

**ATTITUDE AND PERCEPTION OF UROLOGY BY 5TH YEAR (GEMPIII)
STUDENTS AT THE END OF THEIR MIXED BLOCK ROTATION AT WITS**



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

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Johannesburg October 2020

DECLARATION

I, Alain Kabongo Tshiala (Student number: 2296636), declare that the research was conducted in line with the requirements established by the University of the Witwatersrand for the Degree of Master of Medicine in Urology. The distribution of survey questionnaires, acquisition of data, analysis and interpretation of data and drafting of the report were all my own work.

DEDICATION

My dedication goes first to the Almighty God for his wisdom, support and grace on me during this research, then to my belated father, Emery Kabongo Lufuluabo who taught me that practice makes perfect and hard work works, and to my mother, Bernadette Kapuni Kafuka for her support.

A special thanks to my wife, Francine Ruwej Yav who supported and contributed to this research. An additional thanks to my children Kristy Kabongo and Kevin Yav Kabongo for your unconditional love and support throughout this process.

PRESENTATIONS and PUBLICATIONS ARISING FROM THIS STUDY

The research was presented at the urology academic meetings at Wits.

The study was submitted for consideration for publication in the African Journal of Urology, and therefore this MMed is in the submissible format according to the Instructions to Authors of the African Journal of Urology.

Abstract

Background

The University of the Witwatersrand Medical School has a six year MBBCh programme, of which the fifth year is more of a clerkship consisting of both didactic (lectures and assigned readings) and practical (work in hospital wards or in an outpatient clinic) study, consisting of seven blocks of six weeks each of which two weeks is mixed rotations in specialities such as ophthalmology, ear-nose-throat and urology.

Methods

This was a qualitative survey of fifth year medical students at Wits Medical School 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 assess the current urology knowledge and confidence among undergraduate medical students regarding urological diagnostic and therapeutic procedures, in order to evaluate the current curriculum and the assess the possible need for improvement in urological knowledge and skill.

Results

Of 250 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 had the most common deficit in. There was a statistical significant difference between 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 CMJAH and those who rotated in CHBAH. Indeed, the majority of students had a negative attitude to urology at the end of the mixed block rotations regardless of the training location. Unattractiveness and lack of knowledge were the most common reason 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 and adjusted curriculum, taking into account bedside teachings, attendance of urological clinics and more exposure to urological patients are some suggestions to be considered to improve the urological educational curriculum.

WORD COUNT: 348

Keywords: attitude, perception, urology, 5th year medical students / GEMP III, Wits

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LIST OF 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

HREC : Human Research Ethics Committee

I. Background

The University of the Witwatersrand is one of the leading universities in South Africa, which accepts pupils from secondary schools based on their performance in the matric exams.

Only students who achieve an average of more than 60% across all the subjects (physics, chemistry, mathematics, life orientation and English) in the matric exams are accepted into the MBBCh programme.

The Medical School at Wits University has a six year MBBCh programme, of which the first two years is a foundation block comprising of chemistry, physics, sociology, psychology, anatomy, physiology, molecular medicine, logic and critical thinking. The third year consists of six blocks: basics concepts of medicine, life on the street, haematology, respiratory-, cardiology- and renal systems. The fourth year consists of five blocks: neurology, musculoskeletal, gastrointestinal, endocrine and reproductive systems. The fifth year which is more of a clerkship consists of both didactic (lectures and assigned readings) and practical (work in hospital wards or in an outpatient clinic) study. It consists of seven block rotations of six weeks each in surgery, internal medicine, paediatrics, obstetrics and gynaecology, specialities 1 (ENT, urology, ophthalmology) , specialities 2 (psychiatry, family medicine, public health) and specialities 3 (traumatology, anaesthesia, emergency medicine). The three specialities consists of two weeks mixed rotations in specialities such as ophthalmology, ear-nose-throat and urology . The last years are an internship period of two years in designated hospitals in the country.

The Graduate Entry Medical Programme (GEMPIII) is a programme that provides entry of candidates who meet certain minimum requirements such as two year completed courses

structured as follows: the first year (physics and chemistry), the second year (biology), with the opportunity to complete their undergraduate medical studies in a period of only four years after which they enter internship and the government mandated community service period. As such, for example a student who has completed another undergraduate degree such as a BSc comprising of the appropriate subjects may apply to join the graduate entry medical programme (GEMPIII).

