respondents (59.5%) have heard of BPH before. Over 78.2% of the respondents would seek medical attention if they have LUTS with 15.9% saying they would seek traditional treatment. In conclusion, the prevalence of LUTS was high and the level of awareness was satisfactory.

Key words: lower urinary tract symptoms, prostate, prevalence, awareness, Malaysia

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a clinical diagnosis and may be associated with a collection of urinary symptoms, known as lower urinary tract symptoms (LUTS). LUTS may be divided into voiding (obstructive) and storage (irritative) symptoms. These symptoms experienced by patients can be assessed through the International Prostate Symptom Score (IPSS). The IPSS questionnaire has been validated in Malaysia (Quek et al. 2001). Nevertheless, LUTS are not specific for BPH alone as there are other conditions which may also be associated with LUTS such as urinary tract infections, prostate carcinoma, ureteric stones and chronic prostatitis (Cheah et al. 2003).

The Ministry of Health of Malaysia cited that BPH affects about 50% of men aged 60 years and above (Ministry of Health Malaysia 2002). In Kuala Lumpur, 18.9% and 39.6% of the men were found to be severely and moderately symptomatic, respectively. The prevalence of moderate to severe LUTS in Malays, Chinese and Indians were 70%, 59% and 50% respectively (Teh 2001). In Penang, 80% of

men reported some degree of LUTS, but the prevalence of moderate to severe LUTS was only 6.2% (Mariappan & Wooi 2006).

From this study, we aim to determine the prevalence of LUTS among male outpatients in Universiti Kebangsaan Malaysia Medical Center (UKMMC), besides assessing their level of awareness towards BPH.

MATERIALS AND METHODS

This cross-sectional study was conducted in the surgical and medical clinics of UKMMC, from 20th October, 2009 until 20th May, 2010. Male outpatients were selected through convenient sampling. Inclusion criteria include patients of age ≥ 40 years in stable clinical condition with subject literacy (able to understand and respond to questions).

The questionnaire used in this study consists of demographic data, questions related to knowledge, attitude and practice on BPH and the International Prostate Symptom Score (IPSS). The awareness (knowledge, attitude and practice) of the outpatients were assessed in this study via questionnaire (Table 1). They

were classified into low (n=146) and high (n=74) education levels, with low education defined as SPM qualification and below while high education was defined as STPM qualification and above.

A Medtronic[®] Uroflow Recorder was used to evaluate the function of the urinary tract and determine the severity of BPH. BladderScan[®] BVI 3000 was used to determine the post-void urine volume in the bladder. Mid-stream urine samples were collected for analysis on haematuria, proteinuria and nitrite for urinary tract infections using Combur¹⁰ Test[®] dipsticks.

For the uroflowmetry results to be valid, the voided urine volume must be 150 mL or greater (Ezz el Din et al. 1996). Based on this criterion, 118 respondents were excluded.

The statistical analyses of the study were done using Statistical Package for the Social Sciences (SPSS) version 17.0. The association between IPSS score and age group as well as age group and uroflowmetry were analyzed by repeated measures analysis of variance (ANOVA). The level of significance was set at 0.05. This study was approved by the Ethics Committee of Universiti Kebangsaan Malaysia Medical Centre (FF-303-2009).

RESULTS

Demographic Profile

A total of 220 male outpatients were surveyed in the Medical and Surgical Clinics of UKMMC, all of whom were 40 years old and above with a mean age of 61±10 years. A total of 51.8% of the respondents were Chinese; followed by 36.8% Malays, 9.1% Indians and 2.3% other races. The baseline characteristics are given in Table 2.

Prevalence of Lower Urinary Tract Symptoms (LUTS)

Among men aged 40 and above, the prevalence of significant LUTS (including moderately symptomatic and severely symptomatic) is 42.7%. According to ethnicity, 45.4% of Malays, 43.0% of Chinese and 40.0% of Indians were found to have significant LUTS (Table 3).

The severity of LUTS was analyzed in relation to their age group. The mean IPSS score increased with age, from 5.32±5.78 in the 40 to 49 years age group to 10.89±8.98 in the more than 70 years age group. This increase in mean IPSS score with age was found to be

Table 1: Questions used to assess knowledge of respondents regarding benign prostatic hyperplasia

Questions used to assess the knowledge regarding benign prostatic hyperplasia			
1. Benign prostatic hyperplasia is a type of cancer.	()	True	(✓) False
2. Symptoms of benign prostatic hyperplasia worsen with increasing age.	(✓)	True	() False
3. Benign prostatic hyperplasia can cause kidney failure.	(✓)	True	() False
4. Do you think that benign prostatic hyperplasia can be treated?	(✓)	Yes	() No
5. Benign prostatic hyperplasia can be treated with medication alone.	(✓)	True	() False
6. Surgery is a treatment option in cases of severe symptomatic BPH.	(✓)	True	() False

