

Urological knowledge among primary health care physicians in Saudi Arabia

Anmar M. Nassir, MD, FRCSC, Abdulaziz Baazeem, MD, FRCSC, Hesham Saada, MSc, PhD, Mohamed A. Elkoushy, MSc, PhD, Hattan Badr, MD, Mawaddah Bahuwyrith, MD, Haitham A. Melebari, MD, Jomanah Nasser, MD, Raed A. Azhar, FRCSC, FACS.

ABSTRACT

الأهداف: تقييم أسلوب المعرفة أطباء الرعاية الصحية الأولية (PHC) فيما يتعلق بالتحكم بمشاكل المسالك البولية الشائعة للمسالك البولية في المملكة العربية السعودية.

الطريقة: أجريت هذه الدراسة الاستطلاعية الرصدية، حيث تم توزيع استبيان ذاتي على أطباء PHC الممارسين في المنطقة الغربية، المملكة العربية السعودية في شهر يناير 2017م. تكون الاستبيان من 21 سؤال، عن التركيبة السكانية والمعرفة العامة ومهارات المسالك البولية، بما في ذلك سيناريوهات الحالة لتقييم نمط الممارسة والمواقف لحالة المسالك البولية المحددة بما في ذلك قسطرة مجرى البول، وتعريف وتقييم ببيلة دموية، والاعتراف بالزيادة المحددة حسب العمر في مستضد البروستاتا (PSA) المعين، والتحكم بأعراض المسالك البولية السفلى.

النتائج: تم الانتهاء من الاستبيانات من قبل 148 مستطلع وبمعدل استجابة بلغ 75.7%، واشتملت العينة على 54.3% أطباء مقيمين، 39% ممارس للطب العام، و5.4% من المتخصصين. سبعة وخمسون في المئة من المستطلعين كانوا من الذكور و68% من الممارسين السعوديين. أعرب عدد أكبر من المجيبين عن أنهم كانوا قادرين على قسطرة المرضى الذكور أكثر من الإناث (56.5% مقابل 34.3%). حدد 6.4% فقط من المجيبين البيلة الدموية المجهريّة بدقة. كانت المعرفة حول البيلة الدموية، مستضد البروستات النوعي والمثانة المفرطة النشاط منخفضة في جميع الفئات. بجانب البيلة دموية، كان البحث عن الاستشارات المسالك البولية أقل من 35% لجميع الكيانات المرضية الأخرى.

الخاتمة: يجب تحسين المعرفة ومهارات المسالك البولية بين مقدمي الرعاية الأولية في المملكة العربية السعودية. تعلم المهارات التشخيصية لمشاكل المسالك البولية الشائعة في المنهج الحالي سيساعد في رفع مستوى المعرفة.

Objectives: To evaluate the general knowledge among primary health care (PHC) physicians regarding the management of common urological problems in Saudi Arabia.

Methods: This is an observational prospective study, where a self-administered questionnaire was distributed to practicing PHC physicians in the western region of Saudi

Arabia on January 2017. The questionnaire consisted of 21-item questions, inquiring about demographics and general urological knowledge and skills. The management of common urological problems was assessed by case scenarios for specific urological condition, including urethral catheterization, definition and evaluation of hematuria, recognition of age-specific increase in prostatic specific antigen (PSA), and management of lower urinary tract symptoms.

Results: A total of 148 questionnaires were distributed, with a response rate of 75.7%, where 112 respondents completed the questionnaires, including 54.3% residents, 39% general practitioners, and 5.4% specialists. Fifty-seven percent of respondents were males and 68% were Saudi practitioners. A higher number of respondents expressed that they were able to catheterize a male than female patient (56.5% versus 34.3%). Only 6.4% of respondents defined microscopic hematuria accurately. Knowledge about hematuria, serum prostate specific antigen and overactive bladder was low in all groups. Apart from hematuria, seeking urological consultations was less than 35% for all other disease entities.

Conclusion: Urological knowledge among PHC physicians seems to be insufficient. Significant percentages of the participants were unable to catheterize a female patient, did not know the definition of hematuria; and whether to ask for urological consultations in cases of hematuria, increased PSA, and overactive bladder.

