

# Introducing Physiology Practical Demonstration in Course Curriculum for the First Year Nursing Students

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## ABSTRACT

**Introduction:** Combination of didactic lecture, practical demonstration and performing experiments by students is followed in medicine, dentistry and bachelor of pharmaceutical sciences. The purpose of this study was to assess the attitudes of nursing students towards practical demonstration in physiology.

**Material and Methods:** Seventy three nursing students of the first year underwent practical demonstration of Physiology experiments. Students indicated their agreement or disagreement with the 8 items by ticking one of the five alternative responses.

Mean attitude scores were calculated for each item and for the total scale.

**Results:** The overall mean attitude score of 3.76 was towards the favourable side. Eighty seven percent of students agreed that practical demonstration reinforces concepts. Eighty nine percent of students found practical demonstration is a good form of learning experience.

**Conclusion:** The introduction of practical demonstration in addition to didactic lectures may help the students in understanding concepts in Physiology.

**Key words:** Practical Demonstration, Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OSPE)

## INTRODUCTION

Demonstration of Physiology practical experiments is common in medicine, dentistry and pharmaceutical sciences. The experiments which are demonstrated to MBBS (Bachelor of Medicine and Bachelor of Surgery) students in our college includes recording of spirogram using Knipping's spirometer, twelve lead recording of Electrocardiogram, Lister's perimeter and Stethography. Undergraduate students in MBBS also perform experiments following practical demonstration by faculty like red blood cell count, white blood cell count, absolute eosinophil count and differential leucocyte count. Combination of didactic lecture, practical demonstration by faculty and performing experiments by each student is also followed in bachelor of Pharmaceutical Sciences. Enriching the learning environment through incorporation of a variety of teaching and learning strategies both in and out of classroom should yield enhanced learning [1]. Studies have been done on Objective Structured Clinical Examination (OSCE) and Objective Structured Practical Examination (OSPE) to have a uniform evaluation and normal distribution of grading [2,3]. Research has shown that Objective Structured Practical Examination (OSPE) is an acceptable tool in Forensic Medicine at the undergraduate level [4].

Duration of Bachelor of Nursing Science first year course is eleven months and subjects include Anatomy, Biochemistry, Physiology, Microbiology, Fundamental Nursing and Psychology. The number of subjects in first year nursing is more when compared to first year MBBS. Practical examination is an important component of evaluation in the medical curriculum [5]. Performing experiments by the students and observation of demonstration experiments enhances understanding of concepts better and probably improves logical reasoning.

For any educational program to succeed, attention should be paid, not only to imparting knowledge but also to changing the

attitudes [6]. Hence attitudes by nursing students would help in introducing an additional teaching method to nursing students. The objective of the present study was to assess the attitudes of nursing students towards the introduction of physiology practical demonstration, in a nursing college and to evaluate its value as an acceptance tool.

## MATERIAL AND METHODS

A Likert-type scale containing 8 items was used to assess the attitudes of first year students of Nursing College, towards the introduction of practical demonstration. The survey was administered to the first year undergraduate nursing students in December 2012 after obtaining institutional ethical clearance.

The practical demonstration was held for the entire nursing class of first year students in 7 batches, which included red blood cell count, estimation of packed cell volume and erythrocyte sedimentation rate. Of the 77 students of the first year, there were two absentees on the day of the practical demonstration was conducted. The survey was carried out on the second day following the practical demonstration when a lecture in Physiology was scheduled for the entire nursing class. There were two absentees on the day of the survey in addition to the students who were absent on the day the practical demonstration was conducted. Seventy three students were required to indicate their agreement or otherwise with the 8 items by ticking one of the five alternative responses viz., strongly agree, agree, can't say, disagree and strongly disagree. Students were instructed not to discuss among themselves and return the completed response sheets. No incentives were offered to the students for participating in the survey. To ensure anonymity, the respondent names were not collected. Completed response sheets were received after obtaining informed verbal consent from all the students present on the day of the survey. There were no response sheets rejected because of inadequate information or inconsistent responses.

The responses to the Likert-type items were graded using a differential scaling procedure, from 1 (strongly agree) to 5 (strongly disagree) for negative items (statements numbered 3 and 5 in [Table/Fig-1], and from 1 (strongly disagree) for positive items (statements numbered 1,2,4,6 and 7 in [Table/Fig-1]). Mean attitude scores were calculated for each item as well as for the total scale. The Likert-type items were analyzed such that scores <3 indicated disagreement, scores >3 indicated agreement with a positive item or statement and vice versa for a negative item or statement. Score equal to 3 indicated neutrality towards a statement.

## RESULTS

Data obtained were entered into the computer using Microsoft Excel and analysed using SPSS version 16.0. Quantitative as well as

Sl. No	Item	Mean Attitude score $\pm$ S.D	Agreement Level (%)
1	it reinforces the concepts learnt during lecture class	4.37 $\pm$ 0.697	87.4
2	it is a good form of learning experience	4.45 $\pm$ 0.646	89.0
3	since duration of first year is 11 months, inclusion of practical demonstration might result in less time availability for self study	2.08 $\pm$ 1.102	41.6
4	it helps us to know the precautions to be taken in near future while working in blood bank	4.23 $\pm$ 0.874	84.6
5	power point slides with picture is sufficient to understand concepts	2.97 $\pm$ 1.481	59.4
6	I would recommend introduction of practical demonstration as a part of course curriculum	3.79 $\pm$ 1.201	75.8
7	observation of cells, instruments in practical demonstration is superior to lecture class and viewing pictures using computer	3.92 $\pm$ 1.077	78.4
8	it is necessary to obtain student's point of view while incorporating newer teaching methods in course curriculum	4.23 $\pm$ 1.124	84.6
	Overall mean score	3.76 $\pm$ 0.525	75.2

