

PERCEPTION OF UNDERGRADUATE MEDICAL STUDENT REGARDING EARLY INTRODUCTION OF CLINICAL SKILLS IN PROBLEM BASED LEARNING CURRICULUM

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ABSTRACT

OBJECTIVE: To find out the viewpoint and perception of undergraduate medical students of Sulaiman Al Rajhi Medical School (SAMS), Saudi Arabia regarding introduction of clinical training component in the early medical years (years 1, 2 and 3) on students' learning of clinical skills (CS) in a new problem-based learning (PBL) medical curriculum.

METHODS: The study was conducted at SAMS, Saudi Arabia between December 2017 and October 2018. After Informed and written consent, students from 3rd, 4th, and 5th year were divided in to three respective Focus groups (n=8-10/group). A questionnaire was developed to conduct interview with the focus groups that was conducted by two faculty members of SAMS who were not involved in CS training.

RESULTS: More than 90% students agreed or strongly agreed that it was good to introduce CS in the early years of the curriculum. They reacted that the course enhanced their learning interest and made them feel like doctors. Non-availability of expert supervisors, lack of standardization and less number of sessions were the main limitations in early introduction of skills in the medial curriculum. Students made constructive suggestions on how the course could be improved during the interactive focus group interviews to minimize the negative effects.

CONCLUSION: Undergraduate medical students perceive that the introduction of CS in early years is useful and facilitates bedside teaching of important CS during clinical years in PBL curriculum. Standardization of curriculum, availability of simulated patients and CS instructor, and preparation of students before coming to sessions remain the major limitations.

KEY WORDS: Clinical Skills (MeSH); Curriculum (MeSH); Medical Education (MeSH); Problem-Based Learning (PBL) (MeSH); Undergraduates (non-MeSH).

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them clinical acumen in the laboratory settings.⁴

Introduction of students to CS courses during the early years of their medical program was one of the primary themes of discussion in the "Tomorrow's Doctors" published by the General Medical Council.⁵ Review of literature provides a mounting evidence that introduction of basic CS in the medical curriculum warranted to be revisited⁶ and hence, various medical programs in Europe and around the world decided to implement GMC's recommendations which have led to positive results.^{7,8} Such reforms in the medical curriculum in general and with respect to the introduction of clinical training in particular have positively impacted the students' perception of their training in the medical education.⁹

The medical curriculum of Sulaiman Al Rajhi Medical School, Kingdom of Saudi Arabia has been franchised from Maastricht University, Netherland. The medical program spans over 6 years, with years 1, 2 & 3 encompassing teaching of basic sciences while 4th & 5th years are focused on clinical sciences. Year-6 is the internship year wherein the students undergo intensive supervised training for one year in the hospital settings. Although Medical year-3 is basic sciences year, it actually offers the student a gradual transition from basic sciences to clinical sciences. Our novel medical curriculum is based on an integrated, student-centered approach with a small group problem-based learning component. An important aspect of the curriculum is the early introduction of hands-on training to the basic CS in state-of-the art CS lab that starts from Year-1 onwards. Most teachers use live demonstrations and audio-visual material (often videos and slides) to expound the contents. Students are then asked to practice the CS on their fellow students or on mannequins. This is a different from the traditional curriculum wherein medical students

INTRODUCTION

The development of curriculum for undergraduate medical students and its deliverance strategy have undergone drastic changes over the past couple of decades. Now the focus of curriculum delivery has been switched from teacher-centered to student-centered in various medical schools around the world.^{1,2} A common feature of current curricula is

more focused on early imitation of clinical training of undergraduates from first year rather than leaving it until the last years of the medical program as part of the traditional teaching.³ Given its significance, clinical skills (CS) training is now being considered as an integral part of laboratory-based method, away from the clinical settings, to introduce the undergraduate medical students with clinical competencies and inculcate in

