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Structured Skills Training in Urinary Catheterisation for CRRI in Surgical Posting

KEYWORDS: structured skill training lab, OSCE

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ABSTRACT *Back ground: The acquisition of procedural skills is an essential component of learning for medical trainees. An skill training activity usually comprises a circuit of short (the usual is 5–10 minutes although some use up to 15 minute) stations with the help of manikin, in which each candidate is trained to catheterise on a one-to-one basis.(1). Later they are evaluated by OSCE in which each station has a different examiner; as opposed to the traditional method of clinical examinations where a candidate would be assigned to an examiner for the examination (2).At the end the CRRI's are allowed to cathertise on real patients in the ward with direct observation by assistant professors and evaluated.*

Objectives: To Train the CRRIs in urinary catheterisation. Training in manikin and to Perform independently among patients in clinical practice

Methodology: CRRI's will be subjected for structured skills lab training. They will be made to perform in skills lab using manikin. There will be direct observation of catheterization in ward by Assistant Professors, Later Performing catheterization independently with real patients. a) Process Evaluation By OSCE in skills lab Log Book in direct observation (3) Direct observation while performing independently using checklist b) Output Evaluation By questionnaire methods from CRRI's after completion of postings. Data was analyzed in S.P.S.S 16.0 version. Ethical considerations: Data was be collected only after obtaining written informed consent. The proposal has been approved by the Institutional Ethics Committee, Sri Ramachandra University.

Results: The present study showed the mean performance of the student in urinary catherisation was much better to their conventional performances, which were 9.59+/_ 0.8420. Many strongly agreed their procedure of their performance by implementing skill training programme. These answers reported highly significant in the interactive group ($p < 0.005$) with performance and training undergone in manikin. Confidence scores with catheter insertion were similar at index exam in real life situation when compared to significantly lower in the didactic group at the retention testing with conventional method of teaching ($p < 0.05$).

Summary and Conclusion: Finally the study has been concluded that the overall performance and training of skill in urinary catherisation for the student was most effective method in manikin and in real life situation and most of them strongly agreed their procedure of their performance by implementing skills lab training.

Background:

With the introduction of the current trend in medical curriculum and the regulation of the profession and -training bodies in the procedural skills, there is an increased emphasis surrounding the acquisition, assessment and retention of procedural skills within medical training facilities (1). There is a requirement for procedural training to be structured in order to improve skill translation in the least time with maximum efficiency. It is well documented in the literature that poor clinical skills and competency can compromise patient care and safety (4). Ascertaining competence in a task is a complex, multifactorial process that takes time and experience. It is therefore imperative to provide suitable educational opportunities at an early stage of medical training to ensure competency amongst medical trainees (5).Simulation based training is cost- effective and benefits the health sector budget with faster procedural times, fewer complications encountered and overall greater efficiency within the hospital(9) External factors in skill acquisition have been analysed such as the role of feedback to trainees, practice frequency and the type of simulators used but to date, little evidence exists on which trainees benefit most from simulation based training. In addition debate continues regarding standards of skills acquired by medical students and junior doctors and suitability of current teaching methods (6). Despite multiple studies highlighting the advantages of learning through the use of simulators, didactic methods are still used to teach students and junior doctors various procedural skills. Through simulation, students exhibited similar stress levels to real life scenarios that would not be reproducible using lecture techniques. An skill training activity usually comprises a circuit of short (the usual is 5–10 minutes although some use up to 15 minute) stations with the help of manikin, in which each candidate is trained to catheterise on a one-to-one basis.(3). Later they are evaluated by OSCE in which each station has a different examiner, as opposed to the traditional method of clinical examinations where a candidate would be assigned to an examiner for the entire examination (2). At the end the CRRI's are allowed to cathertise on real patients in the ward with direct observation by assistant professors.

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Methodology:
CRRI's will be subjected for structured skills lab -train ing. They will be made to perform in skills lab using manikin. There will be direct observation of catheteri zation in ward by Assistant Professors, Later Per-form ing catheterization independently with real patients. a) Process Evaluation By OSCE in skills lab Log Book in direct observation (3) Direct observation while perform ing independently using checklist b) Output Evaluation By questionnaire methods from CRRI's after completion of postings. Data was analyzed in S.P.S.S 16.0 version. Ethical considerations: Data was be collected only after obtaining written informed consent. The proposal has been approved by the Institutional Ethics Committee, Sri Ramachandra University. Consent was obtained from all participants taking part in the study.. All students were asked to complete questionnaires measuring their con fidence with catheterisation at different stages of the teaching process along with individual characteristics. Students were informed that answers to questionnaires and results were annonomised to prevent response bias. Observed structured clinical examination Within 2 hours of each teaching session the students underwent an Ob served Structured Clinical Examination (OSCE). Students were examined using 4 stations at which examinations ran for 6 minutes each. They were graded by two ob servers using a standardised marking sheet to prevent bias. The examiners were blinded to the teaching meth od each group received. Instructions for each station prior to entry were available to read.

