

## Physical Assessment Simulations - A New Teaching Learning Experience for Pharm. D Curriculum

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### ABSTRACT

**Introduction:** The use of simulation for teaching physical assessment was introduced for the first time in pharmacy curriculum at the College of Pharmacy, Gulf Medical University, Ajman UAE. Previous reports have stated that preclinical training with patient simulation sessions may be used to enhance/ facilitate pharmaceutical care and training.

**Objective:** To evaluate the teaching and learning outcomes of various simulation techniques used to teach physical assessment skills to Pharm. D students.

**Materials & Methods:** A total of 42 students belonging to 3 batches of Pharm. D 8<sup>th</sup> semester registered for physical assessment course between 2012 1nd 2014 were provided training using various techniques for a period of 15 week. Simulation sessions like Intravenous cannulation, subcutaneous injection, and intranasal intubation, and other procedural skills were conducted using part task trainer. Full body mannequin was used to teach Basic Life Support (BLS), First aid and airway management. The training on systemic examination skills was provided using subject volunteers. The students were evaluated at regular intervals to assess their learning abilities and skills attained. Student feedback on simulation based teaching was also obtained using a structured questionnaire.

**Results and conclusion:** Majority of students (92%) strongly agreed that quality of training provided was excellent and students were very confident in practicing physical assessment skills on a simulation based training using mannequin. The high scores obtained during feedback response indicate that mannequin models offer higher quality of training in acquiring the physical assessment skills. As an advantage of this module, instructors were able to repeat experiments and adjust teaching environment suitably at different levels of understanding of the students. This study indicates that training sessions with mannequin can serve as a better tool as compared to standardized patients to provide physical assessment training skills.

**Keywords:** Physical Assessment, Simulation, Pharm. D Curriculum.

## INTRODUCTION

Optimization of medication therapy outcomes by clinical pharmacists has expanded their role in direct patient care. Application of physical assessment skills to monitor patient's outcome can definitely contribute to the improvement of patient care services. Teaching physical assessment techniques to pharmacy students has recently been made mandatory by accreditation bodies like Accreditation Council for Pharmacy Education (ACPE)<sup>1</sup>. Physical assessment skills can either be taught in the classroom (patient assessment laboratory) or in experiential settings. While the need to teach physical assessment techniques to pharmacy students has been established, the ideal method to teach has not yet scientifically established<sup>2</sup>.

The use of mannequins in simulation training has been used for quite a long time in the field of medical education, during the 20<sup>th</sup> century to practice clinical skills, problem solving, and making clinical judgments with the introduction of doctor-patient simulations<sup>3</sup>.

The advantage of simulation based training is that it allows the introduction of multiple learning objectives to be taught in a realistic clinical environment without harming real patients. Teaching using simulation techniques in medical profession has been demonstrated to produce a realistic environment so that when the students return to the workplace, they can easily apply their learning<sup>4</sup>.

The use of simulation for teaching physical assessment has been used most prominently in the curricula of nursing and medical schools, but more recently introduced within schools of pharmacy worldwide. There is a need to study the impact of simulation techniques in physical assessment training among pharmacy students as observed by their performance. Every pilot project needs to be evaluated not only from the instructor's side but also from the course participant's viewpoint. In view of above, an attempt was made to introduce various simulation based training methods to teach physical assessment skills to the Pharm. D students in order to evaluate the teaching and training outcomes.

## OBJECTIVE

To evaluate the teaching and learning outcomes of various simulation techniques used to teach physical assessment skills to Pharm. D students.

## MATERIALS AND METHODS

The Physical Assessment course was conducted annually for a 15 week period at the eighth semester of the 4<sup>th</sup> year of Pharm D program. This course was conducted in parallel with other clinical based courses like; Clinical Pharmacy, Disease and Therapeutic Management; Clinical Problems in Parenteral Nutrition; Medication Errors; Drugs of Abuse and Clinical Toxicology, Ethics of modern world, professional ethics. The duration of training was for 4 hours per week covered in 2 sessions of 2 hours for each. Each session included a set of learning objectives which were constructively aligned with the program outcomes. The course objectives and learning outcomes were revised periodically after each session based on the opinion of specialized pharmacy trainers on the past training experiences and also previous student performance in the real world scenario.