The urology course covers history taking, urological examination, diagnosis and treatment of common urological disorders. Therefore this rotation in urology can be challenging for these undergraduate medical students because it is their first exposure to this speciality.

Nevertheless, this exposure is important because most of the urological patients are primarily managed by local general practitioners or primary care physicians. In fact, it has been reported that since 2010 in Canada, the number of men with lower urinary tract symptoms, for which management may fall upon primary care physicians, has increased significantly (1). Moreover, other previous studies from 1999 and 2016 done in the United States estimated that genitourinary conditions can cause up to 10% of general practitioner visits (2, 3).

Of importance, urological diseases represent a significant health issue worldwide. This is likely to increase as a significant proportion of people, also in South Africa, live longer and become elderly. In fact, the impact on the population mortality due to urology cancers has increased significantly (4). For example, prostate cancer is the third most common cancer causing death in men (5). The prevalence of non-oncological urological disorders such urolithiasis also increased over time due to improvements in clinical–diagnostic procedures, changes in nutritional- and/or environmental factors and increased lifespan due to a western lifestyle (6).

Therefore it is imperative that basic urological knowledge is included in the general medical undergraduate education. As such, it is important to assess the student's urology knowledge during their undergraduate education and to evaluate the current curriculum of Wits Medical School.

II. Methods

This was a qualitative survey from September 2019 to February 2020 of 250 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 United States 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 six week rotation consisting of ophthalmology, ear-nose-throat and urology at the end of the 7th block of rotations, on the day of the exams.

The data was collected in a Microsoft Excel spreadsheet and analysed using STATA Version 14.2 software (College Station, TX). The level of significance 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.

Results

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

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%
p-value	0.018	

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.

Knowledge

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

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

Gender knowledge on erectile dysfunction	MALE	Count	65	
		% within gender	71.4%	
	FEMALE	Count	83	
		% within gender	52.2%	
	p-value		0.03	

Paediatric urology (235 (94%)) and uro-oncology (119 (47.6%)) were the urology subjects students considered their knowledge to be deficient of.

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 catheterization (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.

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 specialization was the medical career the majority of students considered to pursue, followed by surgical specialization, 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 surgical speciality as a career to pursue compared to only 23% of females ($p = 0.024$).

Table 3: Student's preferred medical careers to pursue

MEDICAL CAREER	MEDICAL SPECIALIZATION	121	48.4%
	SURGICAL SPECIALIZATION	66	26.4%
	PSYCHIATRY	11	4.4%
	EMERGENCIES	9	3.6%
	OTHERS	43	17.2%
	Total	250	100.0%

Student's self evaluation

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

Learning urology

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

Table 4: Gender differences regarding best modality to learn urology

GENDER	MALE	Count	22	21
		% within gender	24.2% Independent reading	23.1% Watching endoscopy
	FEMALE	Count	17	20
		% within gender	10.7% Independent reading	12.6% Watching endoscopy
	p-value		0.005	0.031

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

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%
		p-value	0.09

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 ($p = 0.03$).

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).

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

GENDER		N	T test p - value
Attitude	MALE	92	0.021
	FEMALE	158	

Discussion

Although most students regard urology as an important part of the Medical School curriculum, the majority have a negative attitude towards 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 before career with unattractiveness of lifestyle being the most common reason. Indeed, similar findings were revealed in the United Kingdom (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 males

students considered pursuing a career in urology (12). Furthermore, research done at the University of Manitoba in Canada showed that the majority of students had 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, urological education of undergraduate students has not increased. Indeed, this is also revealed by countries such as the United States, United Kingdom and Canada, where insufficient exposure of undergraduate medical students in the field of urology has been reported (9, 13, 14). Furthermore, the current study reveals a deficit in urological clinical- and theoretical exposure with most of the students (75.6%) recommending more clinical exposure.