*Saudi Med J 2019; Vol. 40 (5): 483-489
doi: 10.15537/smj.2019.5.24080*

From the Department of Surgery (Nassir, Baazeem), Umm Al-Qura University, Makkah, from the Department of Urology (Saada, Elkoushy, Badr), King Abdullah Medical City, Makkah, from the Department of Internal Medicine (Bahuwyrith, Melebari), King Faisal General Hospital, Makkah; from the Faculty of Medicine (Nasser), and from the Department of Urology (Azhar) King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.

Received 10th March 2019. Accepted 3rd April 2019.

*Address correspondence and reprint request to: Dr. Anmar M. Nassir, Department of Surgery, Umm-Alqura University, Makkah, Kingdom of Saudi Arabia. E-mail: amnassir@qu.edu.sa
ORCID ID: <https://orcid.org/0000-0003-1341-0845>*

Primary health care (PHC) settings are usually the first line in dealing with newly emerging complaints, including those of a urological nature.^{1,2} Urological health problems and complaints usually increase with age. These include urinary tract infections, overactive bladder, benign prostate hyperplasia, and screening for different ecological conditions, with consequent increased visits to primary care facilities.³ Therefore, it is of utmost importance for PHC physicians to have the appropriate knowledge and skills required for the proper diagnosis and management of these clinical entities. Unfortunately, it seems that PHC providers lack such adequate knowledge and proficiency.^{1,3-5} Consequently, misdiagnosis, delays in treatment, and even mismanagement of such medical problems may occur, resulting in improper utilization of resources in the primary care setting.³

The learning objectives of urology rotations in Saudi Arabia for undergraduate are unclear, with inadequate feedback on performance, especially with lack of case diversity and the possible short urological teaching courses or insufficient clinical practice.⁴ The situation elsewhere is not much better than Saudi Arabia. There was no increase in exposure to urological education in the USA and England, despite the great advances and development in urological care in the last decade.^{6,7} Therefore, it is essential to increase urological knowledge and exposure of undergraduate and postgraduate trainees to guarantee basic competencies.

With the movement toward a more prominent role of PHC services in Saudi Arabia, more effort is being given to increase the level of knowledge in urology in medical school, which will influence the early management of common urological problems and aid in disease prevention.^{2,8,9} Currently, there are only a handful of studies which address this issue in Saudi Arabia. Therefore, the aim of this survey was to evaluate the general level of knowledge involving common urological problems among PHC physicians in Saudi Arabia.

Methods. This observational prospective study used a self-administered questionnaire developed by Mishail et al¹ The questionnaire was distributed to all accessible physicians in the western region of Saudi Arabia on January 2017, including family medicine consultants,

specialists, and residents, in addition to, general physicians working in PHC centers in Saudi Arabia. Interns, medical students, and residents from other specialties on family medicine rotations were excluded.

Ethical standards. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments. This article is a survey used a self-administered questionnaire and does not contain any studies with human participants or animals performed by any of the authors.

The questionnaire was distributed in paper form among physicians who met the inclusion criteria and agreed to participate. It consisted of a 21-item questionnaire in 2 sections. The first section inquired about demographic data, such as gender, nationality, title, educational degree, specialty, country of training and years of practice. The other section assessed general urological knowledge and skills, including definition and evaluation of hematuria, recognition of age-specific increase in serum prostatic specific antigen (PSA), management of lower urinary tract symptoms (LUTS) and catheterization of male and female patients. Some questions were designed in the form of case scenarios, which allowed the participant to choose more than one answer; other questions were open-label to assess the knowledge on specific urological conditions (Appendix 1).

The primary outcome was an assessment of the level of knowledge regarding common urological issues among PHC physicians. For questions with only one correct answer, a single mark was awarded to those who chose the correct answer. No marks were awarded for no answers, and a mark was deducted for those who chose one or more incorrect answers. For questions with multiple correct answers, a mark was awarded for each correct answer and deducted for each incorrect one. The sum of marks for all the knowledge questions was calculated and displayed as a percentage of all possible correct responses.

Statistical analysis. The sample size was calculated to include 384 family and primary care physicians. Data analyses was carried out using the commercially available Statistical Package for Social Science for IBM SPSS Statistics for Windows, Version 22.0 (Armonk, NY: IBM Corp.). Descriptive data were presented in terms of number of responses and percentages or means \pm SD or medians and ranges, depending on the normality of data distribution. Fisher's exact test was used for comparing discrete variables while continuous data was compared with Student's t-test or Mann

Disclosure. Authors have no conflict of interests, and the work was not supported or funded by any drug company.

