ORIGINAL ARTICLE

Medical Education Impact Assessment: Knowledge of Final Year Medical Students of Obafemi Awolowo University about Male Urethral Catheterization

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Abstract

Background: *Urethral catheterization is one of the commonest procedures performed by doctors either for prophylactic, diagnostic or therapeutic purposes. The medical education impact of this procedure on graduating medical students was assessed using a structured questionnaire.*

Method: *This is a questionnaire - based study and the respondents were final year medical students who have completed their final examinations.*

Results: *There were 86 respondents with M:F ratio of 1. About a third of the respondents have not done urethral catheterization during their training while only 7% have done the procedure more than 5 times. All the students know that urethral catheterization is a sterile procedure and 96% knew that sterile gloves should be donned during the procedure. 92.4% of the respondents knew that skin preparation was necessary during the procedure with 75% of them responding that cetriomide and chlorhexidine solution was appropriate. 54% of the students used xylocaine as lubricant while 46% used KY Jelly. On the quantity of the lubricant for catheterization, only 2.7% of the respondents felt that 11-15mls should be injected into the urethra. On the maximum amount of fluid to retain the balloon, only 36% of the students responded that it should be according to the specified capacity of the balloon. Majority of the students (88%) know that the catheter should get to the Y-junction before it is inflated.*

Conclusion: *Most of the students in this study were taught appropriately the procedure of urethral catheterization; however, about a third had not performed the procedure as a medical student.*

Key words: *Medical education, knowledge, male catheterization*

Date Accepted for Publication: 9th March 2010
NigerJMed 2010: 203 - 207

Introduction

Urethral catheterization is the commonest urological procedure done for patients in the emergency room[1]. This is not unrelated to the many indications for this procedure whether it is diagnostic, prophylactic or therapeutic[2]. Another indication for this procedure is the need to monitor urinary output in patients with shock and those requiring fluid resuscitation. It is thus an important procedure that all doctors should be familiar with and some authors have included it as one of the core skills of the medical curriculum[3]. We decided to conduct this study to find out how much knowledge the final year medical students in our institution have about urethral catheterization and act as a feedback to enable curriculum development for subsequent graduating students.

Materials and Methods

The study is a questionnaire-based study. The respondents are final year medical students of Obafemi Awolowo University who have just finished their final qualifying exams and so have been exposed to the whole undergraduate curriculum in Surgery. The questionnaire was administered by the authors on the day the students had their last theory paper soon after submitting their answer papers. The students have their clinical rotation at the Obafemi Awolowo University Teaching Hospitals' Complex (OAUTHC) a 400 bedded hospital. The hospital has accreditation for residency training in Surgery by both the National Postgraduate Medical College of Nigeria and the West African College of Surgeons. The students are thus exposed to training in Surgery by both Consultant staff and Residents during their training in surgery. The questionnaire was administered with assurance of confidentiality of the respondents. Data on the number of years the respondent has spent in medical school, age, sex and marital status were collated. Specific questions aimed at assessing their knowledge about urethral catheterization were also asked (see appendix 1). The responses were analyzed using the Statistical Package for Social Sciences (SPSS) version 13.0.

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Results

There were eighty six respondents consisting of 41 males and 42 females, 3 of the respondents did not signify their sex. This represents 71.6% of the student population of 120. Eighty students signified their age and all of them were less than 30years with 53 (66.3%) of them being within 26 30 years while 27 (33.7%) were between 21 and 25 years (Table I.).

Eighty five respondents answered the question on whether they have been taught the procedure of urethral catheterization. Eighty two (96.5%) agreed that they have been taught while 3 (3.5%) submitted that they have not been taught. One respondent did not address the question.

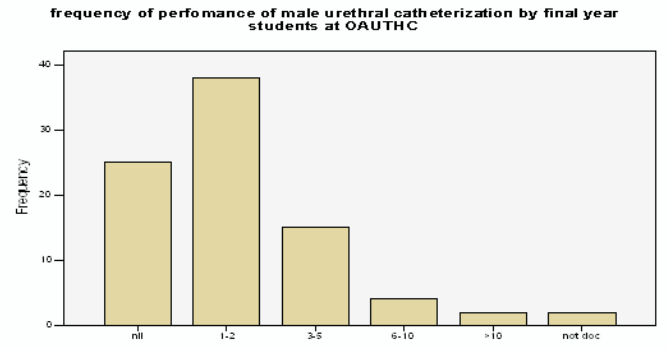
Of the eighty four respondents who answered the question of how many times they have performed a urethral catheterization on male patients, 25 or 29.7% admitted that they have never done the procedure during their training (Fig 1.). Thirty eight respondents (45.2%) have catheterized a male patient once or twice while 15 (18.3%) have done the procedure three to five times. Four students (4.7%) have done the procedure between 6 and 10 times while 2 students (2.3%) have catheterized more than 10 times.