Bedside teachings, regular lectures and attending urology clinics were reported as the best modality of learning urology. Similar findings were reported among 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 while females did not. In contrast, in Saudi Arabia there was no difference in urology subject knowledge between genders (12). In this current study lithiasis and voiding dysfunction were found to be the 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 were the urology subjects students considered themselves most deficient in at 94% (males) and 47.6% (females), in Saudi Arabia most students felt they had sufficient knowledge in paediatric urology and uro-oncology (12). The lack of exposure to paediatric patients in clinics and/or in the wards combined with the fact that most paediatric patients are managed by paediatric surgery, may be of the reasons that students in this current study are not often exposed to such patients, and thus feel inadequate in paediatric urology. 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 important reasons for this current study, to evaluate such 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 felt 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%) compared to those who rotated at CMJAH (8.8%), as the best modality to learn urology. In addition, 92.8% of students who rotated in CHBAH considered lithiasis as the urology topic their knowledge is sufficient in, compared to 84.5% of students who rotated in CMJAH, possibly due to fewer patients seen at the smaller CMJAH. A significant

difference in attitude towards the urology rotation has been revealed by the survey between the two training locations assessed. Generally, students who rotated in CMJAH have a negative attitude to urology compared to those who rotated in CHBAH, which could impact on the students keenness to acquire urology knowledge.

The main limitations to this study are that the survey covered only one Medical School in South Africa and 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.

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.

WORD COUNT: 2461

Declarations

Ethics approval

Ethics 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.

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.

Competing interest

The authors declare that they have no competing or conflicting interests.

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No funding was required, applied for or received for this study.

Author's contributions

AK: conducted the research study, distributed and collected the questionnaires, analysed the data and wrote the first draft of the manuscript. Final approval of the submitted version of the manuscript.

MH: conceptualised and designed the study. Final approval of the submitted version of the manuscript.

MN: oversaw the study from protocol level to final manuscript. Interpretation of results.

Revision of the draft documents, final writing of the manuscript as well as submission to the journal.

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EXAMINERS PLEASE NOTE: The appendices are only additional information and not part of the examination.

APPENDIX 1. DATA SHEET

STUDY QUESTIONNAIRE

1. Gender Male Female
2. Level 5th year medical student
3. Training area: Charlotte Maxeke Johannesburg Academic Hospital
Chris Hani Baragwanath Academic Hospital

Part I

1. Have you been enrolled/rotated in academic urology unit? Yes No
2. If Yes, Do you think working/rotating in a urology unit increased your preparation to become an intern Yes definitely Not definitely May be

3. How do you define urology?

- Medical specialty Surgical specialty Medico-surgical specialty

4. In general, do you consider urology as:

- Important specialty Very important Not important at all

5. Do you think Urology rotation should be part of medical school curriculum?

- Yes No

6. In your opinion what is the best modality to learn urology?

- Dealing with in-patient and bed-side teaching Attending urology clinics

- Independent reading Watching open surgery

- Watching endoscopic surgery Regular lectures

7. Which of the following evaluation methods were used as a part of final evaluation in this rotation? (More than one item may be correct)

- Multiple Choice Questions (MCQs) Oral examination

- Observation by faculty member Objective Structured Clinical Examination (OSCE)

- Observation and evaluation by resident physicians Written essay questions

- Other methods; Please specify... No formal evaluation was performed

8. Which urology subjects do you consider your knowledge sufficient in? (You can mark more than one choice)

- Lithiasis/stone disease Voiding dysfunction

Pediatric urology Uro-oncology Erectile dysfunction

9. Which urology subjects do you consider your knowledge deficient in? (Please mark only one)

Lithiasis/stone disease Voiding dysfunction

Pediatric urology Uro-oncology Erectile dysfunction

10. Do you think you need more exposure and knowledge regarding urological disease during your 5th year surgery rotation? Yes No

11. Which of the following investigation/procedure you feel comfortable to perform/interpret? (You can mark more than one choice)

Male genitourinary exam Digital rectal exam Sexual history

Urinary catheterization (male) Urinary catheterization (female)

Urinalysis Renal US

12. Do you intend to become a urologist? Yes No

15. If your answer is No, What caused you NOT to pursue a career in urology?

Limited specialty Unattractive lifestyle

Demand of surgical residency Lack of knowledge about urology

Social issue

16. Which area would you like to pursue your medical career in?

Medical specialization Surgical specialization

Psychiatry ER Others, please specify

Part II

Indicate whether you agree or disagree with the statements about your urology

rotation: (Scale: 1 = Strongly Agree to 5 = Strongly Disagree)

1 2 3 4 5

Learning objectives of the rotation were clear.

I was notified of the learning objectives and my duties during the rotation at the beginning of the course.

My performance was assessed against the learning objectives.

I had the opportunity to see and follow a variety of different patients (with different medical conditions) on this rotation.

My attending faculty members were adequately involved in teaching during this rotation.

Faculty members provided me with sufficient feedback on my performance.

My time during this rotation was productive.