Whitney test. A 2-tailed $p < 0.05$ indicated significant differences between groups.

Results. A total of 148 questionnaires were distributed among PHC physicians working in the western region (Makkah and Jeddah), with a response rate of 75.7%, where 112 respondents completed the questionnaires. Table 1 showed the demographic data of those who completed the questionnaires.

Urethral catheterization. A higher number of respondents described that they were able to catheterize male than female patients (56.5% versus 34.3%). Compared with female physicians, a significantly higher number of males noted they were able to catheterize a male patient (81.7% versus 25%, $p < 0.001$). Comparably low numbers expressed that they were proficient in catheterizing female patients (26.2% versus 44.7%,

$p = 0.06$). These findings were not affected by the type or level of education, but an increased duration of practice was associated with an improved ability to catheterize female patients ($p = 0.006$). Of interest, a significantly lower number of Saudi physicians expressed the ability to catheterize female patients (24.4% versus 68.2%, $p < 0.001$), compared to non-Saudi respondents, while they were comparable with non-Saudis in male catheterization (55.8% versus 59.1%, $p = 0.81$).

Evaluation of hematuria. Only 6.4% of respondents defined microscopic hematuria accurately as 3 RBCs/HPF, including 16.7% of residents and 8.1% of general practitioners, while 34.1%, 26.6%, and 9.2% of respondents chose the definition of 4 RBCs/HPF, 5 RBCs/HPF, and 6 RBCs/HPF ($p = 0.14$). Of interest, the right answer was significantly higher among female physicians (60.4% versus 30%, $p = 0.002$). Education type and level, country of training and duration of practice did not impact the choice of the correct definition of micro-hematuria ($p > 0.05$).

For a 52-year-old patient who presented with microscopic hematuria, repeat urine analysis was recommended by 54.1% and 52.3% of respondents, antibiotic prescription by 17.4% and 15.6%, sending urine culture by 43.1% and 40.4%, sending urine cytology by 25.7% and 29.4%, and obtaining imaging studies by 38.5% and 40.4% (for female and male patients respectively). These results were comparable between Saudi and non-Saudi physicians (Figure 1). For a 63-year-old patient who was presented with an episode of gross hematuria, repeat urine analysis was routinely

Table 1 - The demographic data of respondents (N=112).

Variable	n (%)
Region	Makkah 73 (65.2)
	Jeddah 39 (34.8)
Gender	Males 64 (57.0)
	Females 48 (43.0)
Title	Residents 61 (54.5)
	General practitioner 44 (39.3)
	Specialists 6 (5.4)
	Consultant 1 (0.9)
Nationality	Saudi 76 (68.0)
	Non-Saudi 36 (32.0)
Urology elective	Yes 16 (14.3)
	No 96 (85.7)

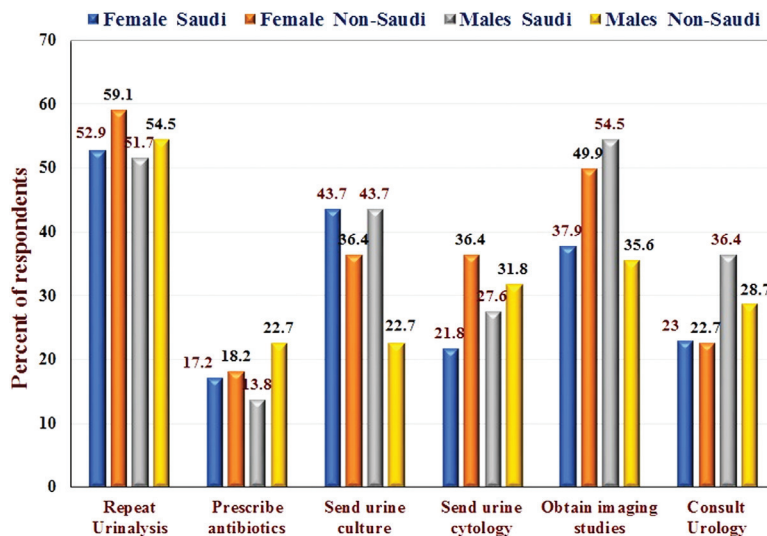


Figure 1 - Recommendations carried out by Saudi versus Non-Saudi physicians for microscopic hematuria. All joined Saudi versus non-Saudi comparisons have a $p > 0.05$ (no significant differences).

carried out by 27% and 22% of respondents, antibiotic prescription by 9.2% and 8.3%, sending urine culture by 26.6% and 20.6%, sending urine cytology by 34.9% and 40.4%, and obtaining imaging studies by 59.5% (female patients) and 60.6% (male patients). All these comparisons showed no significant differences between Saudi and Non-Saudi physicians, apart from obtaining imaging studies in men with gross hematuria (54% versus 86.4%, $p=0.006$) (Figure 2).