The typical plan for one session included 1 hour theoretical instructions followed by demonstration with subject expert in the defined skill. The second hour was dedicated to

small group practice sessions under supervision of the expert. Constructive feedback was provided to each student by the group instructor. The course was strategically placed in such a way that it is conducted before the community pharmacy practice posting in the hospital. This schedule aimed to provide opportunity for the student to gain sufficient clinical skills just before introductory clinical practice training in the hospital. This will enable the student to instantly transfer and translate the learned skills in real clinical setting.

**Participants:** Training faculty included professionals from multidisciplinary health care team. The team included physicians, pharmacists and nursing staff.

### The Instructional and Assessment Strategy

An alignment was ensured among the course objectives, Expected Learning outcomes, teaching strategies and the end of course evaluation of the students.

All sessions were based on simulation and were supported by simulators of various fidelity and modality. The training included the skills like Medication history taking skills, Patient examination skills, Basic procedural skills, Basic life support skills.

The Table-1 reflects the constructive alignment between the skill category, learning objectives, teaching tool and strategy and finally the assessment.

Table -1 Alignment between teaching strategy and simulation modality

S.No	Skills Category	Teaching Strategy	Simulation Modality	Assessment
1	History Taking Skills Counseling Skills	Small group demo and hands on session with feedback from experts	Standardized patient (SP)	1) Mid- course OSCE : Formative assessment 2) End Course OSCE: Summative assessment
2	Patient Examination Skills	Small group demo and hands on session with feedback from experts	Subject Volunteer and SP	1) Mid- course OSCE : Formative assessment 2) End Course OSCE: Summative assessment
3	Basic Procedural Skills	Small group demo and hands on session with feedback from experts	Low fidelity part task trainers	1) Mid- course OSCE : Formative assessment 2) End Course OSCE: Summative assessment
4	Basic Life Support Skills	Small group demo and hands on session with feedback from experts	High fidelity simulators	End of Course Skills Assessment for AHA License

**SIMULATION USED:**



**RESULTS**

**Evaluation and Assessment**

The course was first offered for 2008 batch students with the help of medical faculties at GMCHRC Ajman. As the course was totally new for pharmacy curriculum, medical faculties were involved more in the training for the first batch. During the subsequent years the past experiences and student feedbacks were taken into consideration and more pharmacists were included to improve student’s outcomes. The number of Lecture hours followed by practical hours and Instructors involve for respective batches are shown in Table -2.

Table 2. Distribution of teaching hours in three batches

Teaching Modality	Batch 2008	Batch 2009	Batch 2010
Lecture	30	20	15
Practical	30	40	45
Instructors	11	12	13
Extra training sessions	2	4	6

In first two batch, the training was conducted mainly by the physicians and nursing staff and the pharmacists had little role to play. However in third batch, the pharmacists had greater involvement with decreasing role of nursing staff. This changed the overall pattern with more time devoted to simulation technique training for physical assessment than on theoretical aspects.

Table 3. Involvement of training staff in different batches

Batch	Physician	Pharmacist	Nursing staff	Total
Batch 2008	6	1	4	11
Batch 2009	7	1	4	12
Batch 2010	8	3	2	13

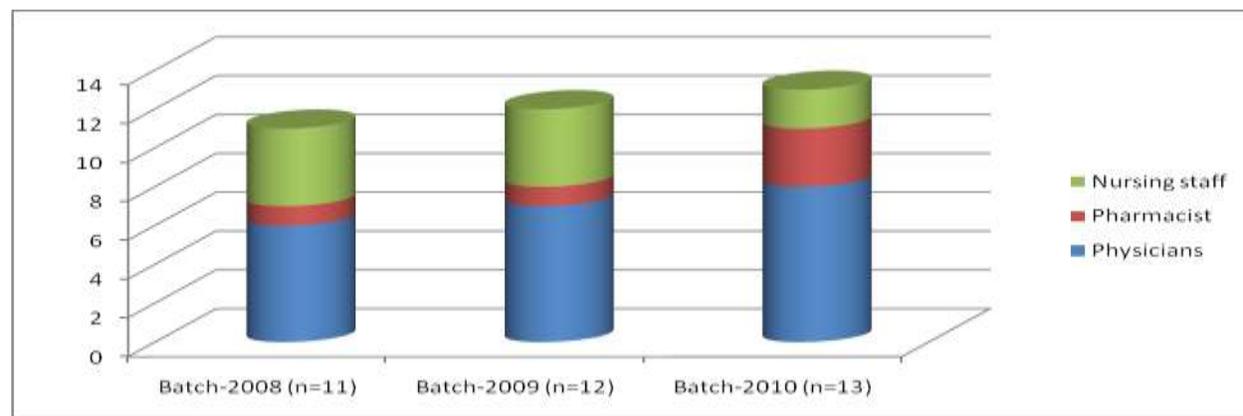


Figure 1: Training staff in different batches

**Participants:** Out of 42 students who underwent training, 16 students were from the batch of 2008, 12 students from the batch of 2009 and 14 students from the batch of 2010.