TABLE I: QUESTIONNAIRE DEVELOPED AND USED FOR THE SURVEY

Variables	Questions
Training	The training was received in the Skills Lab
	The difficulties encountered during the learning process?
	Advantages of Skills training (Years 1 & 2) carried forward to the clinical years?
Limitations	Problems faced related to your pre-clinical skills training?
	Most important training skills learnt in the skills lab?
Apprehensions about Skills training	Cardiovascular examination
	Examination of respiratory system
	First Aid skills (Cardio-pulmonary resuscitation)
	Neurology
	Injections
	Gynecological examination

TABLE II: THE MOST IMPORTANT CLINICAL SKILLS AS PART OF THE SKILLS TRAINING DURING MEDICAL YEARS 3, 4 AND 5

S.No.	Professional Year	Skills
1	Third Professional Year	Communication Skills
		Basic Clinical Skills
		Lifesaving Skills
		History taking Skills
		Understanding Basics of Clinical Skills
2	Fourth Professional Year	Cardiopulmonary Resuscitation
		Respiration
		Cardiovascular examination
		Bandaging
		Neurological Examination
		Communication Skills
		First Aid
History Taking Skills		
3	Fifth Professional Year	Communication Skills
		Basic Clinical Skills
		Lifesaving Skills
		Acquaintance and understanding of Clinical Methods
		History taking Skills
		Understanding Basics of Clinical Skills

would have little or no clinical contact with patients until the end of Year-3. In the past, junior year medical students had often complained that they were taught more like general science students and they were provided little exposure to any course with apparent clinical relevance.⁸ Hence, this study was conducted to find out the viewpoint and perception of undergraduate medical students of Sulaiman Al Rajhi Medical School, Saudi Arabia regarding introduction of clinical training component in the early medical years (years 1, 2 and 3) on students' learning of CS in a new problem-based learning (PBL) medical curriculum and secure timely feed-back from the trained

students which is not possible in the traditional system of teaching.

METHODS

The study was conducted at Sulaiman Al Rajhi Medical School, Kingdom of Saudi Arabia between December, 2017-October, 2018. The study protocol was approved by the Ethics Board of Sulaiman Al Rajhi Medical College, Bukayriah, Kingdom of Saudi Arabia. Qualitative methods (Focus group) were used in this interview-based study. Efforts were made to encourage students to attend the focus groups and confidentiality was ensured.

Focus Group Interviews

A Focus Group of students was developed with the aim to assess the student perception of CS training. The size of the group was kept large enough to provide diversity but small enough to ensure that everyone included got a chance to participate. Forty students of year 3, 4 and 5 were included in focus group for interviews during a post CS session of each year. All classes interviewed in separate sessions. Questions were asked verbally and the students' responses were tape-recorded. The recording of their responses was later analyzed by the principal investigator to draw out patterns of concepts and insights.

Questionnaire For Survey

The students from Medical program years 3, 4 and 5 were asked to assist in this project by providing questionnaire evaluation on the CS component. The questionnaire was developed by the Health Professional Education Unit (HPEU) of Sulaiman Al Rajhi Colleges and used during the survey as shown in Table I. The questionnaire used for the interview-based study included a mix of descriptive, provocative, interpretative and leading types of questions. The students reflected on the effectiveness of the course as well as on the achievements of its objectives. The questionnaire used a three-point scale regarding their training to reflect on the advantages and limitations/ apprehensions about the CS training and was designed in accordance with the main themes arising from the Focus Group interviews that included various aspects such as the training offered, its imitations and apprehensions about the CS training in the different areas of clinical practice. The survey provided information regarding the usefulness of introducing CS in early years, relationship with problem-based learning (PBL) tutorials and factors affecting learning and teaching. Questions were asked in the class or during the break between two lectures, and recorded at the same time. This helped in ensuring a high response rate of the students.

RESULTS

The students responded to the Questionnaire according to the themes. Table II shows the most important CS

learnt in the CS Lab during Years 3, 4 and 5. As given in Table II, Year-3 CS are more focused on understanding the basics of CS, interaction and communication with the patients in terms of patient's history-taking and some life-saving CS.

