



## Early Introduction Of Clinical Skills On Medical School Performance

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### Abstract

**Objectives-**Clinical skills have remained an integral part of medical education since the early twentieth century. Clinical skills training during basic science semesters have proven beneficial for students in the preparation for their clinical rotations. The aim of this study was to determine the student's perspectives on early introduction to clinical skills during basic sciences semesters. The study also evaluated the current structure and efficacy of the clinical skills classes at their respective institutions.

### Methods

A cross-sectional questionnaire survey was conducted among the students currently enrolled in basic sciences at different Caribbean medical schools.

### Results

89.9% of students agreed that clinical skills would be a beneficial component in their medical education and should be a part of the basic science curriculum. 77.5% of the students stated that they would be willing to begin hospital exposure in the first term of the basic sciences curriculum. Most of the students' responded that early exposure of clinical skills in medical school starting from the preclinical years would make them more confident with patient interactions and build strong clinical foundation.

### Conclusion

Students perceived early introduction to clinical skills during the basic science semesters to be beneficial for improved patient interactions. These classes would aid in the acquisition of several skills which were identified as being necessary prior to beginning the clinical years. Early introduction of clinical skills starting from pre-clinical years is necessary to develop competent, scientific, modern and ethical approaches in students to interact with patients. Therefore future research is warranted to consolidate these finding and develop strategies for effective delivery of clinical skills.

**Keywords –** *Clinical skill, preclinical, effectiveness, education, medical, clinical competency.*

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## **1. Introduction**

The clinical skills of a healthcare professional is the combination of communication and procedural skills required to attain overall optimal patient care [1]. The five main components of clinical skills are communication, physical examination, oral case presentation, clinical reasoning and documentation including complete write up [2]. The communication and interviewing skills involve creating a rapport with the patient as well as using their chief complaint to ask the relevant questions. In the physical examination, the patient is evaluated using investigative tests based on their chief complaint [3]. The oral case presentation component serves to help build confidence in public speaking and becoming comfortable with the patient. Clinical reasoning is where the knowledge acquired during basic sciences is applied to the patient's in order to make the diagnosis. All the important information pertinent to the patient is then documented and becomes part of the patient's medical history. Together, these five components allow for a thorough and organized patient-doctor consultation.

Clinical skills have been a fundamental part of medical education as they are helpful in preparing the students for clinical rotations [4]. Recently, there has been a wide interest in determining the best time to introduce clinical skills to the curriculum [5]. A few medical schools have been adopting the "Temporal Coordination" model in which clinical skills are being taught in a way that parallels what is being taught in the basic sciences [6]. In this model, students will be exposed to the corresponding clinical skills that accompany the respective organ systems being studied. Previous studies have shown a favorable reaction by students to early introduction of clinical skills. A few of the advantages cited for this early introduction of clinical skills are learning to comfortably communicate with patients, gaining experience in conducting a physical examination, mastering the information learned in basic sciences in order to arrive at the correct diagnosis and building self-confidence to approach the patients during the clinical rotations. [7]

Clinical skills have been introduced at different stages in different Caribbean medical universities. The typical model for a foreign medical school in the Caribbean is a four year program comprised of two years of basic sciences and two years of clinical sciences. A few programs exist which are patterned after the British curriculum, lasting for five years that grant the students a MBBS degree at graduation. Avalon University School of Medicine (AUSOM) follows an accelerated curriculum, where the students are expected to spend approximately 18 months in the basic sciences and remaining two years in clinical

rotations. Clinical skills classes were introduced to all terms of the basic sciences curriculum at AUSOM in the fall of 2016. Each model introduces clinical skills at different stages during the program. While all models have produced successful students, there is some uncertainty about which model is the most beneficial for the student.

The objective of this study is to determine the efficacy of early introduction of clinical skills classes during the basic sciences curriculum, its various determinants and impact on the student's perception to succeed during their clinical practices.

## **2. Material and methods**

### **Study Design**

A cross-sectional questionnaire survey was conducted through different set of questionnaires over a 4-month period in different Caribbean based medical schools. A sample size of 100 medical students was used for this study; 79 students from Avalon University School of Medicine (AUSOM) and 21 students from other Caribbean medical schools. Attitude of the students towards the integration of clinical skills classes during the basic sciences curriculum and effective implementation of clinical skills in the respective institution was surveyed using quantitative and qualitative questions and response noted.

All the students currently in first to fourth semester of preclinical years and attending clinical skills mandatory course as a part of their curriculum, were voluntarily enrolled in the study, to self assess their understanding of clinical skills in different aspects and satisfaction towards the course technique. Students who were not willing to participate in the studies; and students with less than 80% of attendance at clinical skills classes, were excluded from the study.

A proposal of the prospective study was presented and passed through the ethical review board. The objectives and aim of the study was thoroughly explained to all the voluntary participants and consent obtained. Top priority was given to maintain the anonymity of the respondents.

### **Statistical Analysis**

The data obtained from the questionnaires was analyzed using IBM SPSS Statistics Data Editor and presented using tables and charts where applicable.

### 3. Results

89.9% of the students responded that clinical skills classes should be a part of the basic sciences curriculum. Students showed an encouraging response to the introduction of clinical skills in the curriculum (Table-1). 80% of the students reported that they would prefer if these skills were taught by their institutions instead of learning from an external source. The skills included but were not limited to checking blood pressure, inserting catheters, interpreting X-rays, suturing and phlebotomy. Non-clinical skills such as professionalism, punctuality, and being appropriately dressed were also identified as necessities in the preparation for the clinical years.

92% of the students preferred learning clinical skills classes in small groups (less than 10) in comparison to larger groups as clinical skills classes were thought to be more effective when taught in small groups.

