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# Attitude and perception of urology by fifth-year (GEMPIII) students at the end of their mixed block rotation at Wits Medical School

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## Abstract

**Background:** This University Medical School offers a 6-year MBChB programme, of which the fifth year consists of seven blocks of 6 weeks each of which 2 weeks are mixed rotations in specialities such as ophthalmology, ear–nose–throat and urology. The purpose of the study was to assess the current urology knowledge and skills confidence amongst undergraduate medical students regarding urological diagnostic and therapeutic procedures, in order to evaluate the current curriculum for possible need of improvement.

**Methods:** This was a qualitative survey of 250 fifth-year medical students from September 2019 to February 2020. The survey was conducted by means of a questionnaire consisting of two parts: The first component covered the students perceptions of the urology rotation, and the second component contained the students self-evaluations. The aim of the study was to evaluate students perceptions of the current urology curriculum and to assess the possible need for improvement in urological knowledge and skill.

**Results:** Of 250 (100%) voluntary participants, 159 (63.6%) were female and 91 (36.4%) were male. The majority of students considered their urology knowledge on lithiasis/stone disease and erectile dysfunction sufficient and were comfortable with male catheterisation. Voiding dysfunction, paediatric urology and uro-oncology were the subjects students commonly expressed a deficit in. There was a statistical significant difference in females having a more positive attitude to urology, than males ( $p = 0.02$ ). No statistical significant difference in attitude to urology was found between students who rotated in one center opposed to students who rotated in another center. Indeed, the majority of students had a negative attitude to urology at the end of the mixed block rotations regardless of the training location. Unattractivity and lack of knowledge were the most common reasons for not choosing urology as a career.

**Conclusion:** The study reveals a need for improvement in basic urological knowledge and skills during the mixed block rotation. A more practical curriculum, taking into account: bedside teachings, attendance of urological clinics and more exposure to urological patients, are some suggestions to be considered in improving the urological educational curriculum.

**Keywords:** Urology course perception, Fifth-year medical students, Survey

## 1 Background

The University of the Witwatersrand (Wits) Medical School offers a 6-year MBChB programme, of which the fifth year is more of a clerkship, consisting of didactic (lectures and assigned readings) and practical (work in

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hospital wards or in an outpatient clinic) study. It consists of seven block rotations of 6 weeks each in surgery, internal medicine, paediatrics, obstetrics and gynaecology, specialities 1 (ear–nose–throat (ENT), ophthalmology, urology), specialities 2 (psychiatry, family medicine, public health) and specialities 3 (traumatology, anaesthesia, emergency medicine). The three specialities: 1, 2 and 3 consist of 2-week mixed rotations.

Students who have completed another undergraduate 3-year degree such as a BSc comprising of the appropriate subjects, may apply to join the graduate entry medical programme (GEMP) as GEMP I students in the third year of medical studies, and are thus in their GEMP III year together with the other fifth-year students.

The urology course covers history taking, urological examination, diagnosis and treatment of common urological disorders. This exposure is important because most urological symptoms are primarily managed by general practitioners. In Canada, the number of men with lower urinary tract symptoms for which management may fall upon general practitioners has increased significantly since 2010 [1]. The USA estimated that genitourinary conditions can total up to 10% of general practitioner visits [2, 3].

Urological diseases are likely to increase as a significant proportion of people live longer. The impact on the population mortality due to urological cancers has increased significantly [4], for example, prostate cancer is currently the third most common death causing cancer [5]. The prevalence of non-oncological urological disorders such as urolithiasis also increased over time due to improvements in clinical–diagnostic procedures, changes in nutritional and/or environmental factors with westernisation, and increased lifespan [6].

Therefore it is imperative that basic urological knowledge and skill are included in the general medical undergraduate education. As such, it is important to assess the student's urology knowledge and skill during their undergraduate education and evaluate the sufficiency of the urology curriculum of any medical school.

## 2 Methods

This was a qualitative survey from September 2019 to February 2020 of 250 (100%) fifth-year medical students at Wits Medical School. The survey was conducted by means of a questionnaire including questions on various clinical urology subjects, self-assessed practical skill principals in urology and possible career prospects. The questionnaire was based on a previously used questionnaire of a survey conducted in the USA by the Association of American Medical Colleges [7].