Prostate cancer screening. Only 2.8% of respondents did not routinely screen PSA for prostate cancer. Surprisingly, 58.2% of participants would recommend a PSA test for men older than 80-years,

including significantly higher percentages of residents than specialists and general physicians, respectively (79% versus 40% versus 24.3%, $p<0.001$) (Figure 3). A significantly higher number of Saudi physicians recommend PSA testing for men older than 80-years (63.2% versus 36.4%, $p=0.02$). Training place/country or number of years in practice did not impact that difference ($p>0.05$). A total of 76.2% of respondents believed that digital rectal examination (DRE) is still necessary even when obtaining PSA, while only 16.5% observed that no benefit of digital rectal examination over serum PSA (Figure 4). These concepts were comparable between Saudi and non-Saudi practitioners

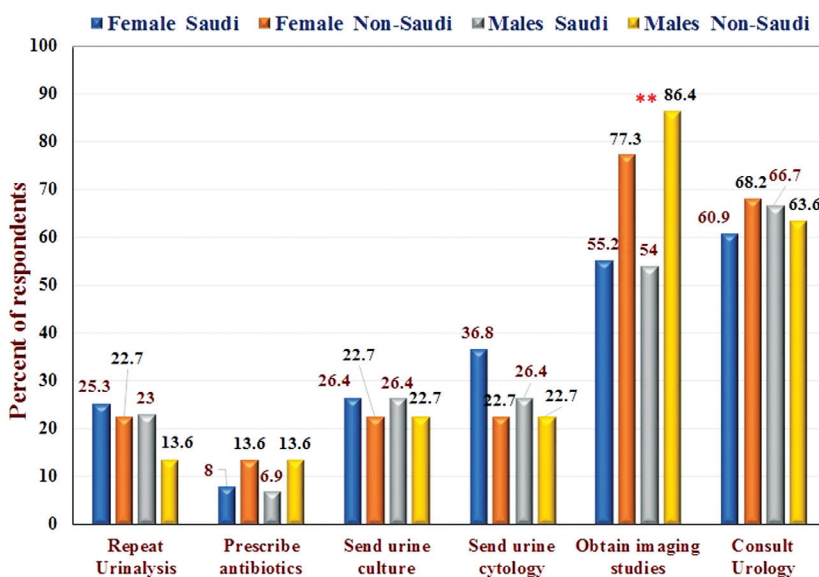


Figure 2 - Recommendations carried out by Saudi versus non-Saudi physicians for gross hematuria. All joined Saudi versus non-Saudi comparisons have a $p>0.05$ (no significant differences), except $**p=0.006$.

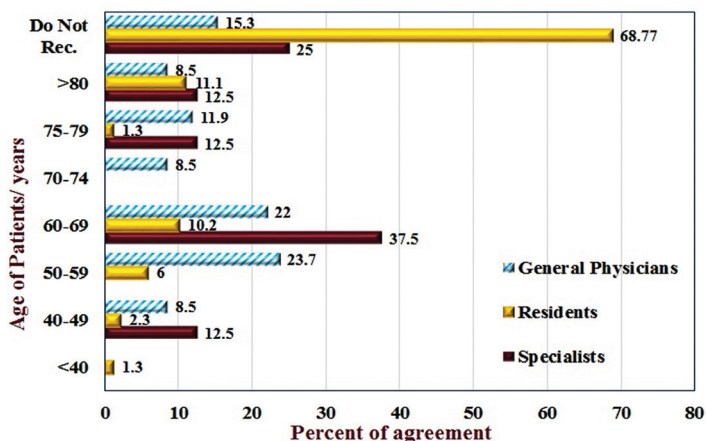


Figure 3 - Prostatic specific antigen screening was considered for men in different age groups older than 40 years ($p=0.01$).