**Table-1:** Students response based on questionnaires regarding clinical skills. Self-evaluation score of medical students on their understanding of clinical skills and its related factors.

Statement	Mean±SD	Median	Mode	Min	Max
Effectiveness of clinical skills from the first term of basic sciences	7.80±2.66	8.00	10.00	1.00	10.00
Clinical skills classes during preclinical years as a predictor of optimal clinical outcome.	7.66±2.58	8.00	10.00	1.00	10.00
Strengthening of the understanding of core courses with recent introduction of clinical skills classes.	7.17±2.71	8.00	10.00	1.00	10.00
Effective integration of basic sciences with clinical skills by the clinical skills faculties/tutors.	7.41±2.57	8.00	10.00	1.00	10.00
Fixation of clinical skills as an integral part of the curriculum in pre-clinical years.	8.74±1.89	10.00	10.00	1.00	10.00
Need for improvement/revision in the clinical skills classes at your institution.	8.16±2.28	9.00	10.00	1.00	10.00
Interference of clinical skills with other basic	5.62±3.29	5.00	10.00	1.00	10.00

sciences courses with negative outcome.					
Improvement in test scores at basic science due to early introduction and exposure of clinical skills classes	6.03±2.91	7.00	7.00	1.00	10.00
Use of integrated knowledge of clinical skills and other basic science courses to apply knowledge to clinical situations.	8.55±1.78	9.00	10.00	5.00	10.00
Promotion of critical thinking and problem solving technique with clinical skills.	8.41±1.83	9.00	10.00	5.00	10.00

### **Students' evaluation of Faculty Members**

Students were involved in different clinical skills classes through participation in lectures, group discussions, online assignments and practice session with standardized patients. Faculty members were evaluated by students, for their effective role in organizing the clinical skills classes. The mean score for faculty satisfaction and performance was 8.02 (10-point scale). 90% students responded that they enjoyed the course, but 81% of responded that there is a need for improvement/revision in the clinical skills classes at their institution.

### **Student's response for successful implementation of clinical skills**

Students recommended that early introduction of clinical skills would be a useful way to teach and train to develop effective clinical skills in them. 77.5% of the students stated that they would be willing to begin hospital exposure in the first term of the basic sciences curriculum.

### **Faculty Members' Evaluation of Medical Students**

The final evaluation of the clinical skills courses was accessed through OSCE, clinical simulation of cases and standardized patient encounter to apprehend their clinical skills, knowledge and understanding. This yielded an overall average of 80.45% with scores ranging from 60% to 90%.

Finally students were given the opportunity to express the potential views regarding the advantages and disadvantages of having clinical skills classes early during the basic sciences curriculum. Most of the students mentioned that clinical skills classes help them to integrate basic sciences knowledge with the clinical application, helps to improve the communication skills and prepares them for clinical rotations later. The advantages are

clearly shown to outweigh the disadvantages; the only disadvantage mentioned being adding up stress to an already rigorous basic sciences curriculum.

#### **4. Discussion**

Medical education was revolutionized by Abraham Flexner in 1910 when he introduced the “Flexner’s Model” [8]. In his model, basic sciences were taught in the first two years of medical school followed by a preclinical period. Prior to his suggestions, most medical schools followed the “Apprenticeship Model” which was based solely on lectures and textbooks with little to no opportunities for direct patient interactions [9]. However there was an option, at an additional cost, to get more experience with patients by being a house pupil [10]. Since then, medical schools have been making changes to make their students better equip to handle the vigorous requirements of being a physician. One such change has been deciding the appropriate time to introduce clinical skills to the curriculum.

In August 2016, the Flexner’s Model was modified at AUSOM and replaced by the introduction of clinical skills for all the terms during the basic sciences curriculum. Clinical skills was previously only offered to students in the fourth term of basic sciences (MD4) and onward. Currently, each term focuses on a different aspect of clinical skills. Students meet with their clinical skills professor once per week for 2 hours, with the exception of MD4 who has two classes per week for a total of 4 hours for the week. In the clinical skills classes, the students are given a brief presentation on the topic for the day and the opportunity to practice the skills on their fellow classmates. This is followed by a block examination approximately every 4 weeks which tests both the theory and practical components of the material covered for that block.

While most students were in favor of the early introduction of clinical skills, they had very specific ideas of how this introduction should be done. Many of the students thought that the key feature to a successful clinical skills class would be a competent and knowledgeable facilitator. They also identified these classes as a way of breaking the monotony of traditional lectures and getting a more hands-on approach to medicine. There was some disparity as to whether or not the students would prefer standardized or real volunteer patients for these classes or to continue to practice on each other.

The main point of concern for the students seemed to be the time that would be spent on incorporating clinical skills during the basic sciences. They believed that this time could be used for mastering the basic sciences instead of trying to focus on different aspects. The

clinical skills facilitator had obvious dilemma for early introduction with the adequacy of the knowledge in first semester medical students to maximally benefit from the clinical skills classes. Their recommendation was to tailor the curriculum in a way that the knowledge base of the students would be taken into consideration with suitable “temporal coordination”.

## **5. Conclusion**

Clinical skill is an important aspect in medical education, as it provides the platform for future clinical practice. It comprehends basic and clinical sciences for developing skills necessary as a future health professional. The early introduction of clinical skills classes was well received by the students with most of the students responding that clinical skills classes should be an integral part of the basic sciences curriculum. They also perceived clinical skills classes as a predictor of an optimal clinical practice. In the future, this study could be replicated in order to consolidate these findings and determine the students’ attitudes toward the early introduction of clinical skills after being exposed to the clinical skills classes for a longer period of time.

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## **Conflict of Interest**

None

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