The questionnaire consisted of two parts: the first covered perceptions of the urology rotation, the second

covered self-evaluation. The questions consisted of binary (yes/no), Likert scale and multiple choice questions. The questionnaire was distributed to the fifth-year medical students at the end of their 6 week rotation consisting of ophthalmology, ENT and urology at the end of the 7th block of rotations, on the day of the examinations.

The data was collected in a Microsoft Excel spreadsheet and analysed using STATA Version 14.2 software (College Station, TX). The level of significance was set at  $p \leq 0.05$ . Descriptive data was analysed to determine the prevalence of the variables, means and medians. An association between these variables and the outcomes was analysed using the Students *t* test and the Chi-square test as applicable.

## 3 Results

The completed questionnaires totalled 250 (100%) of which 159 (63.6%) were from female and 91 (36.4%) from male voluntary study participants. A total of 139 (55.6%) students rotated at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) compared to 111 (44.4%) at Chris Hani Baragwanath Academic Hospital (CHBAH).

The questionnaire had multiple options per question, whereby students could choose more than one option. The majority of respondents [176 (70.4%)] considered the rotation to have increased their readiness for internship. In addition, the majority of students 190 (76%) considered urology as an important speciality that should be part of the undergraduate curriculum. However, students had various perceptions of urology as a speciality (Table 1).

The majority of students chose inpatient bedside teaching [203 (81.2%)] and attending urology clinics [164 (65.6%)] as the best modalities to learn urology. Multiple choice questions (MCQs) [248 (99.2%)] and oral examinations [213 (85.2%)] were chosen as the best methods used in the evaluation of knowledge.

### 3.1 Knowledge

Lithiasis/stone disease [219 (87.6%)] and erectile dysfunction [148 (59.2%)] were the two urology topics in which most students considered their knowledge sufficient. There was a significant difference in gender with regards to knowledge in erectile dysfunction (Table 2).

**Table 1 Student perceived definition of urology**

Medical speciality	3	1.2%
Surgical speciality	106	42.4%
Medico-surgical speciality	141	56.4%
Total	250	100%
<i>p</i> value	0.018	

**Table 2 Gender difference in terms of sufficient knowledge in erectile dysfunction**

Gender knowledge on erectile dysfunction	
Male	
Count	6
% within gender	71.4%
Female	
Count	83
% within gender	52.2%
<i>p</i> value	0.03

**Table 3 Student's preferred medical careers to pursue**

Medical career	Count	%
Medical specialisation	121	48.4%
Surgical specialisation	66	26.4%
Psychiatry	11	4.4%
Emergencies	9	3.6%
Others	43	17.2%
Total	250	100.0%

Paediatric urology [235 (94%)] and uro-oncology [119 (47.6%)] were the two urology subjects in which students considered their knowledge deficient.

### 3.2 Skills

With the exception of renal ultrasound [8 (3.2%)], the majority of students [233 (93.2%)] felt comfortable performing male catheterization 210 (84%), digital rectal examination [205 (82%)], and female catheterisation [202 (80.8%)]. However, the majority of students (75.6%) expressed the need for more exposure and knowledge regarding urological disease during their fifth-year urology rotation.

### 3.3 Career perception

The majority of students [233 (93.2%)] did not intend to become urologists, of which 94 (37.6%) reported the reason being the unattractive lifestyle, followed by a perception of the urological speciality as being narrow and restricting 38 (15.2%), the lack of knowledge in urology 23 (9.2%), the perception of the surgical residency as being physically and technically demanding 20 (8%), and social issues 18 (7.2%).

Medical specialisation was the medical career the majority of students considered to pursue, followed by surgical specialisation, psychiatry, emergency medicine and others (Table 3). Interestingly, a medical speciality was chosen as the choice medical career to pursue by 46.3% of male students compared to 56.1% of females ( $p=0.049$ ), while 39% of male students considered

**Table 4 Gender differences regarding best modality to learn urology**

Gender		
Male		
Count	22	21
% within gender	24.2%	23.1%
Female		
Count	17	20
% within gender	10.7%	12.6%
	Independent reading	Watching endoscopy
<i>p</i> value	0.005	0.031

**Table 5 Gender differences in the value of OSCE as final evaluation method in the urology rotation**

OSCE	
Male	
Count	64
% within gender	70.3%
Female	
Count	85
% within gender	53.5%
<i>p</i> value	0.09

surgical speciality as a career to pursue compared to only 23% of females ( $p=0.024$ ).

