Knowledge E
Engaging minds

Letter to the Editor

Teaching Procedures and Skills in Medical Schools: Gaps, Weakness, and Challenges

Mohamed D. Awadalla Gismalla

Department of Surgery, Faculty of medicine, Gezira University, Sudan

Abstract

There is deficiency and gaps among medical graduates in performing certain procedures and skills. Till recent years, some school used an apprenticeship model for teaching procedures. The way of teaching skills should be revised and reinforced. Medical schools showed adopt formal curricula based training for teaching procedure. In this letter, we would like to highlight the challenges and weakness in teaching procedure for undergraduates medical students.

الملخص

هناك نقص وثغرات بين خريجي الطب في أداء وإجراء بعض المهارات. وحتى في السنوات الأخيرة، أستخدمت بعض الكليات النماذج والدمى للتدريب المهني في تدريس وإجراء هذه المهارات. وينبغي تنقيح وتعزيز مهارات التدريس. ويجب أن تعتمد كليات الطب مناهج معتمدة تؤسس للتدريب على إجراء المهارات. في هذه الرسالة، نود أن نسلط الضوء على التحديات وضعف التدريس لأداء وإجراء المهارات بين طلاب الطب.

Corresponding Author:
Mohamed D. Awadalla
Gismalla; email:
mohadaff22@gmail.com

Editor-in-Chief:
Prof. Mohammad A. M.
Ibnouf

🔓 OPEN ACCESS

1. Gaps in Procedure Skills among Graduates

Promes et. al. talked about the gaps in procedural and skills training and experiences among medical school graduates. They found that, first-year residents had the most experience in suturing and Foley catheter placement. There is some procedure which done less than five. They had the least experience in central venous access. Most had not performed basic life support, and more than one-third had not performed cardiopulmonary resuscitation (CPR). They found the residents who had procedure course during undergraduates are significantly more likely to report competency in performing basic medical procedures [1]. Other study done among graduate's students showed that more than two-thirds of the participant were capable of doing venipuncture, intravenous placement, arterial puncture, placement of the nasogastric tube, placement of Foley catheter, suturing lacerations, and CPR [2].

In a survey of basic practical skills in one of UK medical school, it was found that not all skills had been mastered to the same degree as venous blood sampling and

intravenous cannula insertion [3]. The proportions reported in another study for intravenous cannula insertion are higher than those in previous studies; for example, an audit of clinical skills conducted among final-year medical students in Nigeria reported that only 4.8% of final-year students had never inserted an intravenous cannula [4].

Other studies have reported a number of final year medical students or newly graduated doctors not attempting common procedural skills such as basic life support, nasogastric tube insertion, simple wound suturing, lumbar puncture, endotracheal intubation and thoracentesis [5]. A significant number, 38 (45.2%) had never inserted a urinary catheter nor had any experience with bag/mask skills [4]. All these mention studies showed the concern of educators about skill competences among medical students and graduates. It demonstrates the weakness and gaps in some skills and procedure competence. Also, it state that not all procedure done with the same competence and it differ from school to another.

2. Teaching Medical Procedure

Most of Medical schools depend on an apprenticeship model as teaching methods for skills

and procedures through observation, trial, and demonstration; see one, do one, teach one. But it does not offer to students and graduates adequate experience for future prepare to specialized residency. Also, apprenticeship model can be affected by patient sitting, teaching environments, and another surrounding learner (cosmetician), and the educator himself (teacher) [6]. Studies have shown that observation of procedures does not give the students self-confidence and competence to perform in patients' real life [7–9].

So nowadays, medical schools have started formal procedural skills training curricula. This will help students to get formal procedural training maintained skills performance superiority over subsequent years of medical school [10]. Several studies showed that clinical skills curricula have demonstrated significant improvements in medical student confidence after implementation of formal procedural skills courses [9, 11, 12].