Outcomes measured at the individual stations were: Pa tient consenting station – Assessing understanding of the procedure.

Catheter Insertion Score – Assessing knowledge and synthesis of the procedure. Each participant performed the task of urinary catheterisation using Advanced Hu man Patient Simulators with the manikin are fitted with urinary bags containing yellow liquid. The presence of urine backflow into the catheter with safe balloon infla tion using an aseptic technique throughout represented completion of the task. All students were re-examined at 4 weeks to measure retention of catheterisation skills. Students were requested not to up-skill in the in terim.

Data was collected and analysed using SPSS version 16 the relationship between variables. A p-value of < 0.05 was considered significant.

Results:
The present study showed the mean performance of the student in urinary catherisation was much better to their conventional performance, which was 9.59+/_ 0.8420. Many strongly agreed their procedure of their perfor-mance by implementing skill training programme. These answers reported highly significant in the interactive group ($p < 0.005$) with performance and traning under-gone in manikin. Confidence scores with catheter inser-tion were similar at index exam in real life situation when compared to significantly lower in the didactic group at the retention testing with conventional method of tea-ch ing ($p < 0.05$).

Table:1 Distribution of percent responses given by the students to different study specific questions

Ques-tion	Variables	Responses Strongly agree	Agree	Total	p-value
1	Skills learnt in a Manikin can be directly trans-ferred to patients	95	5	100	0.001
2	Training in skills lab has increased my confi-dence when I perform catheterization on pa-tients in my internship	91	9	100	
3	Training in skills lab has increased my outcome of internship	94	6	100	
4	Teachers demonstrated the skills for me so that I understood what to do	93	7	100	
5	Teachers went through the skill with me before I had to perform it myself	93	7	100	
6	Teacher gave me feedback	98	2	100	
7	Any suggestions	100	0	100	

Table:2 indicates the reason shown by the students in question has been strongly agreed by most of the partici pants these difference of observation is statistically signifi cant $p<0.005$.

Student confidence levels with urinary catheter insertion

All students were asked to document their level of confi dence with a seven point rating scale catheterisation at different stages of the teaching and examination process. Prior to teaching there was no significant difference in the confidence of students in performing urinary catheter in sertion

All students were asked to document what they estimated their level of confidence would be with urinary catheter insertion 4 weeks after their index examination in real life situation by monitoring with senior health officials. Prior to undergoing retention testing, actual confidence levels in performing catheter insertion were measured again.

Figure: 1.

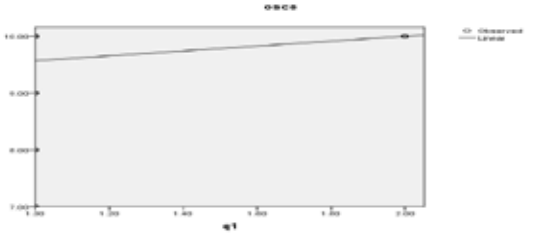

Figure 1: Shows a linear response pattern in student per-formance in skills lab which ranged from 7 to 10 as the maximum correct responses

A multivariate analysis was carried out to assess the -rela tionship between factors associated with scores for cath e ter insertion at index examination and at the retention test four weeks after teaching.

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A multivariate analysis was carried out to identify the factors associated with higher catheter scores at the retention test. Teaching method and catheter score at index examination were found to be significantly associated with catheter scores at retention testing ($p < 0.001$)

Table-2 Binary logistic regression model

Responses from checklist	β	S.E of β	Exponential β	Wald test	Significance
Check if all things are ready before procedure	-.342	.303	.526	4.0	0.03
Scrubbing	-.362	.240	.570	5.7	0.01
Explaining the patient – the procedure	-.476	.297	1.966	5.1	0.02
Exposing the urethral orifice	-.337	.217	.584	6.1	0.01
Lubrication with lignocaine jelly	.339	.246	1.551	3.5	0.07
Inflating the bulb approximately only after clear urine drains	-.674	.212	.509	10.8	0.001
Constant	1.865	1.17	5.844	2.9	0.1

Table-2 Denotes responses of participants on each variable :To analyze simultaneously on all- the variables, the step wise procedure has resulted in- six important variables Check if all things are ready before procedure,Scrubbing,Explaining the patient regarding the procedure, Exposing the urethral orifice, Lubrication and inflation of the bulb after urine drain are predicted as the important factor for urinary catheterization as the order of the procedure.