Table II summarizes the responses to the other questions.

Table I: showing the frequency of respondents and their age.

Age of respondents	Frequency	Percent
21 - 25yrs	27	31.4
26 - 30yrs	53	61.6
no response	6	7.0
Total	86	100.0

Fig 1: Bar chart showing frequency of performance of male urethral catheterization by final year students at OAUTHC, Ile Ife, Nigeria



Discussion

The students chosen for this study have completed their undergraduate surgical curriculum and so they are a good assessment of the medical education they received during their training. The sex distribution was equal.

Almost all the students (96.5%) agreed that they have been taught the procedure of urethral catheterization. This not surprising as this procedure is done in almost all the units of surgery and even in medicine and pediatrics. However, about a third of the students (29.7%) had never done the procedure themselves as students. This is similar to findings at Sheffield Medical School in the UK where 38 of 122 (31.1%) students have not done urethral catheterization while in school[4]. Almost half (45.2%) of the respondents have done this procedure once or twice. The fact that a third of the students have not done this procedure before is less than expected as they will be required to do so sometime in their career. While urethral catheterization in itself may not be life-saving, it does relief pain and restlessness in patients with urinary retention and also may be required in overall management of the patient to save his life such as in patients with hypovolaemic shock. Hence, it should be considered mandatory for all doctors to be able to perform this procedure safely and correctly.

All the students who responded agreed that this procedure is a sterile procedure. In the same vein, 96.3% of the respondents knew that sterile gloves should be donned before performing the procedure. Three students (3.7%) did not think this was necessary. This means that these latter set of students probably did not understand the concept of aseptic procedure. Hence, this theoretical gap in knowledge needs to be filled by their teachers.

On the need for skin preparation before urethral catheterization, 92.4% of the respondents knew it was necessary and three-quarters of them knew that Savlon® (centriomide and chlorhexidine) only should be used. This antiseptic is considered adequate by some authors[5]. Often, iodine and methylated spirit are not used in routine urethral catheterization because some patients develop hypersensitivity to iodine while methylated spirit is peppery and very uncomfortable when applied on a sensitive organ such as the penile shaft.

The recommended lubricant for catheterization is 2% Lignocaine gel[2]. This is because it combines lubricant

properties with ability to anesthesize the urethra. In OAUTHC, Lignocaine gel is not always available hence the students use water soluble K-Y jelly® which has excellent lubricant properties but no anesthetic effect. It is curious, however, to note that 40% of the respondents did not answer why they used the lubricating agent employed by them during the catheterization they carried out. This may suggest a gap in their knowledge that needs to be filled and hence subsequent students should be taught which and why a lubricant is being used.

Only 2.7% of the respondents will introduce up to 11-15mls of lubricant into the urethra before catheterizing the male patient as should be the practice[2, 5]. This perhaps stem from the fact that most patients could not afford the paste of the gel and so the one the hospital provides must be rationalized among as many patients as possible. It is the firm belief of the authors that this practice inflicts greater discomfort to patients and standard practices should be enforced in the teaching of medical students.

A little more than a third of the respondents were aware that the maximal amount of fluid to retain the catheter should be according to the specified capacity of the balloon. This, again, may be as a result of the practice of retaining the balloon with as minimal as possible of fluid to prevent irritation of the trigone and allow more bladder space for urine. While this may be expedient, it is good to teach the students that the maximal capacity of the balloon varies and this ***should be known and noted for the catheter to be used and should not be exceeded.***

Of critical importance in the process of urethral catheterization is the point at which the balloon should be inflated as most urethral injuries from this procedure occur at this stage. It is gratifying to note that 88% knew that it should get to the Y junction before the balloon is inflated. While some authors recommend that the balloon could be inflated after pushing the catheter further even when urine has started draining[5], some others[6] (and the authors belong to this group) feel that the catheter should get to the Y-junction. This is because in chronic urinary retention the prostatic urethra could be dilated and significant urine could stagnate therein and so pushing just a "little further" does not ensure entrance in to the bladder. This is also the case in children with posterior urethral valves where there is dilatation of the posterior urethra with pooling of urine.

Ninety three percent of the students were reasonably or very confident of their ability to perform this procedure. This is a reflection of the self esteem of the students. We believe this could be used positively to make them believe in themselves; nevertheless, they should be encouraged to do the right thing under supervision of more senior colleagues and perfect the skills before being unleashed to the unsuspecting public.