The students were evaluated periodically based on predefined skills and evaluation techniques. Student's performance in various simulation techniques is illustrated in table 4.

Table 4. The number of students securing A-grade in various simulation skills

S.No	Skills	Batch -2008	Batch- 2009	Batch- 2010
1.	History Taking Skills & Counseling Skills	3	4	14
2.	Patient Examination Skills	5	10	14
3.	Basic Procedural Skills	3	5	14
4.	Basic Life Support Skills	5	10	14

Grades of participants at course evaluation show that there is marked improvement in securing A-grade in subsequent batches. Initially there were only 18% student were able to secure A-grade in first batch where as 100 % A-grade in 2010 batch.

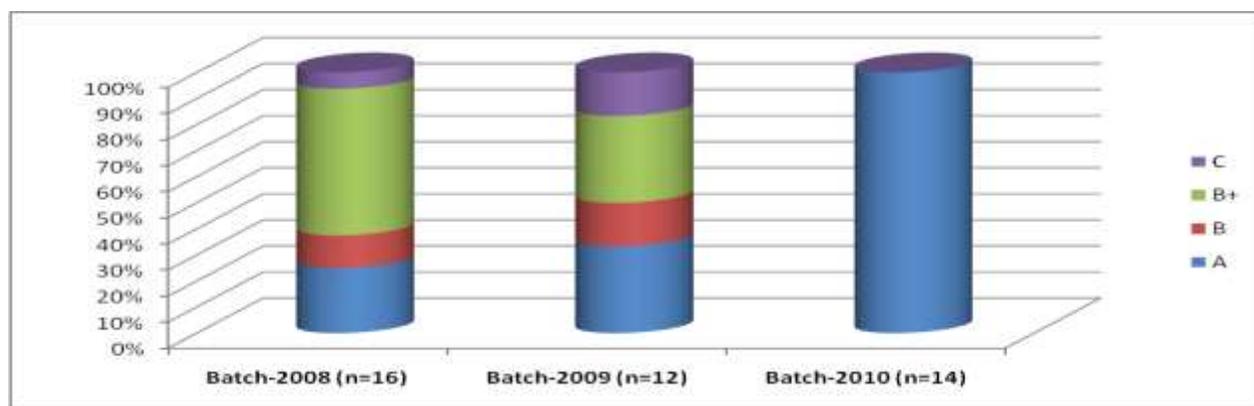


Figure 2: The number of students securing A-grade

## DISCUSSION

Simulation techniques in physical assessment are emerging fast in healthcare disciplines in 21<sup>st</sup> century.<sup>5</sup> the students had the freedom to practice the learned techniques to their convenience. The use of simulation also helped students to undertake certain procedures which are difficult to undertake in patients due to high risk.

The students expressed their confidence to meet the current needs of new healthcare system. It also helped student to develop competencies in different areas such as working as interdisciplinary teams, delivering patient-centered care, focusing on quality improvement, practicing evidenced-based medicine, and using information technologies as reported earlier<sup>6</sup>.

The Impact of pharmacy faculty on outcomes of student performance is higher than teaching by other professionals. Similar findings were reported by Bolesta S et al. in their study<sup>7</sup>.

A collaborative effort between interdisciplinary team of instructors with a pharmacy orientation have produced a curriculum that resulted in greater student comfort in latest batch with the use of physical assessment skills as compared to first batch. Such collaborations among nursing and pharmacy faculty during an ambulatory care Pharmacy experiences had favorable results as reported by Hilaire M et al.<sup>8</sup>

## CONCLUSION

From learning point of view, pedagogy plays an important role in patient care apart from classroom teaching and should be adopted as early as possible. The traditional assessment heavily depends on recall of facts and logical reasoning. However, the use of simulation techniques involves multiple skills fulfilling the needs of a learner as evident by the student's performance in end term assessment.

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