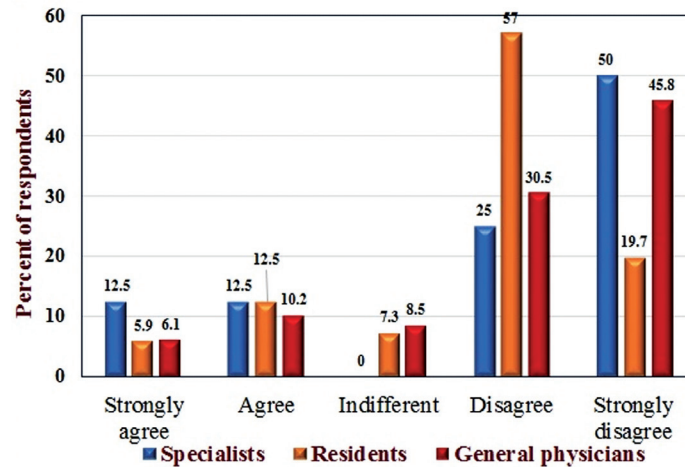


Figure 4 - Agreement with whether digital rectal examination of the prostate is not necessary if serum prostatic specific antigen is ordered.

($p=0.05$), and similarly with the type and level of education, board certification or duration of practice ($p>0.05$). For a 49-year-old caucasian with a PSA of 2.9 ng/ml, 22.9% would repeat PSA after 6-months, 13.6% would ask for prostate ultrasonography, and only 2% would repeat the PSA. Out of 48.6%, a significantly lower number of Saudi physicians believed that this is normal and would follow the patient in one year (43.7 versus 68.2%, $p=0.04$).

For initial treatment of 65-year-old female with storage urinary tract symptoms, urinalysis and culture were recommended by 82.6% and 40.4% of respondents, with comparable results between Saudis (80.5% versus 90.9%, $p=0.20$) and non-Saudis (44.8% versus 22.7%, $p=0.08$). Urine cytology was requested by 10.1%, while a significantly lower number of Saudi physicians asked for renal ultrasonography (21.8% versus 50%, $p=0.01$), which was requested by 27.5% of respondents. Overactive bladder medications would be prescribed by 10.1%, while 33.9% would ask for gynecological consultations (27.6% Saudi versus 59.1% non-Saudi, $p=0.01$). For initial treatment of a 65-year-old male with storage urinary tract symptoms, 76.1% would ask for urinalysis, 42.2% recommend urine culture and 16.5% recommend urine cytology, 40.4% will requested serum PSA (32.2% Saudi versus 72.7% non-Saudi, $p=0.001$), while 24.8% recommend a renal ultrasound (19.5% Saudi versus 45.5% non-Saudi, $p=0.02$). Overactive bladder medications (6.4%), α blockers (15.6%) and 5 α -reductase inhibitors (8.3%) were prescribed with comparable numbers of Saudi and non-Saudi physicians.

Urological consultation. In adult females and males with microscopic hematuria, urological consultation

was considered by 22% and 29.4%, respectively, including 18.1% and 20.8% of residents, 50% and 62.5% of specialists and 22% and 30.5% of general physicians. Only 17.7% of respondents will obtain a urology consultation for a 49-year-old Caucasian male with a PSA of 2.9 ng/ml. In adult females and males with macroscopic hematuria, 61.5% and 66.1%, respectively, will consult urology, where more than 50% in each category considered urological consultation for female and male gross hematuria, including 54.2% and 50% of residents, 62.5% and 63.5% of specialists and 62.7% and 59.3% of general physicians. For initial treatment of a 65-year-old female with storage urinary tract symptoms in women (15.6%) and men (35.8%) requested a urological consultations.

Discussion. The Ministry of Health in Saudi Arabia provides PHC services through 2259 centers. Each of them serves approximately 13,455 people,² and continuously strives to improve the service provided by these PHC centers. This study aimed to assess the general level of knowledge and practice patterns regarding common urological problems observed by PHC physicians, who provide the initial health care for patients with urological problems, and its potential effect on urological care provided in Saudi Arabia.

