

Medical Students' Perceptions on Skills Laboratory Training for Clerkship Preparedness at the University of Rwanda: A Pilot Study

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Abstract

Background: The preclinical and skills laboratory training years of undergraduate medical education provide educational content in a structured learning whereas clerkship provides clinical training in a more experiential manner. Although early clinical skills training is emphasized in many medical schools today, students still feel unprepared about starting their clerkship.

Aim: This study explored perceived challenges encountered by early clerkship students performing clinical skills learned in a skills laboratory.

Methods: Self-administered questionnaires were distributed to ninety purposely selected medical students from year three to year six of the medical school of the University of Rwanda in the academic year 2012-2013. Questionnaire was answered anonymously by the participants. Descriptive statistics were used. Results were analysed in terms of distribution and percentages.

Results: Sixty-eight self-administered questionnaires out of ninety distributed (76%) were returned. The results showed that a simulation exercise for preclinical years may be a valuable tool to increase knowledge and student self-confidence at a key transition period prior to beginning clerkship experience. Preclinical skills-laboratory enhances patients' safety during medical students' early clerkship years.

Conclusions: Preclinical skills training in a skills laboratory is an important tool to increase knowledge and student self-confidence of medical students before beginning clerkship experience.

Keywords: Medical students, clinical skills, clerkship, rotations, transition

Introduction

Clinical clerkship and clinical rotations have proved to be challenging to junior medical students worldwide. [1] Installing skills laboratory facilities for clinical skills training enhances and creates opportunities for students to learn clinical skills in a safe environment and without endangering patients, with the intention to better prepare students for the clinical years.[2]

Training within a skills laboratory cannot fully represent the training in clinical setting. Consequently, students may encounter problems when they attempt to transfer the clinical skills they learned in the laboratory to the clinical setting.[3,4] More extensive practice in the skills laboratory and exposing preclinical students to patients earlier in the curriculum could be of help for overcoming these problems.[2] However, most studies addressing this transitional problem were carried out in developed countries with positive results concerning correct attitudes and skills that are required for clinical placement.

In Rwanda, the skills laboratory of the University of Rwanda, School of Medicine and Pharmacy is equipped with simulation equipment for cardiorespiratory resuscitation, mannequins for intravenous and intramuscular injections, lumbar puncture, urethral catheterization, and episiotomy. It also has equipment for cardiopulmonary auscultation, neurological examination, eye examination, eye and ear irrigation, and rectal examination. These equipment and other learning tools are used by students to get skills in specimen collection (venipuncture, urine and faeces collection), lumbar puncture, nasogastric tube insertion, urethral catheterization (in males and females), episiotomy, administration of drugs (precautious, intravenous, intramuscular), and gastronomy feeding. Skills Lab instructors train students in physical examination of men and women, taking the vital signs, including pulse, temperature, respiratory rate, and blood pressure. They also train students in pain measurement. Nevertheless, such skills training has not been assessed about challenges students may experience in their transition from preclinical skills to clerkship training.

This study explored perceived challenges encountered by early clerkship students in clinical skills during clerkship at the two main University Teaching Hospitals in Rwanda; Butare and Kigali University Teaching Hospitals during the academic year 2012-2013. Usefulness of skills acquired in the skills laboratory in the clerkship experience was explored. The results are expected to guide the improvement of skills laboratory training to better prepare medical students for their clerkship rotations.[1,2]

Methods

A survey was conducted in four subsequent classes of the medical programme of the University of Rwanda, School of Medicine and Pharmacy, regarding the transfer of medical students' preclinical skills to the clinical clerkship setting. All medical students who attended skills laboratory training from year three to year six (last year of medical training) and who were willing to participate in the study were purposively selected. The selection excluded year 1 and year 2 students because skills laboratory attendance started from year 3. A total of 90 students were selected and given questionnaires

during clerkship period organized at the University teaching hospitals. Data were analysed descriptively, in terms of distribution and percentages, using Microsoft Excel 2007 software.

Ethical considerations

The research project was approved by the Ethics Committee of the University of Rwanda, School of Medicine and Pharmacy. All students participating in the study gave informed consent. Participation was completely anonymous, questionnaires were self-administered and the students were free to withdraw if they changed their mind with no repercussions.

Results

Out of ninety (90) questionnaires distributed, sixty-eight (76%) were returned. The demographic distribution of the students showed: the biggest number (40; 58.5%) were from third year, and the least (6; 9%) from the sixth year. Thirteen (19%) were females and 52 (77%) were male, while three (4%) did not disclose their gender, as indicated in table 1.