Registrars and fellows had a prominent role in teaching during this rotation.

Common problems and ambulatory care were adequately emphasized.

APPENDIX 2. APPROVED PROTOCOL

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02 October 2019

To the postgraduate office,

I herewith confirm that Dr Alain Kabongo Tshiala has made the required changes to his MMed protocol as was requested by the protocol assessors group on the 4th of September 2019.

With kind regards,

Supervisors: Prof M Haffejee and Dr MJ Nel

Dr Marietha Nel



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Approved protocol

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04 september 2019

1. INTRODUCTION AND LITERATURE REVIEW

The University of the Witwatersrand is one of the leading universities in South Africa, which accepts pupils from secondary schools based on their performance in the matric exam results. Only students who achieve an average of more than 60% across all the subjects (physics, chemistry, mathematics, life orientation and English) in the matric exam are accepted onto the MBChB programme.

The Medical School at Wits University has a 6 year MBChB programme, of which the first two years is a foundation block comprising of: chemistry, physics, sociology, psychology, anatomy, physiology, molecular medicine, logic and critical thinking. The 3th year has 6 blocks: basics concepts of medicine, life on the street, haematology, respiratory, cardiology and renal systems. The 4th year has 5 blocks: neurology-, musculoskeletal-, gastrointestinal-, endocrine- and reproductive systems. The 5th year which is more of a clerkship, consists of both didactic (lectures and assigned readings) and practical (work in hospital wards or in an outpatient clinic) study and has 7 block rotations which include a mixed rotation of specialities such as ophthalmology, ear-nose-throat and urology. The rotation in these

specialities is a 2 week period in each of the three specialities. The last years is an internship period of 2 years in designated hospitals in the country.

The Graduate Entry Medical Programme (GEMPIII) is a programme that provides entry of candidates who meet certain minimum requirements such as two year completed courses structured as follows: the first year (physics and chemistry), the second year (biology), with the opportunity to complete their undergraduate medical studies in a period of only 4 years after which they enter internship and the government mandated community service period. As such, for example a student who has completed another undergraduate degree such as a BSc comprising of the appropriate subjects may apply to join the graduate entry medical programme (GEMPIII).

The GEMP curriculum includes an urology rotation in the 5th year which exposes the students to 19 hours of practical clinical training and 22 hours of theoretical seminars (1, 2). The urology course covers history taking, urological examination, diagnosis and treatment of common urological disorders. Therefore this rotation in urology can be challenging for these undergraduate medical students because it is their first experience of such a speciality.

Nevertheless this exposure is important because most of the urological patients are primarily managed by local general practitioners or primary care physicians. In fact it has been reported that since 2010 in Canada, the number of men with lower urinary tract symptoms, for which management may fall upon primary care physician has increased significantly (3). Moreover, other previous studies from 1999 and 2016 done in the United States estimated that genitourinary conditions can cause up to 10% of general practitioner visits (4, 5).

Importantly, urological diseases represent a significant health issue worldwide. This is likely to increase as a significant proportion of people, also in South Africa, live longer and become elderly. In fact, the impact on the population's mortality due to urology cancers has increased

significantly (6). For example, prostate cancer is the third most common cancer causing death in men (7). The prevalence of non - oncological urological disorders such urolithiasis also increased over time due to improvements in clinical–diagnostic procedures, changes in nutritional or environmental factors and increased lifespan resulting from a western civilization (8, 9).

Therefore it is important that basic urological knowledge should be included in the general medical undergraduate education. Indeed, several studies throughout the world emphasized the critical need for improvement in fundamental urological knowledge and skill by rotating undergraduate students through the Urology Department, such as:

- A study done in Saudi Arabia in 2019, mentioned the lack of knowledge of undergraduate medical students regarding urology subjects due to unclear learning objectives and inadequate exposure to urological disorders during their rotation (10).
- In Poland in 2018, a study revealed an inability of medical students to obtain good scores even after completing the urological course (11).
- The United States also advocated the need for more urology exposure for undergraduate students in order to improve the urological knowledge and skill (12).
- Canada reported on the low scores of almost half (44%) of final year medical students in 2013 at British Columbia University due to insufficient urological medical education(13).

Taken together, these findings suggest that both theoretical and clinical teaching of urology are necessary and of essence during medical education. Therefore, it is important to assess the student's urology knowledge during their undergraduate education and thus evaluate the current curriculum of Wits Medical School.