### 3.4 Student self-evaluation

Some students (35.6%) disagreed that learning objectives were clear during their urology rotation, performance was assessed against the learning objectives (28.4%), time was used productively (34.8%), registrars and fellows had a prominent role in teaching (34.8%) and the existence of common problems such as taking care of patient files, follow-up patient booking for imaging such as X-ray, CT scan, MRI and ambulatory care, were emphasised by 41.2% of students.

### 3.5 Learning urology

The survey revealed a statistically significant difference in the preferred learning method of urology between male and female students. Interestingly, more males considered watching endoscopy advantageous to learning urology (Table 4).

Objective structural clinical examination (OSCE) was considered by mostly male students as the most valued evaluation method in urology (Table 5).

The need for more exposure and knowledge in urological disease was suggested by 86.4% of male students compared to 72% of female students. In addition, 87.9%

of male students were comfortable with urinalysis interpretation compared to 76.7% of females ( $p=0.03$ ).

### 3.6 Training location

The survey revealed that 22.7% of students who rotated at CHBAH preferred watching open surgery as the best modality to learn urology, compared to only 8.8% of students who rotated at CMJAH ( $p=0.04$ ). Additionally, 68.8% of students who rotated at CMJAH chose OSCE as the preferred evaluation method, compared to 53.6% of those who rotated at CHBAH ( $p=0.015$ ). Furthermore, 92.8% of students who rotated at CMJAH considered their knowledge in lithiasis/stone disease sufficient compared to 84.5% of those who rotated at CHBAH ( $p=0.041$ ). Interestingly, there was no significant statistical difference between the training location and the attitude to urology, or the training location and readiness for internship, regardless of gender.

However, there is a statistically significant difference between females (who in general indicated a more positive attitude to urology) and males, with regard to the perception of readiness for internship after rotating in the urology unit (Table 6).

## 4 Discussion

Although most students regard urology as an important part of the medical school curriculum, the majority have a negative attitude to this rotation. These findings are not unique to South Africa. It was reported in Canada that at least 70% of students have a positive impression of urology at the beginning but lose interest as they progress through the training [8]. In this study, urology was the speciality least students chose to pursue as career with unattractiveness of lifestyle being the most common reason. Indeed, similar findings were revealed in the UK [9] and in Greece [10]. In contrast, surveys in Poland [11] and in Saudi Arabia [12] revealed that the majority of medical students considered pursuing a career in urology [11, 12]. In Saudi Arabia, especially male students considered pursuing a career in urology [12]. Furthermore, research done at the University of Manitoba in Canada showed that the majority of students have a positive attitude in managing and investigating common urological conditions after completing their urological rotation. These

students were more likely to consider a career in urology [13].

Despite significant technological improvements in the urological field over the last decade, urology education of undergraduate students has not advanced. Indeed, this is also revealed by countries such as the USA, UK and Canada, where insufficient exposure of undergraduate medical students in the field of urology are reported [9, 13, 14]. Furthermore, the current study reveals a deficit in urological clinical- and theoretical exposure with most students (75.6%) recommending more clinical exposure.

Bedside teaching, regular lectures and attending urology clinics were reported as the best modality of learning urology. Similar findings were reported amongst undergraduate medical students at King Saud University College of Medicine in Saudi Arabia [12]. However, in Canada at McMaster University, lectures were the most commonly preferred modality of exposure to urology [8].

The current study reveals that most of the male students considered their knowledge of erectile dysfunction as sufficient, opposed to females. In contrast, in Saudi Arabia there was no difference in urology subject knowledge between genders [12]. In this current study, lithiasis and voiding dysfunction are the two urology subjects that students (87.6% male and 56.0% female) considered their knowledge sufficient in. This may be due to these two clinical issues being the most common urological diseases managed in our academic settings.