3. How to Teach and Learn Procedure

It is important to provide students an opportunity for the student to be prepared to learn that procedure. This preparation session showed to be in very structured format before the laboratory or bedside session. The aim of this session is to prepare the students with more information about indications and contraindications of specific procedure, the instruments and the tools used to perform the procedure, and the expected outcome of the procedure [13]. In addition, learners should take the time to review the risks of any procedure they perform, including the possible complications

and how to manage them if they occur. Apart from this preparation should focus on the process of obtaining informed consent as well as documentation of the procedure [14, 15].

Before starting skill laboratory or bedside session, the students should recall information regarding the procedure before its performance. Students can be prepared to the procedure by several methods assigned chapters, computer programs, or videos containing the information, they would like the learner to have mastered before the teaching experience. The problem of this preparation session, it cannot go beyond theory and it is not active sessions [13].

4. The Process of Learning

Steps in the process of learning a procedure:

1. Conceptualization — understanding the reasons for performing a procedure, the overall process, the tools involved, and the risks/benefits

2. Visualization — observing a demonstration of the procedure, performed in a fluid and competent manner by the master teacher

3. Verbalization — reviewing a verbal deconstruction of the procedure while it is performed by the expert, with opportunity for interruptions and clarifications

4. Guided practice — performing the sequential steps of the procedure under the-supervision of an expert physician [13].

Therefore, it is important to be cognizant of the basics of a procedure, as some instructors may have to alter their "usual" method for performing a procedure to deliver a more standardized educational experience. Once the standard method is mastered by the learner, particular variations and shortcuts may be taught, but if taught prematurely, these will only confuse the novice learner and lengthen the time required for motor learning of the procedure [16].

As the learner becomes more comfortable with the procedure, demonstrating increased skill competence, the instructor's involvement in the procedure should decrease until the learner is essentially performing it without assistance. Practice without guidance can precipitate errors and result in imprinting of inappropriate actions, which is dangerous to patients and a disservice to the learner. Immediate feedback, both positive and negative, is invaluable throughout the learning process. More specifically, effective feedback is performance based, highlighting portions of the procedure that were done well and pointing out areas for improvement, with specific tips on how to improve the skill attempted [17].

Once a basic procedure is mastered by a learner, the next step in skill acquisition is to present variations on that procedure. It is in this final step that learners can be introduced to the shortcuts or varied methods that instructors use in their daily

practice. They should be challenged to apply the procedure in difficult situations and learn alternative techniques to accomplish the desired outcome [18].

5. Creating a Procedural Education Elective for Preclinical Medical Students

Many educators and clinicians have commented that medical school is the optimal time in physician training to teach basic procedural skills. Because medical students have less direct patient care responsibilities and more time to spend practicing acquired skills, many emergency medicine clerkships have designated space within their curricula for procedural education. Beyond the basic skills learned at the bedside, specific procedural skills sessions using cadavers and simulators are now an increasingly popular way to provide exposure to clinical procedures for the new learners within a safe, well-supervised environment [13]. Overall, this course presents a successful example of procedural education for early learners that takes into account the educational theory of motor skills acquisition and uses multiple models for guided practice and learning with feedback. It provides a venue for students to learn basic procedures in a prescribed sequence from master teachers, rather than in the unstructured and often inexperienced hands of residents during their clinical rotations [19].

6. Conclusion

Apprenticeship model only for teaching procedures has a lot of drawback and weakness. Medical schools should adopt well structure curriculum for teaching procedures. During medical school the students has very good chance to learn procedures and skills before their residency program and future career.

References

[1] S. B. Promes, S. M. Chudgar, C. O. Grochowski et al., "Gaps in procedural experience and competency in medical school graduates," Academic Emergency Medicine, vol. 16, no. 2, pp. S58–S62, 2009.

[2] C. W. Sanders, J. C. Edwards, and T. K. Burdenski, "A survey of basic technical skills of medical students," Academic Medicine, vol. 79, no. 9, pp. 873–875, 2004.