Discussion: The role of simulation is to recreate a clinical scenario that is representative of a true life situation. Multiple studies have shown that skills learned at the bench using simulators are translated into the operating room (7). This allows trainees to focus more on operative strategy and managing operative complications rather than wasting valuable and expensive operating room time on the initial refinement of psychomotor skills (8).In this study the degree of readiness or confidence levels of individual students with catheter insertion was measured during-different time points. Confidence levels were found to be significantly lower in the traditional group after their initial teaching session. Interestingly however, confidence levels were significantly highest for all students after undergoing an OSCE format examination for catheter insertion. This outlines the importance of the examination process in assuring students of their ability to perform a procedural skill competently. A limitation to this study is that although all students underwent the OSCE examination process, it is difficult to assess whether this increase in confidence may simply be due to more hands on experience rather than the examination process itself. Assessments have been shown to promote reflective practice (9)
This helps students identify gaps in their knowledge and skill set in carrying out certain tasks. Moreover it promotes self learning and allows students to develop higher levels of cognition. Through simulation, trainees apply their knowledge to create or synthesis a solution. The importance of using a simulator was evident from our study with the didactic group reporting significantly higher levels of confidence with catheter insertion after using the simulator once during their examination. Despite this however, the same group significantly overestimated their confidence in catheter insertion at index examination compared to actual confidence measured four weeks later by retention testing. This overestimation was not experienced by the interactive or observed groups. A study examining confidence in performing on real life patients after simulation training showed that simulation-trained residents had higher levels of confidence and performed better than untrained-controls during the initial stages of training, after which there was no difference. This finding indicates that the learning curve which is commonly encountered when performing a new technique could be reduced by performing simulation based training. The use of simulators by students prior to examination is associated with significantly higher scores at index examination than those just simply observing the process. This highlights the benefit of "skill reinforcement (5).

Skill degradation is a serious issue in medical education and is associated with increased procedural times, costs and complications. Factors considered important for skill retention include the duration of retention interval, the quality of the original training, task complexity, and intrinsic learner differences. Studies to date have analysed the impact of extrinsic factors such as practice distribution, task complexity and feedback on motor skill acquisition and retention. The importance of feedback during skill acquisition has been highlighted in multiple studies surrounding the recent introduction of Hybrid Simulation (6, 7, 8, and 9).

Conclusions: The importance of simulators in teaching a complex procedural skill has been highlighted. Teaching and allowing students to practice their skills on simulators is associated with higher index and retention .This study also highlights the importance of the examination process during teaching in assuring students of their ability to carry out procedural skills. Simulator training has been shown to suit all types of individuals regardless of learning style. Students with increased manual dexterity and spatial awareness score significantly higher with the use of simulators in teaching. Finally the study has been concluded that the overall performance and training of skill in urinary catherisation for the student was most effective method in manikin and in real life situation and most of them strongly agreed their procedure of their performance by implementing skills lab training.

What is already known about the topic?	Catheterisation skill is a mandatory clinical skill which every CRRI should know as per MCI norms.
What the study Adds?	Improving the clinical skill of catheterisation by structured training program to prevent catheter related complications.

References:

1. Pye's surgical handicraft ; Pg 310-316
2. Ward procedures by Dr.Mansukh ; Elsevier publishers Pg 137-140
3. Improving in training evaluation programs. Journal of Gen internal medicine 1998 ; 13:317-323

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4. Chikwe J, de Souza AC, Pepper JR. No time to train the surgeons. BMJ. 2004;328(7437):418–419. doi: 10.1136/bmj.328.7437.418.
5. Wolfe JH. Training–vive la difference? Eur J Vasc Endovasc Surg. 1999;18(1):1–3. doi: 10.1053/ejvs.1999.0862.
6. Pringle M. The Shipman inquiry: implications for the public's trust in doctors. Br J Gen Pract. 2000;50(454):355–356.
7. Lucas AN. Promoting Continuing Competence and Confidence in Nurses Through High-Fidelity Simulation-Based Learning. J Contin Educ Nurs. 2014;16:1–6.
8. Tsuda S, Scott D, Doyle J, Jones DB. Surgical skills training and simulation. Curr Probl Surg. 2009;46(4):271–370. doi: 10.1067/j.cpsurg.2008.12.003.
9. Scott DJ, Bergen PC, Rege RV, Laycock R, Tesfay ST, Valentine RJ, Euhus DM, Jeyarajah DR, Thompson WM, Jones DB. Laparoscopic training on bench models: better and more cost effective than operating room experience? J Am Coll Surg. 2000;191(3):272–283. doi: 10.1016/S1072-7515(00)00339-2.
10. Reznick R, Regehr G, MacRae H, Martin J, McCulloch W. Testing technical skill via an innovative "bench station" examination. Am J Surg. 1997;173(3):226–230. doi: 10.1016/S0002-9610(97)89597-9.