The present study showed a lack of knowledge and inconsistencies in the management of patients with various common urological conditions by residents, general practitioners, and specialists. It seems that urological knowledge should be improved for undergraduates in many subjects, necessitating the need for more urology exposure and an increased diversity of clinical exposure. Moreover, an increasingly

aging population results in more frequent exposure of common urological problems by PHC providers in daily practice.^{10,11} Binsaleh et al⁴ observed that the learning objectives of urology rotation in Saudi Arabia for undergraduates are unclear, with inadequate feedback on performance, especially with lack of case diversity and short urology exposure. The situation in USA and Europe was not much better regarding this issue, where there was no corresponding increase in exposure to urological education in USA and England, despite the great advances and development in urological care in the last decade.^{7,8} Therefore, it is essential to increase urological exposure of undergraduate and postgraduate trainees to guarantee basic competencies.

Surprisingly, almost half and two-thirds of our respondents were respectively unable to catheterize male and female patients, with a significantly lower number of female physicians who were able to catheterize men. Inappropriate urethral catheterization may result in urethral injury, infection, and failure of bladder decompression. Consequently, patients may develop acute gross hematuria with long-term urethral stricture formation, requiring invasive surgical correction, and may require repeated invasive managements.¹² At a tertiary medical center, 74% of observed urethral morbidity were due to catheter placement by interns, who reported inadequate training and/or supervision for urethral catheter insertion.¹³ Therefore, adequate catheterization skills should be acquired during medical school, as expected by the Accreditation Council for Graduate Medical Education. Unfortunately, most PHC physicians often call for urology to catheterize the patient, especially in women. Liu et al¹⁴ found that 70% of urology consultations for catheterization required no additional equipment, with consequent delay to the patient and increased cost. Therefore, non-urologist physicians should have enough experience for comfortable urethral catheterization for patient safety, ideally within medical schools.¹⁵

Evaluation and management of hematuria, either microscopic or gross, by PHC providers are not without shortcomings either. Only 6.4% of respondents define microscopic hematuria accurately as 3 RBCs/HPE. As the severity of hematuria does not always correlate with the severity of underlying pathology, the work-up and management of microscopic hematuria should be taken seriously, as it may be associated with 1% to 3% incidence of malignancy. This necessitates full evaluation and appropriate urological consideration, especially in older patients. Nieder et al¹⁶ found that fewer primary care physicians requested urine cytology (11% and 13%), imaging studies (25% and 41%), and

urology consultation (36% and 77%) for microscopic than gross hematuria. These were not less satisfactory than that observed in practitioners evaluated in our study, especially in gross hematuria, where workup and recommendations by PHC physicians were not affected by the patient's gender, and all choices were comparable between Saudi and non-Saudi physicians, apart from obtaining imaging studies in men with gross hematuria, which was recommended by a significantly higher number of non-Saudi practitioners. This may be due to the fewer number of the non-Saudi participants in the study.

Prostatic specific antigen screening remains controversial, and making decisions to screen or not for prostate cancer is complex. Some guidelines recommend against PSA screening because the harms of prostate cancer screening might exceed the benefits for most men. Other guidelines contradict the previous conclusion and cite the potential benefits of early detection with the PSA test.¹⁷ Whether to perform a biopsy or repeat PSA in a 49-year-old man with a PSA of 2.9 ng/ml should depend on patient counselling, with considering referral to urology. Only 2.8% of respondents did not routinely screen PSA for prostate cancer, while 58.2% would recommend a PSA test for men older than 80-years, including significantly higher numbers of residents than specialists and general physicians. Prostate cancer screening is not recommended in asymptomatic men older than 75-years, or those with a life expectancy less than 10-years, due to the potential harms relative to questionable benefits.¹ Most respondents believed that digital rectal examination (DRE) is still necessary even when obtaining PSA. Despite that DRE was recommended in guidelines for screening prostate cancer, the PSA test is more sensitive than DRE, and no trials have evaluated the use of DRE alone.

Overactive bladder or chronic storage urinary symptoms are a frequent cause of seeking medical advice by men and women, especially in older age. Treatment should be started to relieve such bothersome complaints after exclusion of urinary tract infection and possible malignancy. Of interest, only 10-15% of respondents considered an initial medical therapy in men or women. Urinalysis was the recommended initial test in both gender, associated with urine culture in 40% of patients, while urine cytology was recommended in only 10-16% of patients. Prostatic specific antigen was a preferred initial test in a substantial number of men with storage symptoms among the respondents.

Most participants of the current study will not ask for urological consultation in the different surveyed case scenarios. It seems sound from medico-legal aspects for

PHC providers to ask for consultations in doubtful cases to avoid adverse events.