Table 2: Baseline characteristics of respondents according to ethnicity

	Malay (n = 81)	Chinese (n = 114)	Indian (n = 20)	Others (n = 5)	Mean
Age (year)	58.98 ± 9.24	63.13 ± 9.38	58.00 ± 14.60	57.00 ± 13.66	61.00 ± 10.17
Height (cm)	165.99 ± 7.91	167.75 ± 7.00	165.47 ± 6.50	172.60 ± 7.30	167.02 ± 7.38
Weight (kg)	73.44 ± 12.22	67.85 ± 11.84	72.94 ± 9.87	84.80 ± 34.12	70.83 ± 13.07
BMI (kg/m ²)	26.71 ± 4.47	24.02 ± 3.76	26.73 ± 3.58	28.36 ± 10.30	25.37 ± 4.47

BMI: Body Mass Index

Table 3: Respondents' IPSS class according to race

	IPSS Class			Total
	Mild	Moderate	Severe	
Malay	45 (55.6%)	22 (27.2%)	14 (17.3%)	81 (100.0%)
Chinese	65 (57.0%)	41 (36.0%)	8 (7.0%)	114 (100.0%)
Indian	12 (60.0%)	6 (30.0%)	2 (10.0%)	20 (100.0%)
Other races	4 (80.0%)	1 (20.0%)	0 (0.0%)	5 (100.0%)
Total	126 (57.3%)	70 (31.8%)	24 (10.9%)	220 (100.0%)

IPSS: International Prostate Symptoms Score

Table 4: Association between IPSS score and age group

Age	Mean IPSS Score	Standard deviation	ANOVA F	p
40 – 49 years (n = 34)	5.32	5.78	4.339	0.005
50 – 59 years (n = 57)	7.09	7.47		
60 – 69 years (n = 75)	9.12	7.93		
≥ 70 years (n = 54)	10.89	8.98		
Total (n = 100)	8.44	7.98		

IPSS: International Prostate Symptoms Score

ANOVA: Analysis of variance

significant by ANOVA, in which $p=0.005$ at 95% confidence level (Table 4).

The prevalence of individual symptoms of IPSS (scores 1–5) are determined from the study sample, whereby the three most commonly found LUTS are nocturia (78.2%), re-voiding within two hours (58.2%) and incomplete emptying of bladder (44.6%) (Figure 1).

The quality of life reported by the respondents is classified according to the severity of symptoms based on IPSS. The level of satisfaction with their urinary

condition is generally higher among the mildly symptomatic compared to the severely symptomatic respondents (Table 5).

Uroflowmetry Results

The mean voided urine volume for all the subjects ($n=102$) are 278 ± 122 mL with a mean Qmax of 19.8 ± 11.5 mL/s and mean Qave of 10.8 ± 5.2 mL/s. The mean residual urine volume as determined by bladder scan was 41 ± 14 mL.

Prevalence of Lower Urinary Tract Symptoms

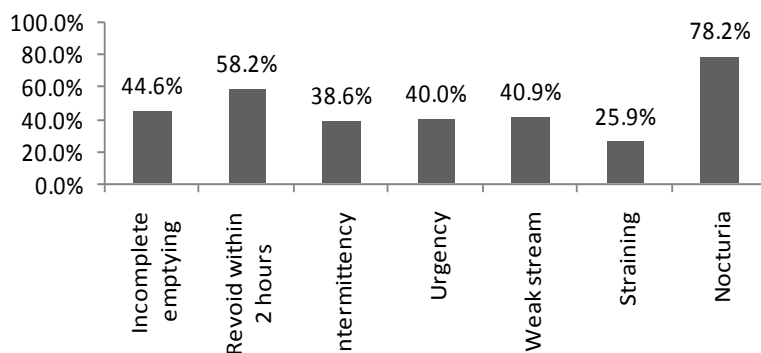


Figure 1: Prevalence of Lower Urinary Tract Symptoms.

The mean values for both Qmax and Qave decreased with every 10 years increase in age, and these were found to be statistically significant associations ($p=0.039$ and 0.001 respectively). On the other hand, the postvoid residual urine volume rises significantly with age, with $p=0.037$ (Table 6).

Urinalysis Results

The prevalence of urine abnormalities such as glycosuria, proteinuria and haematuria were determined by urine dipstick analysis. The most common urinary findings among male outpatients of UKMMC were glycosuria (23.6%), followed by proteinuria (11.4%). The prevalence of haematuria was found to be only 1.8% (Figure 2).

Knowledge, Attitude & Practice (KAP) In Relation To BPH

More than half (59.5%) of the respondents have not heard of benign prostatic hyperplasia before. Most of the respondents were able to answer only five questions correctly (34.1%).