Table 1. Demographic distribution of student participants

Characteristic	Number of participants	Percentage (%)
Year 3	40	58.5
Year 4	6	9.0
Year 5	12	18.0
Year 6	10	14.5
Gender		
Female	13	19
Male	52	77
Not disclosed	3	4

Students' perceptions on clerkship

The students' perceptions on clerkship were assessed with different categories of perceptions as indicated in table 2. Out of 68 students; 38 (47%) indicated that the atmosphere for clerkship was very educative, 30 (44%) that was relatively educative, 3 (4.5%) said it was not educative at all while 3 (4.5%) did not show their appreciation for atmosphere.

Regarding availability of patients for clerkship, a large number of students (52; 76.5%) perceived the number

of patients available for clerkship training was sufficient, while 41 (60.3%) perceived patients were available for clinical practice skills.

The same table 2, indicated that majority (41; 60.3%) of students perceived that often there was an opportunity to apply experience of skills learnt in laboratory into clinical placement, again majority (42; 60.8%) perceived that the learning materials were often available in clinical placement, and the highest number (49; 72%) showed that there was often problem of functionality of learning materials during clerkship.

Table 2. Students' perceptions on clerkship

Student appreciation of clerkship				
Perception	Insufficient n (%)	Sufficient n (%)	No response n (%)	
Number of clerked patients	14 (20.6%)	52 (76.5%)	2 (2.9%)	
Availability of patients to practice clinical skills prior learned in skills laboratory	25 (36.8%)	41 (60.3%)	2 (2.9%)	
Availability of patients for clerkship				
Perceptions	Sometimes n(%)	Often n(%)	Always n(%)	No response n(%)
Opportunity to apply skills laboratory experience in clinical placement	11 (16.2%)	41(60.3%)	13(19.1%)	3 (4.4%)
Availability of learning materials in clinical placement	17 (25%)	42 (61.8%)	7 (10.3%)	2 (2.9%)
Functionality of equipment	5 (7.4%)	49 (72.0%)	9 (13.2%)	5 (7.4%)
Impression in the clinical clerkship setting				
Impression	Minor	Moderate	Major	No response
Translating learned skills to the care of real patients	30 (44.1%)	16 (23.5%)	19 (28.0%)	3 (4.4%)
Overcoming fear in clinical placement	51 (75%)	9 (13.2%)	2 (2.9%)	6 (8.9%)

First impression in the clinical clerkship setting

When asked how they found the clerkship environment, 33 (48.5%) of students responded that they found clerkship area to be friendly, 32 (47%) found it to be scaring while 3 (4.5%) students did not respond.

Causes of fear in clinical setting

Out of the 68 students who were asked the question of the causes of fear in clinical setting, 22 (32.3%) said the unfamiliar environment was scaring; 6 (8.8%) said

clinical staff (doctors and nurses) looked scaring to them and 4 (5.9%) were scared by patients' looks, while 36 (53%) did not respond.

Students' perceptions on the preclinical training

The perceptions of students concerning the importance of preclinical training and skills laboratory training to ensure preparedness to clinical clerkship (table 3) showed very important expectations from preclinical (39; 57.4%) and skills laboratory training (62; 91.2%).

Table 3. Students' perception of the importance of preclinical and skills laboratory training as preparation for clerkship

Trainings	Of little importance	Important	Very important	No response
Preclinical training	0 (0%)	26 (38.2%)	39 (57.4%)	3 (4.4%)
Skills laboratory training	3 (4.4%)	2 (2.9%)	62 (91.2%)	1 (1.5%)

Students' suggestions for strengthening preclinical skills

Out of 68 students 33 (48.5%) indicated the need to increase the skills laboratory equipment, materials and increased staff, as well as bigger room, 14 (20.6%); students requested for specific time for skills laboratory practice; 11 (16.2%) suggested improvement of equipment and materials; and 5 (7.4%) wanted the number of staff increased, while 3 (4.4%) did not say anything.

Discussion

This study explored challenges encountered by early clerkship students performing clinical skills learned in a skills laboratory at the University of Rwanda, School of Medicine and Pharmacy. The study suggests that simulation exercises in preclinical years may be a valuable tool to increase self-confidence at a key transition prior to clerkship experiences.

In this study medical students at all levels held high expectations towards skills training as indicated by 62 (91.2%) students who said the skills laboratory prepared them for the clinical setting, confirming previous studies. This is in line with findings of previous studies on skills laboratory training which showed that students had high expectations in relation to training in skills laboratory. [3,5,6] These studies found that students considered that they were not given as much time to practice skills taught in the skills laboratory as they expected. This was also demonstrated by the students in this study. While overall students indicated that their skill expectations in skills laboratory training were generally met, some students did not get enough chance to practice all skills taught in theory. This is likely caused by student classes being so large and having only two hours per week for practice (and sometimes missing these two hours even). In addition, the room was too small and there were only one staff in the skills lab. Such reasons were confirmed by 33 (48.5%) students' recommendation to increase staff, equipment and materials so as to strengthen skills laboratory training and practice. This is also supported by Godefrooij et al., [7] who showed the same need. They reported that early patient contact seemed pre-empted students' shock in clinical placement and prepare them for clinical work. [7] The finding on high numbers of students, small class rooms, and shortage of staff in this study are similar to ours. However, problems of socialisation process reported by Godefrooij et al were not observed in our study. [7]