As is common to all surveys, the current study may be limited by selection bias, represented by only respondents who may have been interested to complete the survey with consequent limiting the generalizability of the results. Similarly, recall bias constitutes another limitation in any survey design, where respondents may overestimate the numbers reported. The large number of residents included, with lack of their professional training, may represent another limitation of the current study. However, this was compensated by the subgroup analyses, which have been performed. Nevertheless, this survey can support the sparse literature regarding the general level of knowledge and practice patterns regarding common urological problems observed in the PHC setting among PHC physicians, and its impact on urological care provided in Saudi Arabia.

In conclusion, urological knowledge among PHC physicians appears to be insufficient. Significant percentages of the participants were unable to catheterize a female patient, did not know the definition of hematuria; and whether to ask for urological consultations in cases of hematuria, increased PSA, and overactive bladder. More inclusion of family physician trainees in the practical settings to learn the diagnostic skills for urological issues and essential procedures could help in raising the level of knowledge and skills. Giving more space for urological issues in the current curriculum is suggested and early implementation of such training in medical schools and internship is also suggested.

References

- Mishail A, Shahsavari M, Kim J, Welliver RC Jr, Vemulapalli P, Adler HL. Deficits in urological knowledge among medical students and primary care providers: potential for impact on urological care. *J Urol* 2008; 180: 2140-2147.
- Alzaied TAM, Alshammari A. An Evaluation of Primary Healthcare Centers (PHC) services: The views of users. *Health Science Journal* 2016; 10: 15.
- Patel P, Nayak JG, McGregor TB. The value of a core clinical rotation in urology for medical students. *Canadian Urological Association Journal* 2015; 9: 392.
- Binsaleh S, Al-Jasser A, Almannie R, Madbouly K. Attitude and perception of urology by medical students at the end of their medical school: an appraisal from Saudi Arabia. *Urol Ann* 2015; 7: 211-220.
- Chung E, Spratt P. Interns' assessment and management of three common urological conditions: a survey of their knowledge and skills. Are they adequately prepared for clinical practice? *N Z Med J* 2008; 121: 1273.
- Scott R, Pearce I, Payne SR, et al. 5 year follow up of urology undergraduate education: a decline in exposure, satisfaction with teaching techniques, and consideration of urology as a career. *BJU Int* 2010; 106 (Suppl 1): 24.
- Loughlin KR. The current status of medical student urological education in the United States. *J Urol* 2008; 179: 1087-1090.
- Al-Abbad HM, Al-Haidary HM. The perception of physical therapy leaders in Saudi Arabia regarding physical therapy scope of practice in primary health care. *J Physical Therapy Sci* 2016; 28: 112.
- Gagnon LO, Simard A, Tu LM. Knowledge about urology in the general population: alarming results. *Canadian Urological Association Journal* 2009; 3: 388-391.
- Wei JT, Miner MM, Steers WD, et al. Benign prostatic hyperplasia evaluation and management by urologists and primary care physicians. Practice patterns from the observational BPH registry. *J Urol* 2011; 186: 971-976.
- Hoag NA, Hamidizadeh R, Macneily AE. Undergraduate exposure to urology: Impact of the distributed model of medical education in British Columbia. *Can Urol Assoc J* 2013; 7: 20-25.
- Mundy AR, Andrich DE. Urethral strictures. *BJU Int* 2011; 107: 6-26.
- Thomas AZ, Giri SK, Meagher D, Creagh T. Avoidable iatrogenic complications of urethral catheterization and inadequate intern training in a tertiary-care teaching hospital. *BJU Int* 2009; 104: 1109-1112.
- Liu JJ, Guo DP, Gill H. Patterns of urinary catheter consults in a tertiary care hospital. *Can J Urol* 2013; 20: 7046-7049.
- Cohen A, Nottingham C, Packiam V, Jaskowiak N, Gundeti M. Attitudes and knowledge of urethral catheters: a targeted educational intervention. *BJU Int* 2016; 118: 654-659.
- Nieder AM, Manoharan M, Vyas S, Soloway MS. Evaluation and work-up of hematuria among primary care physicians in Miami-Dade County: an anonymous questionnaire-based survey. *J Urol* 2007; 177: 357.
- Duchene DA, Rosso F, Clayman R, McDougall EM, Winfield HN. Current Minimally Invasive Practice Patterns among Postgraduate Urologists. *J Endourol* 2011; 25: 1797-1804.
- Qaseem A, Barry MJ, Denberg TD, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for prostate cancer: a guidance statement from the Clinical Guidelines Committee of the American College of Physicians. *Ann Intern Med* 2013; 158: 761-769.