[3] P. Board and M. Mercer, "A survey of the basic practical skills of final-year medical students in one UK medical school," Medical Teacher, vol. 20, no. 2, pp. 104–108, 1998.

[4] N. J. Jebbin and J. M. Adotey, "An audit of basic practical skills acquisition of final year medical students in a Nigerian medical school," Annals of African Medicine, vol. 11, no. 1, pp. 42–45, 2012.

[5] L. Coberly and L. M. Goldenhar, "Ready or not, here they come: Acting interns' experience and perceived competency performing basic medical procedures," Journal of General Internal Medicine, vol. 22, no. 4, pp. 491–494, 2007.

[6] D. Nutter and M. Whitcomb, The AAMC project on the clinical education of medical students: clinical skills education, Association of American Medical Colleges, Washington, DC, 2005.

[7] J. J. Dehmer, K. D. Amos, T. M. Farrell, A. A. Meyer, W. P. Newton, and M. O. Meyers, "Competence and confidence with basic procedural skills: The experience and opinions of fourth-year medical students at a single institution," Academic Medicine, vol. 88, no. 5, pp. 682–687, 2013.

[8] E. H. Wu, D. M. Elnicki, E. J. Alper et al., "Procedural and interpretive skills of medical students: Experiences and attitudes of third-year students," Academic Medicine, vol. 81, no. 10, pp. S48–S51, 2006.

[9] R. A. Stewart, L. S. Hauge, R. D. Stewart, R. L. Rosen, A. Charnot-Katsikas, and R. A. Prinz, "A CRASH course in procedural skills improves medical students' self-assessment of proficiency, confidence, and anxiety," American Journal of Surgery, vol. 193, no. 6, pp. 771–773, 2007.

[10] R. Remmen, A. Scherpbier, C. Van Der Vleuten et al., "Effectiveness of basic clinical skills training programmes: A cross-sectional comparison of four medical schools," Medical Education, vol. 35, no. 2, pp. 121–128, 2001.

[11] K. Shanmugarajah, J. Shalhoub, S. Mastoridis, and P. A. Paraskeva, "A course in basic surgical techniques improves medical student confidence in key skills.," Medical teacher, vol. 32, no. 9, pp. 789–790, 2010.

[12] M. Panahkhahi, "Station-based deconstructed training model for teaching procedural skills to medical students: a quasi-experimental study," Advances in Medical Education and Practice, vol. Volume 1, pp. 17–23, 2010.

[13] S. Moayedi and M. Torres, "Teaching Invasive Medical Procedures," Practical Teaching in Emergency Medicine, Second Edition, pp. 72–84, 2012.

[14] J. H. George and F. X. Doto, "A simple five-step method for teaching clinical skills. Fam Med," in Doto FX. A simple five-step method for teaching clinical skills. Fam Med, vol. 33, pp. 577–578, 577–578, 33, 2001.

[15] M. E. Gallery, "Teaching clinical skills," in The Emergency Medicine Teaching Fellowship Manual, American College of Emergency Physicians, M. F. Whiteside and M. A. Geist, Eds., p. 11, TX, Dallas, 2001.

[16] T. S. Wang, J. L. Schwartz, D. J. Karimipour, J. S. Orringer, T. Hamilton, and T. M. Johnson, "An education theory-based method to teach a procedural skill," Archives of Dermatology, vol. 140, no. 11, pp. 1357–1361, 2004.

[17] P. J. McLeod, Y. Steinert, J. Trudel, and R. Gottesman, "Seven principles for teaching procedural and technical skills," Academic Medicine, vol. 76, no. 10, p. 1080, 2001.

[18] T. M. Van Der Vlugt and P. M. Harter, "Teaching procedural skills to medical students: One institution's experience with an emergency procedures course," Annals of Emergency Medicine, vol. 40, no. 1, pp. 41–49, 2002.