Given the spiral nature of our curriculum at Sulaiman Al Rajhi Colleges as discussed earlier, Years 4 and 5 are taught more advanced levels of the CS as studied during Year-3 in addition to the introduction of specific theme related CS, i.e., cardiovascular, gynecological and neurological examination. The CS taught to the students from different medical years have been enlisted in Table III.

Table IV shows the response of participants in terms of the benefits of an early introduction of CS in the medical curriculum. Students from all the senior years agreed that early introduction of the CS enhanced their confidence and acquaintance with the CS, improved their communication with the patients and refined their history taking CS. The training sessions also prepared the students in the simulated settings of the CS Lab for their future interaction with the patients in the real-time settings in the hospital. Despite the advantages of an early introduction of CS as enlisted in Table IV, this approach is not without its limitations (Table V). The analysis of the students' response showed CS training during the early medical years, i.e. years 1, 2 & 3 of the curriculum was not supervised by any Specialist which impaired students' understanding of the practical aspects the CS as they only followed the bookish procedure using SIM's Book as a reference. Smaller number of the supervised practical sessions as well as teacher-independent practical sessions significantly reduced the benefits of the strategy which otherwise could have been immensely beneficial for the students.

DISCUSSION

The major finding of our study is that an early introduction of CS in the safe settings of clinical skills laboratory during early years of medical curriculum facilitates CS learning in the senior years. The challenging nature of the medical education is highly stressful for the medical students during both pre-clinical as well as clinical years.⁷ The stressors experienced by the medical students are multifactorial and stress of learning

practical aspects of the medical profession haunts the students equally throughout their academic life in the medical school as well in the hospital settings. In order to overcome these stressors related with the learning of CS, introduction of CS training in the early years of medical curriculum is gaining popularity as this approach will help the students to learn these CS in the secure simulated settings of the educational institutions.^{5,6} A recent study by Auda and colleagues has shown approval of this strategy by the students during the pre-clinical years.⁸ Upadhyay has recently published a single-blinded study to report that CS lab training is a better teaching method for CS especially when introduced in the pre-clinical years.¹⁰ A similar study has earlier reported that early introduction of CS is well-perceived by the students and prepare them better for the hospital training during the clinical and internship years.⁶ Shigli, et al. have recently reported that inclusion of Prosthodontic module for pre-clinical year students, though challenging, has positive effect on the grades of the students.¹¹ In our present study, the students were very excited to talk about the advantages and limitations of

introducing CS from Year-I onwards in our medical curriculum during the Focus group study. The primary theme emanating from the data is that the participants of the study were greatly satisfied with the early introduction of CS in the medical curriculum and appreciated the benefits of this novel approach although they noted some limitations in its implementation as well. The students agreed or strongly agreed with "the CS sessions were well-conducted". The students applauded the idea but disagreed with its implementation strategy. They also opined that CS training was useful which is in line with the previously published data, enhanced their confidence, helped in comprehending the exact sequence of clinical examination to be followed during patient's physical examination and alleviated their fear of examining the real patients in the clinical settings.¹²⁻¹³ Put together, CS sessions provided the students with multiple practice sessions before going to the clinical settings to deal with the real patients, learn the fundamentals of dealing with the patient, enhance communication skills and develop proper history-taking skills. The

TABLE III: THE TRAINING RECEIVED DURING YEARS 3, 4 AND 5 IN THE CLINICAL SKILLS LAB

Professional Year	Trainings Received
Third Professional Year	Injections
	Blood Pressure
	Bandage
	Cardiopulmonary Resuscitation (First Aid)
	Systemic Examination
	History Taking
	Blood Sampling
	Gynecology
	Breast Examination
Fourth Professional Year	Injections
	Blood Pressure
	Bandage
	Cardiopulmonary Resuscitation (First Aid)
	Systemic Examination
	History Taking
	Blood Sampling
Fifth Professional Year	Injections
	Blood Pressure
	Bandage
	Cardiopulmonary Resuscitation (First Aid)
	Systemic Examination
	History Taking
	Blood Sampling