Appendix I

1. Gender
 Male Female
2. Nationality
 Saudi Non-Saudi (please specify)

3. From which region-city you are working in?

4. Title:
 Consultant Specialist R4 R3 R2 R1 General physician
5. What is the level of your degree?
 Still in residency program Finished a board degree Master Doctorate
 Other (please specify)

6. If you have a board certification:
 Please specify what board? _____
 What specialty? _____
7. If you have any subspecialty please specify what is your subspecialty

8. Which country you did your training program in?

9. If beyond the residency program, please what is the number of years you are in practice?

10. Did you do a urology elective in internship year?
 Yes No
 If yes, how many week _____
11. I am adequately trained to place a urethral Foley catheter in a female patient:
 Yes No
12. I am adequately trained to place a urethral Foley catheter in male patient:
 Yes No
13. Please complete the following statement: I define microscopic hematuria as (check only 1 response):
 I do not know how to define microscopic hematuria
 Positive urine dipstick for blood Presence of 1 or more RBC/HPF
 Presence of 3 or more RBC/HPF Presence of 5 or more RBC/HPF
 Presence of 10 or more RBC/HPF None of the above
14. Assume you are seeing a real patient. A 52-year-old female patient is found to have microscopic hematuria. Please check which of the following recommendations you would routinely make for this patient. You may check more than one box:
 Repeat urinalysis Prescribe antibiotics
 Send urine culture Send urine cytology
 Obtain imaging studies Consult urology
15. Assume you are seeing real patient. A 52-year-old male patient is found to have microscopic hematuria. Please check which of the following recommendations you would routinely make for this patient. You may check more than 1 box:
 Repeat urinalysis Prescribe antibiotics
 Send urine culture Send urine cytology
 Obtain imaging studies Consult urology
16. Assume you are seeing a real patient. A 63-year-old female patient has an episode of gross hematuria. Please check which of the following recommendations you would routinely make for this patient. You may check more than 1 box:
 Repeat urinalysis Prescribe antibiotics
 Send urine culture Send urine cytology
 Obtain imaging/radiological studies Consult urology
17. Assume you are seeing a real patient. A 63-year-old male patient has an episode of gross hematuria. Please check which of the following recommendations you would routinely make for this patient. You may check more than 1 box:
 Repeat urinalysis Prescribe antibiotics
 Send urine culture Send urine cytology
 Obtain imaging/radiological studies Consult urology
18. For what age group(s) do you routinely recommend prostate specific antigen (PSA) testing? You may check more than 1 box:
 Younger than 40 years 40-49 years 50-59 years
 60-69 years 70-74 years 75-79 years
 80- Years or older I do not routinely recommend PSA testing
19. To what extent do you agree with the following statement: digital rectal examination of the prostate is not necessary if I am ordering a serum PSA
 Strongly agree Agree Indifferent
 Disagree Strongly disagree
20. Assume you are seeing a real patient. A 49-year-old healthy, asymptomatic white male patient has a serum PSA of 2.9 ng/ml. The prostate is normal on rectal examination. Which of the following would you routinely advise this patient to do? You may check more than one box:

- This is normal - return in 1 year Repeat the PSA now
 Repeat the PSA in 6 months Order a sonogram of the prostate
 Consult urology
21. Assume you are seeing a real patient. A 65-year-old healthy female sees you for the first time today. She is complaining of several months of urinary urgency and frequency. Which of the following would you routinely recommend for this patient at the initial visit? You may check more than 1 box:
 Urinalysis Urine culture Urine cytology Renal ultrasound
 Overactive bladder medication Consult her gynecologist Consult urology
22. Assume you are seeing a real patient. A 65-year-old healthy male patient see you for the first time today. He is complaining of several months of urinary urgency and frequency. Which of the following would you routinely recommend for this patient at the initial visit? You may check more than 1 box:
 Urinalysis Urine culture Urine cytology Serum PSA
 Renal ultrasound Overactive bladder medication α -blocker
 5 α -reductase inhibitor Consult urology