



ANALYSIS OF PRE-TEST AND POST-TEST PERFORMANCE OF SECOND YEAR PHYSIOTHERAPY STUDENTS AT A DIDACTIC LECTURE

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ABSTRACT

Introduction: Didactic lectures are the most commonly used method of teaching in many medical and paramedical institutes. There are certain drawbacks in this method. It is important to evaluate whether the learning objectives have been accomplished. In the present study pre-test and post-test with true and false answers are introduced for second year physiotherapy students in “hydrotherapy” lecture and assessed the effect on gaining and retention of knowledge acquired at the end of the lecture.

Materials and methods: 57 second year students were evaluated from two different batches in 2016 and 2017. Pre-test paper and the post-test paper were same, consisting of 30 questions with either true or false answer. Students were given 15 minutes for answering the pre-test paper before the lecture begins and they were given 15 minutes to answer post-test paper at the end of the lecture. Lecture hand out was given after collecting of the post-test papers.

Results and discussion: Analysis in the paired t test for pre- and post-test according to the mean and the standard deviation, the p value was < 0.005 at the test. Therefore according to the statistical analysis it can conclude that at the 5% of significant level, the post-test paper scored more compared to the pre-test and the students improved their knowledge after the lecture.

Conclusion: Giving pre-test paper and post-test paper will enhance the students concentration on the lectures especially in a didactic lecture and it will improve the knowledge they gained at the end of the lecture. Post-test paper will improve the immediate memory and it will help to remember the content of the lecture for a longer period. Therefore, it is strongly recommended that giving a pre-test and a post-test will enhance students’ knowledge and the memory in a didactic lecture.

Key words: Pre-test, Post-test, Didactic lecture, Physiotherapy students

INTRODUCTION

Physiotherapy undergraduates learn more in fundamentals of physiotherapy in their first year. In their second year, they begin to learn physiotherapy skills and other Physiotherapy centered modules. Physiotherapy skills module consist of lectures and practicals. “Hydrotherapy” is one of the topics under the module which will give a basic background of Hydrotherapy in Physiotherapy, conduct as a didactic lecture. The Hydrotherapy lecture is teacher centered procedure with providing the students as passive listeners. It is doubted that whether the students are properly listening and giving attention to the lecture all the time. Therefore it is important to evaluate whether the learning objectives have been accomplished. Previous studies showed that the students drop their concentration after 15-20 minutes of the

lectures (Penner J, 1984 and Verner C and vDickinson G, 1967). Even highly motivated postgraduate students were also same in the case (Stuart J and Rutherford R, 1978).

Teachers/ lecturers can realize what students actually learnt from the lessons by comparing pre- and post-tests. In addition to evaluating learning, pretests can enrich learning. Pre-testing may be valuable because it inspires more active involvement in learning, possibly by increasing general interest in the topic. Even the students couldn't give the correct answers in pre-tests; it improves subsequent learning(Kornell, N et al, 2009).The introduction of a pre-test/post-test tool supported achieving the learning objectives with a better understanding and utilization of the concepts(Cramer JS and Mahoney MC, 2001).

The present study aims at introducing true and false answered questions (there are only two options for the answer, either true or false) in didactic lecture classes and to assess whether there is any improvement of the student learning with pre- and post-testing. Pre-test is used to evaluate the knowledge of the students about the lecture topic before the lecture is delivered and post-test is used to evaluate the effect on gaining and retention of knowledge acquired at the end of the lecture.

MATERIALS AND METHODS

This study was conducted in the Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, in May 2016 for the second year students of 2016 (13/14 batch of students) and in June 2017 for the second year students of 2017 (14/15 batch of students). All the students from two groups of different batches were evaluated for the "Hydrotherapy" lecture in their corresponding year (year 2016 and 2017).