From Figure 3, the majority of the respondents were able to answer five questions correctly; however, the percentage of respondents with high education level (39.19%) was much higher than those with lower education level (31.51%). Conversely, the percentage of respondents who were unable to answer at least three questions correctly were found to be greater in the lower education group compared to the higher education group.

Over 78.2% of the respondents would seek medical attention if they had LUTS. The reasons commonly given by those who do not want to seek treatment were that LUTS was a part of the normal ageing process and that LUTS did not affect their quality of life. In addition, there were 15.9% of respondents who would also seek traditional treatment for LUTS.

DISCUSSION

Our study population consists of three major ethnic groups in our country, i.e. Malays, Chinese and Indians, as well as other minority races. The Chinese (51.8%) made up the highest proportion of our

Table 5: Respondents' quality of life index according to severity of LUTS

	Quality of Life Index		
	Delighted (scores 0– 1) (n = 103)	Mixed (scores 2 – 4) (n = 77)	Terrible (scores 5 – 6) (n = 40)
Mild symptoms	90 (87.4 %)	23 (29.9 %)	13 (32.5 %)
Moderate symptoms	10 (9.7 %)	44 (57.1 %)	16 (40.0 %)
Severe symptoms	3 (2.9 %)	10 (13.0 %)	11 (27.5 %)

Table 6: Association between age group and uroflowmetry results

	Age				Total (n = 102)	ANOVA F	p
	40 – 49 (n = 18)	50 – 59 (n = 27)	60 – 69 (n = 37)	≥ 70 (n = 20)			
Q _{max} (mL/s)	23.2 ± 6.9	22.0 ± 14.4	19.9 ± 12.4	13.7 ± 5.6	19.8 ± 11.5	2.899	0.039
Q _{ave} (mL/s)	14.5 ± 5.1	11.8 ± 6.2	10.0 ± 3.8	7.5 ± 3.4	10.8 ± 5.2	7.629	0.001
Voided urine volume (mL)	273 ± 124	299 ± 134	283 ± 130	243 ± 85	278 ± 122	0.835	0.478
Residual urine volume (mL)	8 ± 14	58 ± 85	33 ± 60	63 ± 80	41 ± 69	2.943	0.037

ANOVA: Analysis of variance

study population, followed by Malays (36.8%) and Indians (9.1%). This could be due to the relatively higher proportion of Chinese population in the study area. The prevalence of symptomatic LUTS based on a symptom index 8 (including moderately symptomatic and severely symptomatic) in our study was 42.7% among men of all races. In comparison with the study conducted in Hospital Kuala Lumpur (Ministry of Health Malaysia 2002), our results showed a lower prevalence among all the races, with Malays at 45.4%, Chinese 43.0%, and Indians 40.0%. This could be explained by the younger age range in our study population, with a minimum age which was ten years lower than their study.

The most important risk factor for BPH is age, being significantly associated with a higher IPSS score (more severe LUTS), lower maximum urine flow rate (Q_{max}) and higher post-void residual urine volume. Similar findings have been re-

ported by Homma et al. (1997). This study involving Asian men showed a progressing trend of 18%, 29%, 40%, and 56% BPH prevalence in the age groups of 40 to 49, 50 to 59, 60 to 69, and 70 to 79 years, respectively. Our results showed a significant increasing trend for the mean IPSS score with every 10 year increase in age ($p=0.005$), which is also consistent with another study in Taiwan (sample size=100; $p=0.02$) (Liu et al. 2004). However, a study in Singapore showed contrasting results with a decreasing trend of median IPSS score with age. This is probably due to the difficulty in quantifying symptoms and cultural differences among the older patients in Singapore (Loh et al. 2009). Our respondents' urodynamics were also assessed by uroflowmetry. The mean maximum urine flow rate (Q_{max}) was 19.8±11.5 mL/s. Both Q_{max} and Q_{ave} have been shown to progressively decline with advancing age, which was consistent