**[Table/Fig-1]:** Likert-type items used in the survey with mean attitude scores and agreement level

Sl. No	Item	Agree Number of Students (%)	Disagree Number of Students (%)	Can't say Number of students (%)
1	it reinforces the concepts learnt during lecture class	69(94.5)	1(1.4)	3(4.1)
2	it is a good form of learning experience	69(94.5)	1(1.4)	3(4.1)
3	since duration of first year is 11 months, inclusion of practical demonstration might result in less time availability for self study	9(12.3)	56(76.7)	8(11.0)
4	it helps us to know the precautions to be taken in near future while working in blood bank	62(84.9)	2(2.7)	9(12.3)
5	power point slides with picture is sufficient to understand concepts	35(47.9)	33(45.2)	5(6.8)
6	i would recommend introduction of practical demonstration as a part of course curriculum	54(74.0)	12(16.4)	7(9.6)
7	observation of cells, instruments in practical demonstration is superior to lecture class and viewing pictures using computer	53(72.6)	8(11.0)	12(16.4)
8	it is necessary to obtain student's point of view while incorporating newer teaching methods in course curriculum	63(86.3)	7(9.6)	3(4.1)

**[Table/Fig-2]:** Classifies scaling procedure into agreement, disagreement and can't say

qualitative analysis of the students' point of view about the inclusion of practical demonstration in their curriculum was done. In the quantitative analysis, mean and standard deviation were estimated and subsequently, the mean was converted to the scale of 0 to 100 to assess the level of students' agreement as a percentage. In qualitative analysis, the percentages of students agreeing or disagreeing with different aspects of practical demonstration were worked out.

The overall mean attitude score, item wise mean attitude score and standard deviation are shown in [Table/Fig-2] with the items used for assessment. The overall mean attitude score of 3.76 shows that students have accepted inclusion of practical demonstration in their course curriculum.

## DISCUSSION

In the present study we assessed the attitudes of undergraduate nursing students towards the practical demonstration in Physiology, in a nursing college in India.

Much attention is paid to the attitudes of students towards the training program especially when the conventional method of teaching is replaced by addition of practical classes, problem based learning and seminars by students. Study by Maloney et al., have observed significant difference between student ratings of perceived educational value, with teaching approaches of pre-recorded video tutorial and student self-video being rated higher than traditional live tutoring [7]. Study by Menezes et al., has shown attitude score towards favourable side indicating acceptance of OSPE [4]. Study by Nayar et al., has shown that OSPE is appreciated by teachers as well as students as a distinct improvement when compared with earlier pattern of practical examination [8]. The present study is about introducing a newer teaching method in addition to lecture class whereas studies by Menezes et al., and Nayar et al., is comparison of assessment in two kinds of examination. Students do accept change in teaching methods only when it is beneficial in understanding concepts and involves reinforcement of concepts. More than 87 percent students have agreed to items 1 and 2 which indicate that students are benefited by inclusion of practical demonstration. For the item number 4, 84 percentage of students have agreed indicating that students would prefer to know more facts before entering clinical postings. Seventy six percent students have disagreed for negative item number 3 indicating that students are aware of time devoted for didactic lecture and practical demonstration will be within college working hours. For item number 5, 33 percent students have disagreed which shows that if a choice is given to students, they would prefer a teaching method in addition to regular didactic lecture consisting of Power Point presentation.

The findings of the present study should be interpreted in the light of limitations. The present study is preliminary in nature as it involved only one class of students in one nursing college in India. Only 73 students of a particular class were included as participants and hence the results of this study cannot be generalized to other nursing colleges in India. Four out of 77 students did not participate in the study as they were absent on that particular day.

## CONCLUSION

The insights gained from this study will stimulate a change in the existing conventional pattern of didactic lectures to addition of practical demonstration in many other Nursing colleges in India and other developing countries.

## REFERENCES

- [1] Joshi A, Trivedi M. Innovations in Pharmacology Teaching. *International Journal of Pharmaceutical and Biomedical Research*. 2010;1(2): 62- 64.
- [2] Natu M V, Singh Tejinder. Objective Structured Practical Examination (OSPE) in Pharmacology- students' point of view. *Indian Journal of Pharmacology*. 1994;26:188-89.

- [3] Ananthkrishnan N. Objective structured clinical/practical examination (OSCE/ OSPE). *Journal of Postgraduate Medicine*. 1993;39:82.
- [4] Menezes Ritesh G, Nayak Vinod C, Binu VS, Kanchan Tanuj, Jagadish Rao P, Baral Prakash, et al. Objective structured practical examination in Forensic Medicine: Students' point of view. *Journal of Forensic and Legal Medicine*. 2011; 18:347-49.
- [5] Roy V, Tekur U, Prabhu S. A comparative study of two evaluation techniques in pharmacology practicals: Conventional practical examination versus objective structured practical examination. *Indian Journal of Pharmacology*. 2004;36(6):385-89.
- [6] Verma M, Singh T. Designing attitude scales: theoretical considerations. *Medical Education*. 1993;30:1369-72.
- [7] Maloney S, M Storr, S Paynter, P Morgan, D Ilic. Investigating the efficacy of practical skill teaching: a pilot-study comparing three educational methods. *Adv Health Science Education Theory Practical*. 2012 Feb22 [Epub ahead of print].
- [8] Nayar U, Malik S L, Bijlani R L. Objective structured practical examination: a new concept in assessment of laboratory exercises in preclinical sciences. *Medical Education*. 1986;20:204-09.

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