The study also showed that skills training in the laboratory helped students gain confidence in performing clinical procedures since 44.1% of students reported to have faced minor problems in clinical setting compared to 28.0% who faced major ones. This is supported by earlier studies which showed that interrelated learning process of medical students had positive effect when students progress from the skills laboratory to clinical practice. [8]

The study also revealed that preclinical skills training could ease the anxiety and lack of confidence which can be a real problem to medical students' first experience in clinical setting since 91.2% said the skills training prepared them for clinical setting. This is in line with the reason why realistic medical simulation has expanded worldwide over the last decade to try and help to solve the clinical setting problems. This agrees with Shahid from Medical Sciences at University Saints Malaysia, who said that integrating clinical skills laboratory programme facilitated sound and safe clinical skills training for medical students to real life patients in subsequent clinical years and even during internship after graduation. [6] This suggests that the skills laboratory of the University of Rwanda, School of Medicine and Pharmacy should be used by all staff at all levels since it has proven to be very useful elsewhere and in this study. However, the

study also revealed that students can be apprehensive while going to clinical settings for the first time, as 32 out of 68 (47%) found the clinical setting scary. Therefore, students going to clinical setting should first be prepared both psychologically and clinically. Similarly, Sarikaya et al., [9] who did a study in two different medical schools indicated that majority of medical students expressed a high level of fear and anxiety whereby the students feared making mistakes that could harm patients. Fear was especially experienced when it came to performing core skills like measuring blood pressure or suturing a wound or putting up intravenous infusion, where they feared causing serious mistakes. [10] The medical students also had the empathy for patients because failing to perform an invasive procedure properly would mean using more materials thus increasing patients' cost. Therefore, continuous medical skills training and practice will help students get rid of this anxiety as reported by Lynagh et al. [1]

The same authors reported that medical skills in laboratory lead to improvement in procedural skills compared with standard or no training at all when assessed by simulator performance and immediately after the training. Having observed the usefulness of skills laboratory training, Lynagh et al. and Sarikaya et al. also highlighted the lack of well-designed trials addressing the crucial issue of transferability of the skills to clinical practice and retention of skills over time. [4,6] Lack of data about skills laboratory knowledge acquisition and retention led the authors to recommend further research to address their concerns and advance awareness and need of skills laboratory training of future medical students. [1]

Shahid also reported that skills laboratory teaching helps to overcome the problem of imbalance between the available resources (real patients) and the learners (medical students). [6] Challenges faced by the students in this study may have been experienced in many developed countries. Therefore, strengthened pre-clinical laboratory based on skills training will complement the ward and ambulatory clinical teaching to attain better motivation and pleasure of learning, thus, better performing medical students and young doctors.

Since simulation exercises are teaching methods that require the students to think and react consistently, skills laboratory teaching method require students to apply their theory to practice in an integrated way. Thus, it may be more effective than sitting in the library reading books or just listening to professors in classrooms. To achieve this at the University of Rwanda, it would be better if all professors and lecturers integrate the skills laboratory teaching sessions within their modules to better equip their students with practical skills before clinical placements. However, Stark and Fortune said there is a challenge of having too large groups of

students in too small laboratories with too few staff causing difficulty in teaching and learning.[11]

In one study medical students in their evaluation revealed that students enjoyed the experience and gained both knowledge and confidence when 5-6 students per group learned over one mannequin.[4] While, at the University of Rwanda, the groups are normally composed of 10-20 students but still students enjoy the skills laboratory, however they lack facilitators. Effort is needed to strengthen hands-on training during years 1 and 2 to help medical students overcome the phobia of first clinical setting experience challenges and protect the patients from early clinical practice errors. Some other studies done in Europe confirmed the same preference of medical students to first get experience in the skills laboratory before dealing with real patients.[1]

Conclusion

In conclusion, this study suggests that skills laboratory and simulation training for preclinical years for medical students may be a valuable tool to increase knowledge and self-confidence at a key transition period prior to beginning clerkship experience. Staff interested in utilizing skills laboratory and simulation should emphasize on students practicing to differentiating normal from abnormal in their early practice to enhance students' self-confidence and patients' safety. Small groups of students may be more beneficial by encouraging increased individual participation and involvement of all group members.

More extensive research is needed to look into the long-term effectiveness of skills laboratory training and simulation interventions in the preclinical teaching in regard to the retention of acquired skills and self-confidence.

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Conflict of interest

The author declares no conflict of interest.

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