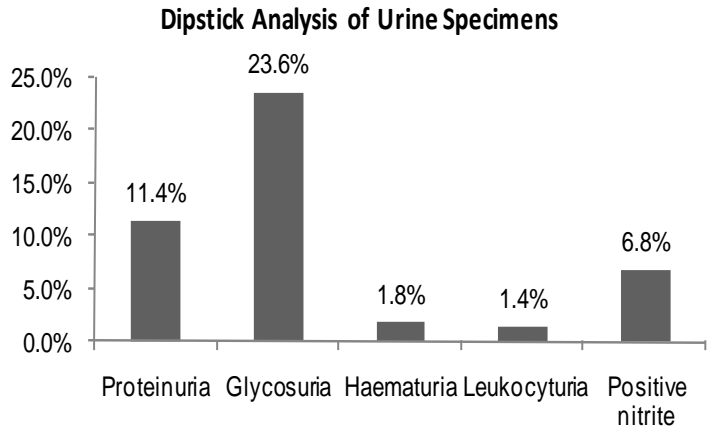


Figure 2: Results of urine dipstick analysis

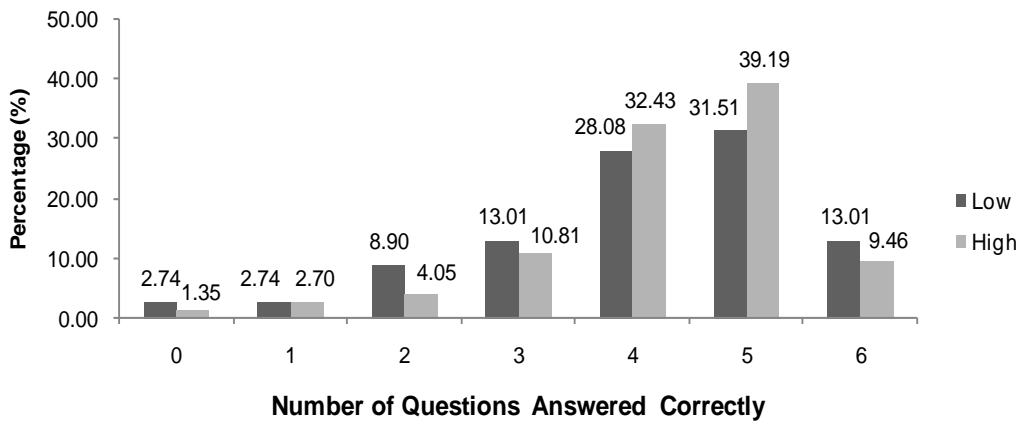


Figure 3: Number of questions answered correctly by respondents according to education level

with the increase in severity of LUTS with age. The residual urine volume showed an increasing trend in relation to age as this indicated an increase in urinary retention as a result of bladder outlet obstruction.

Aside from BPH, there are many urological as well as non-urological diseases that present with LUTS including prostate cancer, prostatitis, bladder cancer, bladder stones, overactive bladder, urinary tract infections, cystitis, primary bladder neck hypertrophy, urethritis and diabetes mellitus. From our study, the two most commonly reported LUTS are nocturia and frequency. However, they

are non-specific and can also be caused by other diseases as well, for example urinary tract infections and diabetes mellitus. The presence of glycosuria in our study (23.6%) is suggestive of diabetes mellitus while haematuria (1.8%) and nitrites (6.8%) are indicative of urinary tract infection. Although these symptoms are non-specific, the detection and management of these secondary causes of LUTS provide us with another approach towards reducing the high prevalence of LUTS among the population.

We also found that those whose quality of life was adversely affected by LUTS (67.5%), mostly presented with sig-

nificant urinary symptoms, as compared to those (87.4%) who presented with mild symptoms or were asymptomatic. This is consistent with a study done by Teh (2001), which found that there is a good correlation between the severity of LUTS with the quality of life ($r=0.69$, $p<0.001$). Calais Da Silva et al. (1997) found that the areas of life most affected by BPH were daily activities due to frequency and sleep interrupted by nocturia.

A total of 34.1% of respondents were able to answer five out of six questions correctly. Since our study was conducted in the surgical and medical clinics of UKMMC, our respondents have either been made aware of BPH by their doctors or have read about it from the brochures or posters in the clinic. Hence, we recommend that a study should be carried out in the general population so that the data generated can better reflect the level of awareness in our community.

Comparing the level of knowledge about BPH between the higher education group and lower education group, as expected, the higher education group had a higher level of knowledge of the disease, whereas the lower education group had a lower level of knowledge. However, among those who answered all six questions correctly, the results showed a contrasting higher proportion of lower education group. This might be explained by the fact that these subjects are afflicted with BPH and hence, understood the disease after being educated by their doctors.

The last part of the assessment was about the health-seeking behaviour among those who had LUTS. We found that most (78.2%) patients with LUTS would seek medical attention and treatment. In addition, traditional medication was still regarded as an alternative treatment for LUTS by a small group of people (15.9%), especially among the elderly, as they still place enormous faith in traditional medicine as part and parcel of their culture and belief. In order to

promote appropriate health-seeking behaviour, awareness campaigns should be carried out in order to better educate the public on BPH, including its prevalence, signs and symptoms, treatment options, as well as its complications if left untreated.

CONCLUSION

There is a high prevalence of LUTS among male outpatient attendees in Universiti Kebangsaan Malaysia Medical Centre. The level of awareness is satisfactory. However, a more concerted effort is needed to screen patients in the hospital for this problem and provide the optimal care for them, targeting mainly men above the age of forty. However, lower urinary tract symptoms are not synonymous with BPH and men only. Further studies are also needed to look into lower urinary tract symptoms among women.

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