2. AIM OF THE RESEARCH

The aim of the study is to assess the current urology knowledge and confidence in performing urological diagnostic- and therapeutic procedures among undergraduate medical students at Wits University Medical School, in order to evaluate the current curriculum and the need for the improvement in urological knowledge and skill among the undergraduate students.

3. MATERIAL AND METHODS

3.1. STUDY DESIGN

This is a qualitative survey of 5th year medical students at Wits Medical School from September 2019 to March 2020.

The survey will be conducted by means of a questionnaire including questions on various clinical subjects, self-assessed practical skill principals in the field of urology and possible career prospects. The questionnaire is based on a previously used questionnaire (13) and a survey conducted in the United States by the Association of American Medical Colleges (14).

The questions consist of two major parts: the first covers student's perceptions of urology rotation, the second covers the student's self-evaluation. The questions consist of binary (yes/no), Likert scale and multiple choice questions.

3.2. STUDY SETTING

The urology course at Wits University Medical School takes place during the 5th year of undergraduate study. It includes: two week rotations either at Chris Hani Baragwanath Academic Hospital or Charlotte Maxeke Johannesburg Academic Hospital.

During the rotation, 19 hours of practical clinical training and 22 hours of theoretical seminars are offered. The course includes history taking, urological examination, diagnosis and treatment of common urological disorders.

The study will be conducted from September 2019. A questionnaire on perceptions of urology, competences, overall satisfaction in terms of the training and career prospects will be distributed in a printed form (See Data Collection Sheet Appendix) to the 5th year medical students at the end of their six week block rotation, on the day of their block exams at Wits Medical School, 5th floor, room 5A08.

3.3 INCLUSION CRITERIA

Students in their 5th year of undergraduate MBBCh V degree who are willing to participate.

3.4. EXCLUSION CRITERIA

- 1) Questionnaires that are incomplete
- 2) The 5th year MBBCh V students who did not complete the two week rotation in urology.

3.5. DATA ANALYSIS

The data will be analysed with the assistance of a statistician from the Biostatistics Department at Wits Faculty of Health Sciences using SATA software and the level of significance will be set at $p \leq 0.05$.

Descriptive data will be analysed to determine the prevalence of the variables, means and medians. An association between these variables and the outcomes will be analysed using the Students t-test and the Chi-square test as applicable.

The storage of the data will be in an Excel spreadsheet with each entry only given a unique study number, without any personal identifiers such as names or student numbers, to which only the researchers will have access to.

3.6. ETHICAL CONSIDERATIONS

The proposed study data collection will not commence before the approval certificate and study number from the University of the Witwatersrand Human Research Ethics Committee (HREC) (medical) and a permission letter from the Head of the Urology Department of the University of the Witwatersrand are obtained.

The study will adhere to the South African Good Clinical Practice Guidelines (15) and the declaration of Helsinki (16).

3.7. TIMEFRAME

	JUNE 2019	JULY-AUGUST 2019	SEPTEMBER-OCTOBER 2019	NOVEMBER-DECEMBER 2019	JANUARY-FEBRUARY2020	MARCH-APRIL 2020	MAY-JUNE 2020	JULY-AUGUST 2020
LITERATURE REVIEW	X							
PREPARING PROTOCOL		X						
PROTOCOL ASSESSMENT			X					

ETHICS APPLICATION			X					
DATA COLLECTION			X	X	X			
DATA ANALYSIS						X	X	
WRITING UP PAPER								X

3.8. BUDGET

All costs (stationary only) of the study will be covered by the researcher.

APPENDIX 3. ETHICS CLEARANCE CERTIFICATE



R14/49 Dr A Kabongo Tshiala

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M190978

NAME: Dr A Kabongo Tshiala
(Principal Investigator)
DEPARTMENT: School of Clinical Medicine
Department of Surgery
Division of Urology
Medical School
University


PROJECT TITLE: Attitude and perception of urology by 5th year (GEMPIII) students at the end of their mixed block rotation at Wits

DATE CONSIDERED: 2019/09/27

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr M Nel and Professor M Haffejee

APPROVED BY: 
Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 2019/11/14

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Research Office Secretary on the 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to submit details to the Committee. I agree to submit a yearly progress report. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in September and will therefore reports and re-certification will be due early in the month of September each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date

PLEASE QUOTE THE CLEARANCE CERTIFICATE NUMBER IN ALL ENQUIRIES