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Research Article

Clinical skill learning for tomorrow's doctors - a step towards better obstetric care

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ABSTRACT

Background: Female urethral catheterization is the most commonly performed procedure in obstetrics and gynecology, for the assessment of urinary output. Many times catheterization is done by junior colleagues with improper technique resulting in improper catheterization and urethral injury. It is a must to know skill for every graduating medical student to avoid devastating consequences of performing it poorly. The objectives of this study are to evaluate the effectiveness of four step method of skill learning of bladder catheterization in female patients by interns and demonstrate the competency in the proper insertion and removal of an indwelling urinary catheter and also the study aimed to determine the effectiveness of bladder simulator training for medical interns.

Methods: A prospective, observational and skill imparting study done using a specially designed model, after ethical committee approval. 30 Interns were divided in to six groups of five each for skill learning. It was done with Kirkpatrick model using specially designed objective structured clinical examination forms and scoring sheets. Sample paired t test was used.

Results: 80% of the interns could perform the skill with maximum scores.

Conclusions: It is an innovative teaching learning method for incoming interns which will help them to improve knowledge and practice and finally reduce the risk of complications and injury.

Keywords: Female urethral catheterization, Skill

INTRODUCTION

Learning clinically relevant technical skills is the major objective of the medical internship. The process of learning "while doing" is even more risky. We need to focus on sharpening and developing specific teaching skills and eliminate errors.

Medical educators have been exploring alternative methods of teaching clinical skills that may enhance or accelerate learning among young doctors.

Evidence has shown that utilizing simulation models for training improves operational performance in actual clinical settings.¹

Female urethral catheterization is the most commonly performed procedure in obstetrics and gynaecology. Incorporating a simulator model into training provides a safe, low stress environment in which students can gain skills and receive feedback.²

The overall goal of obstetric simulation is to improve the quality and safety of care for women. We have used a

low fidelity model type of surgical simulator into training interns the right method of female catheterization.

An adult female urethra is a delicate tubular structure of 4 cms that begins at the bladder neck and terminates at the vaginal vestibule.

Various types of catheters are in use, like the latex, silastic, silver alloy and antibiotic impregnated, but routinely we use the Foley's 16-18 F size for adult female patients.

Insertion of a Foley's catheter following aseptic technique reduces complications. Infections including urethritis, cystitis, pyelonephritis and transient bacteraemia, creation of false passages, urethral strictures, urethral perforation and bleeding, altered micturition are some common complications. Non-infectious complications of short and long term catheterization include accident removal, catheter blockage, gross haematuria and urine leakage and difficulty during removal of the catheter. Tissue trauma and infection are the main complications. The implications for patients of developing a catheter related urinary tract infection range from discomfort to bacteraemia, with resulting morbidity and mortality. It is estimated that 1-4% of catheterized patients with a urinary tract infection go on to develop bacteraemia with a mortality rate of 13-30%.³

The risk of developing a catheter related urinary tract infection rises by 5% for each day the catheter remains in place. As per the EPIC project, inserting the catheter using an aseptic technique is a recommended intervention in reducing urinary catheter associated infection.³

For safe patient care, certain must to know basic clinical skills must be mastered by junior doctors during their internship. Talking to patients during the procedure is a standard practice, helps to relieve patient anxiety that may contribute to difficult catheterization.

So the objectives of this study are to evaluate the effectiveness of four step method of skill learning of bladder catheterization in female patients by interns and demonstrate the competency in the proper insertion and removal of an indwelling urinary catheter. And also the study aimed to determine the effectiveness of bladder simulator training for medical interns.

METHODS

A prospective, observational and skill imparting study done using a specially designed model (Figure 1) after ethical committee approval.

30 interns were divided in to six groups of five each for skill learning. They were taught female catheterization procedure using the Rodney Peyton's four step skill learning technique on a pelvis model, made of plaster of

Paris. Rodney Peyton's four step technique involves demonstration, deconstruction, comprehension and performance.^{4,5}

Evaluation was done with Kirkpatrick model using a specially designed Objective Structured Clinical Examination forms and scoring sheets (Table 1)

RESULTS

Table 1: OSCE checklist for technical ability and procedure.

Steps	Score 0	Score 1
Counselling and informed verbal consent		
Wash hands, Wear sterile gloves		
Dorsal position , Parts prepared and draped		
Separate labia with left hand and visualize the external urethral meatus		
Apply Xylocaine jelly on the tip of the Foley's catheter		
Insert the Foley's catheter into the external urethral meatus with right hand		
Advance the catheter until more than half of the catheter is inside.		
Inflate the balloon with 8-10 ml of distilled water		
Connect the catheter to the urosac or collecting bag and observe for free flow of urine		
Pull the catheter gently until there is resistance		
Total score		

Table 2: Assessment of pre-test scores.

Pretest	Frequency	Percentage
0 - 4	15	50.00
5 - 7	14	46.7
8 - 10	1	3.3
Total	30	100

Table 3: Assessment of post-test scores.

Pretest	Frequency	Percentage
0 - 4	0	0
5 - 7	0	0
8 - 10	30	100

0-4 is average, 5-7 is good and 8-10 is very good.