TABLE IV: IMPACT OF SKILLS TRAINING DURING YEAR-I AND YEAR-2 IN THE CLINICAL SKILLS LAB

Professional Year	Impact
Third Professional Year	Skill Lab training takes off the fear of examining the real patients in hospitals.
	Mistakes of sequence of examination were corrected before going to hospital.
	Acquaintance and understanding of clinical methods.
	As many times, you can practice in skills lab but not on real patients in hospital.
	Learning the fundamentals of dealing with the patients
	Learning the fundamentals of communication skills
	Development of history taking skills
Fourth Professional Year	Acquaintance and understanding of clinical methods
	Development of history taking skills
	Understanding of basic clinical skills
	Learning the fundamentals of dealing with the patients
	Improvement of communication skills
Fifth Professional Year	Acquainted with clinical examination
	Much confident in approaching the real patient
	Learn practical approach
	Got aware with the art of history taking
	Improved in communication skills

TABLE V: LIMITATIONS OF THE STRATEGY OF AN EARLY INTRODUCTION OF SKILLS IN THE MEDIAL CURRICULUM

Professional Year	Limitations
Third Professional Year	Less practice time
	No specialists
	The instructors were not following the SIM Book
	Lack of dedicated staff
Fourth Professional Year	Less numbers of sessions
	No specialists
	Non-Availability of SIM (Skills in Medicine) for students
	The instructor were not following the SIM book
Fifth Professional Year	No repetitions of skills
	Over activity in a specific block
	Lack of standardization
	Small number of sessions
	Non-availability of experts
	More TIP sessions
Lack of dedicated staff	

students also responded unanimously regarding the benefits of early introduction to clinical skills in terms of confidence in dealing with the patients in hospital, in performing physical examination of the patients and felt more comfortable in the professional settings of the hospital. Moreover, the students felt confident about performing life-saving skill thus scoring high grades from their immediate supervisors.

The students also felt very energetic

while performing different CS such as blood pressure measurement, basic First-Aid and doing phlebotomy. While the course organizers and the supervising faculty took great care to provide clear learning objectives and supplementary reading material, some students felt less confident about the depth of learning required from the skill sessions. It is pertinent to mention that teachers' performance and attitudes also directly affected students' perception of the CS

course. When the trainers involved in the course lacked enthusiasm, that not only created a bad impression on the students, it also impacted students' learning. Therefore, frequent student peer/teacher evaluation was very useful, allowing advice, replacement and re-training when required.

Despite the above-mentioned advantages, lack of standardization of protocols amongst different instructors, smaller number of session, lack of trained and dedicated staff etc. remained the weaker links in the implementation of the CS training program. The students also emphasized the need for teacher independent practice sessions so that the students could practice the taught skills for further refinement. In conclusion, exposure of students during the early years in the PBL curriculum in a medical program facilitates bedside clinical skills teaching/training during the senior years.

CONCLUSION

Undergraduate medical students perceive that the introduction of CS in early years is useful and facilitates bedside teaching of important CS during clinical years in PBL curriculum. Standardization of curriculum, availability of simulated patients and CS instructor, and preparation of students before coming to sessions remain the major limitations.

RECOMMENDATIONS

In light of the data from this study, availability of dedicated faculty members for CS Lab teaching is the fundamental requirement for successful running of the CS Lab. Although the students opined the presence of specialists to supervise their CS session, the author believes that the faculty supervising these should not be subject experts (specialists) who can restrict himself to the SIM's Book guidelines to achieve standardization and avoid confusion. Even peer-teaching and self-directed teacher-independent practice session will give good learning outcome. Secondly, the students should have access to standardized clinical methods/ protocols so that they should come prepared with theoretical knowledge relevant to the CS session. Moreover, each block/ cluster time table should ensure Teacher independent practice (TIP) sessions should be integral part of the time table. It is thus concluded

that introduction of CS during early years of medical curriculum is useful as it facilitates the CS learning during the clinical years.

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AUTHORS' CONTRIBUTIONS

The sole author **SSA** has made substantial contributions to the manuscript in terms of concept & study design, acquisition and analysis of data, drafting the manuscript & final approval of the version to be published. Author agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Author declared no conflict of interest

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