While the current survey revealed that paediatric urology and uro-oncology are the urology subjects students considered themselves most deficient in at 94% (males) and 47.6% (females), in Saudi Arabia most students reported their knowledge efficient in paediatric urology and uro-oncology [12]. The lack of exposure to paediatric patients in clinics and/or in the wards due to the fact that most paediatric patients are managed by paediatric surgery, may be one of the reasons that students in this current study are not often exposed to paediatric patients, and thus feel inadequate. A similar situation exists in the cases of uro-oncology patients being referred to the oncology section.

Of interest, most respondents in the current study were comfortable with urinalysis interpretation, while in Saudi Arabia only 4% of students were able to interpret urinalysis [12]. The reason for this vast contrast may lie in urology curriculum differences between these two countries. This controversy is just one of the reasons for this study evaluating differences in curricula.

However, in terms of skills, male students in Saudi Arabia were comfortable performing both male and female catheterisation ( $p=0.00$ ) while female students were more comfortable performing female catheterisation [12]. Both genders in the current study feel

**Table 6 Effects of gender on readiness for internship after urology rotation**

Gender	N	Mean	SD	T test p value
Attitude				
Male	92	3.43	0.937	0.021
Female	158	3.14	0.927	

comfortable doing male and female catheterisation and digital rectal examinations. Interestingly, males in Saudi Arabia expressed the need for more urology teaching exposure opposed to females. These gender differences may be cultural [12].

Regarding the training location, students who rotated at CHBAH preferred watching open surgery (22.7%) as the best modality to learn urology, compared to students who rotated at CMJAH (8.8%). In addition, 92.8% of students who rotated at CHBAH considered lithiasis as the urology topic their knowledge is sufficient in, compared to 84.5% of students who rotated at CMJAH, possibly due to fewer patients at the smaller CMJAH. A significant difference in attitude to the urology rotation was revealed between the two training locations assessed. Generally, students who rotated at CMJAH have a negative attitude to urology compared to those who rotated at CHBAH, which could impact on the students' keenness to acquire urology knowledge.

The main limitations to this study is that the survey covered only one medical school in South Africa. We recommend other medical schools to do similar studies, not only for self-evaluation but also for medical school comparison purposes. Comparing such study results between medical schools and also in other medical divisions such as obstetrics and gynaecology for instance, will certainly be very valuable to all education curriculum designs at all medical schools and to a country as a whole.

The questionnaires were distributed among the undergraduate medical students on the last day of their mixed block rotation, when they were probably more focussed on the coming exams than completing a survey questionnaire. Therefore, it is necessary to evaluate the perception of urology teaching among undergraduate medical students at other academic institutions across the country at the beginning and at the end of their urology block rotation.

## 5 Conclusion

This study reveals the need for improvement in basic urological teaching, knowledge and skills during the rotation of the undergraduate medical students in this Urology Department. The perceived lack of clear learning objectives and inadequate exposure to urological disorders during rotation, indicate a deficiency in the curriculum. Therefore, an adjusted curriculum taking into account bedside teachings, attendance of urology clinics, frequent exposure to urological patients are just some of the suggestions to be considered in order to improve the urological educational curriculum and possibly the perception of urology as a career.

## Abbreviations

CHBAH: Chris Hani Baragwanath Academic Hospital; CMJAH: Charlotte Maxeke Johannesburg Academic Hospital; GEMPIII: Graduate entry medical programme; MCQs: Multiple choice questions; Wits: University of the Witwatersrand.

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## Authors' contributions

AK: conducted the research study, distributed and collected the questionnaires, analysed the data and wrote the first draft of the manuscript. Gave approval of this final submitted version of the manuscript. MH: conceptualised and designed the study. Gave approval of this final submitted version of the manuscript. MN: oversaw the study from protocol level to the writing of the final manuscript. Interpretation of results, revision of draft documents, writing of the final submitted manuscript as well as submission to the journal. All three authors have read, approved and consent to this study being published.

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## Availability of data and materials

The datasets used and/or analysed during the current study are available from the first author or corresponding author upon reasonable request.

## Ethics approval and consent to participate

Ethics approval was obtained through the University of the Witwatersrand Medical School Human Research Ethics Committee (HREC) (medical) with certificate number: M190978. No participant consent was needed since the study was in the form of a questionnaire voluntarily completed by the students.

## Consent for publication

Not applicable.

## Competing interests

All three authors declare herewith that they have no competing or conflicting interests.

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