Conclusion and Recommendation

Most of the students in this study were taught appropriately the procedure of urethral catheterization and most of them know that it is a sterile procedure; about a third had not performed the procedure as a medical student.

While most of the students know that skin preparation is necessary, about a quarter of them did not know what antiseptic to use. Most of the students also know what lubricant to use but almost half of them did not know why they are using it. Similarly, most of the students know at what point the balloon should be inflated to retain the catheter but most of them did not know how much lubricant should be introduced into the urethra before catheterization or the maximum amount of fluid to retain the catheter.

The authors wish to recommend that urethral catheterization should be among the mandatory procedures in medical students' logbook. The use of manikins as a teaching tool should be looked into by Medical Schools in our region. Also, medical students should be taught to use a paste of the lubricant per patient as this is the standard thing to do. Senior colleagues and Consultant staff should always supply the theoretical basis for the practice they perform.

Table II: Responses to different questions by respondents

Question	Response					
Have you been taught how to perform male urethral catheterization?	Yes		No		No response	
No of Respondents: 85	82 (96.5%)		3 (3.5%)		1	
How many male urethral catheterizations have you performed?	None	1-2	3-5	5 - 10	>10	No response
No of Respondents: 84	25 (29.7%)	38 (45.2%)	15 (18.3%)	4 (4.7%)	2(2.3%)	2
Is urethral catheterization a sterile procedure?	Yes		No		No response	
No of Respondents: 83	83 (100.0%)		0 (0.0%)		3	
Do you have to don sterile gloves?	Yes		No		No response	
No of Respondents: 82	79 (96.3%)		3(3.7%)		4	
Do you have to perform any skin preparation?						
No of Respondents: 79	73 (92.4%)		6 (7.6%)		7	
i) Savlon only	55 (75.3%)					
ii) Savlon and Methylated Spirit	15 (20.5%)					
iii) Methylated spirit only	1 (1.4%)					
iv) Savlon, Iodine and Methylated spirit	2 (2.8%)					
Which lubricant do you use? (tick as appropriate)	Xylocaine jelly		K-Y Jelly			
No of Respondents: 59	32 (54%)		27 (46%)		17	
Which do you prefer and why?	31 (53%)		4 (7)		51	
How many mls of lubricant will you use? (tick as appropriate)	0-5mls	6-10mls	11-15mls	16-20mls	No response	
No of Respondents: 74	29(37.2%)	43 (55.1%)	2 (2.7%)	Nil	12	
When will you inflate the balloon? (tick as appropriate)	At Y-junction		As soon as urine drains		Further after urine drains	No response
No of Respondents: 75	66 (88%)		7 (9.3%)		2 (2.7%)	11
How much mls of fluid will you maximally use to retain the catheter?	5 - 10mls	11-20mls	21 - 30mls		According to label (max capacity)	No response
No of Respondents:75	24 (32%)	15 (20%)	9 (12%)		27 (36%)	11

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Fig 2: Questionnaire on male urethral catheterization administered to the final year medical students

APPENDIX 1

Questionnaire on knowledge about male urethral catheterization by final year (graduating) medical students.

This is a study to audit the knowledge of medical students on male urethral catheterization. Information will be treated strictly as confidential. Kindly fill as truthfully as possible. Thank you.

Age: ..... Sex..... Marital status: ..... No. of years in medical school..... Type of Medical school: Federal or State. Is there any surgical residency program in your school? Yes/ No

Have you been taught how to perform male urethral catheterization?		
Yes		
No		
No response		
How many male urethral catheterizations have you performed?		
None		
1- 2		
3- 5		
6 -10		
>10		
Is urethral catheterization a sterile procedure?	Yes	No
Do you have to don sterile gloves?	Yes	No
Do you have to perform any skin preparation?	Yes	No
If Yes, tick as appropriate		
i) Savlon only ii) Savlon and Methylated Spirit iii) Methylated spirit only iv) Savlon, Iodine and Methylated spirit		
Which lubricant do you use? (tick as appropriate)		
i) Xylocaine jelly ii) K-Y jelly iii) water iv) savlon v)None		
Which do you prefer and why?		
How many mls of lubricant will you use? (tick as appropriate)		
i)0-5mls ii)6 -10mls iii)11 - 15mls iv)16 - 20mls v) others specify		
When will you inflate the balloon? (tick as appropriate)		
i) Immediately urine is draining out ii) push in further even after urine starts draining iii) up to the Y junction		
How much mls of fluid will you maximally use to retain the catheter?		
5 - 10mls ii) 11 - 20mls iii)21 - 30mls iv) according to the capacity on the catheter		
Please indicate how confident you feel about male urethral catheterization		
Very		
Reasonably		