The study intended to train and assess the clinical skills of the trainees. After going through the OSCE (Objective Structured Clinical Evaluation) pre and post test scores it can be observed that the overall skills of the subjects improved. In the pre-test 50% of the subjects scored up to 4, 46.7% scored up to 7 and only 3.3% of the subjects scored 8 to 10. The post test results after the subjects undergone the skill learning revealed that the OSCE score significantly increased to 100% of the subjects scoring 8-10.

DISCUSSION

The medical council of India has come up with the attitude and competency based medical education where the stress is on clinical skill training of must to know skills for safe patient care. With this intention, we designed this pilot study and found that the participating interns displayed more experience and confidence in their skills. Enhancing learning through simulation is a contemporary tool to accelerate competency based learning in a low key, non-pressurized environment which will help them to relearn, recreate and master their clinical skills for better patient care. Practice makes perfect, by following the four-step approach, the trainee has shifted from being “consciously incompetent” (realizing they can’t do it) to being “consciously competent” (being able to do it with great thought). Only with repeated practice will he or she be able to perform satisfactorily in a variety of situations.⁶

Table 4: Statistical significance - paired t test.

	t	Df	Sig (2tailed)
q1_pretest - q1_posttest	- 12.042	29	0.000
q2_pretest - q2_posttest	- 2.283	29	0.030
q3_pretest - q3_posttest	- 4.709	29	0.000
q4_pretest - q4_posttest	- 5.385	29	0.000
q5_pretest - q5_posttest	- 4.397	29	0.000
q6_pretest - q6_posttest	- 5.757	29	0.000
q7_pretest - q7_posttest	- 16.155	29	0.000
q8_pretest - q8_posttest	- 5.037	29	0.000
q9_pretest - q9_posttest	- 7.077	29	0.000
q10_pretest - q10_posttest	- 4.709	29	0.000
pretest_score - posttest	-14.060	29	0.000

Each question showed a significant p value of <0.05 (Table 4).

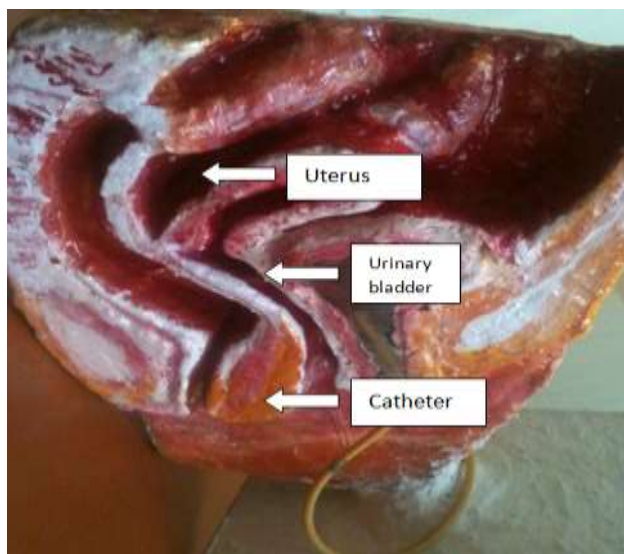


Figure 1: Model of sagittal section of female pelvis (simulator).

There were no similar studies reported during an online search; however a similar project was done by Dr Jagadeeshwar at Secunderabad, who attempted to teach male catheterization to a small group of interns, showed similar results.⁷

However in western countries, regular training sessions to medical students are conducted using simulators as done in south western medical center, Dallas.⁸ Results showed that 100% of trainees (n=204) demonstrated proficiency while the self-rated comfort increased from 10% to 98% (p<0.001) for bladder catheterization. In another study by Manalo who conducted a questionnaire based study showed that 55.6% had adequate theoretical training and 66.7% adequate practical training.⁹ The authors conclude that training in catheterization should be universal and should be designed to include step by step instruction in the process.

Eziyi has reported that 98.4% of the students knew about male urethral catheterization, 27.6% had never performed male urethral catheterization, 90.6% agreed that it is a sterile procedure.¹⁰ 38.6% students said they are very confident about male urethral catheterization, 48.0% were reasonably confident while 3.9% were not confident at all. So students should receive adequate instruction about the technique.

There were some minor obstacles faced during the study like the preparation of the model and the study scheduled beyond working hours.

On analysing the impact of the study, on short term basis the interns were performing well on the clinical side, as teachers it gives self-satisfaction that we are giving good doctors to the society and on long term basis the college will flourish.

The future of the study would be to make it compulsory as part of interns training and utilize similar teaching modules on real patients. Overhead projectors can also be used to teach catheterization procedure.

Lack of knowledge and skills can lead to improper catheterization and urethral injury so regular training at the start of internship to every graduating batch of interns should be the protocol in the institute.

CONCLUSION

Innovative teaching methods will improve knowledge and practice of female urethral catheterization and finally reduce the risk of complications and injury. Simulator training builds in confidence among students. Medical teachers need to adopt clinical skill training for medical students, interns and postgraduates.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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