Pre-test paper was consist of 30 questions of true and false answers and has been given 15 minutes to complete the test before the lecture begins. The post-test paper is also consists the same questions of the pre-test paper, the only change of the two papers were that mentioning whether it is pre-test or the post-test in the top of the paper. Post-test paper was delivered at the end of the lecture. Before delivering the pre-test paper students were clearly instructed that the lecture topic of the day was "Hydrotherapy" and the power point presentation of the lecture will be given at the end of the session, so there is no need to copy down the lecture, they can properly listen to the lecture.After that, they were instructed of delivering the pre-test paper, and the marks of that will not be carried out for their end semester, and they were asked to answer it by their own, not coping by others, because pre-test is only to assess their pre- knowledge about "Hydrotherapy".Then the paper was delivered and given fifteen minutes to answer it, they have to select either the statement is true or false.In the pre-test paper they had to write their student registration numbers, to compare the results of pre- test and post-test, but the results will be kept confidentially, the results will not be display in the notice board or anywhere. (Informed written consent was obtained from the students before the study). After completed answering the pre-testpaper, all the papers were collected and kept in a separate file.Then the lecture session was started with the power point presentation. During the lecture, students were encouraged to ask questions and the lecturer asks questions from students. It was conducted for one and half hours and in between, students had a fifteen minutes break.At the end of the lecture, students were informed that they have to answer the post-test paper which is consist of the same questions as the pre-test paper. They had to write their student registration numbers in the post-test paper to compare the individual results of pre- and post-test. Students were clearly informed that post-test paper marks also will not calculated for their end semester examination and will not display anywhere. Then the post-test paper was delivered among students and after fifteen minutes all the papers were collected. All the post-test papers kept in a separate file as pre-test papers. At the end of the session, students were given the lecture handouts.

Statistical analysis

The mean and standard deviation were analyzed for pre and post-test for both the study groups from different batches. The p value was analyzed by comparing the pre- and post-test scores of both the groups for statistically significant differences by paired t test.

RESULTS AND DISCUSSION

32 second year students of the 13/14 batch (first group) and 25 second year students of 14/15 batch (second group) (total of 57 students) were participated in the study. In both the groups, all of the students are scored more in their post-test paper compared with their pre-test paper. Table 01 and 02 shows the score difference in pre- and post-tests in the two groups.

Table 01: Group 01 scores

Number	Pre-test score (/100)	Post-test score (/100)	Score difference (/100)
1	66.67	96.67	30.00
2	83.33	86.67	3.33
3	56.67	90.00	33.33
4	60.00	93.33	33.33
5	73.33	93.33	20.00
6	80.00	93.33	13.33
7	73.33	93.33	20.00
8	83.33	93.33	10.00
9	80.00	93.33	13.33
10	70.00	86.67	16.67
11	66.67	86.67	20.00
12	73.33	90.00	16.67
13	70.00	93.33	23.33
14	60.00	80.00	20.00
15	86.67	93.33	6.67
16	66.67	86.67	20.00
17	80.00	86.67	6.67
18	66.67	86.67	20.00
19	70.00	83.33	13.33
20	76.67	93.33	16.67
21	83.33	93.33	10.00
22	13.33	96.67	83.33
23	83.33	90.00	6.67
24	73.33	86.67	13.33
25	83.33	93.33	10.00
26	76.67	93.33	16.67
27	63.33	93.33	30.00
28	76.67	90.00	13.33
29	66.67	86.67	20.00
30	86.67	90.00	3.33
31	80.00	96.67	16.67
32	73.33	86.67	13.33

Table 02: Group 02 scores

Number	Pre-test score (/100)	Post-test score (/100)	Score difference (/100)
1	66.67	90.00	23.33
2	50.00	83.33	33.33
3	66.67	93.33	26.67
4	80.00	93.33	13.33
5	66.67	96.67	30.00
6	90.00	93.33	3.33
7	73.33	93.33	20.00
8	70.00	93.33	23.33
9	50.00	90.00	40.00
10	80.00	96.67	16.67
11	86.67	96.67	10.00
12	76.67	90.00	13.33
13	60.00	83.33	23.33
14	76.67	90.00	13.33
15	70.00	90.00	20.00
16	83.33	93.33	10.00
17	46.67	90.00	43.33
18	70.00	83.33	13.33
19	73.33	100.00	26.67
20	73.33	90.00	16.67
21	80.00	86.67	6.67
22	83.33	93.33	10.00
23	70.00	90.00	20.00
24	50.00	90.00	40.00
25	66.67	90.00	23.33

Total of 26 Students from both the groups score more than 20% in their post-test compared to the pre-test. Analysis in the paired t test for pre- and post-test according to the mean and the standard deviation, the p value was < 0.005 at the test. Therefore according to the statistical analysis it can conclude that at the 5% of significant level, the post-test paper scored more compared to the pre-test and the students improved their knowledge after the lecture.

CONCLUSION

All the students were scored more in their post-test paper compared to the pre-test paper. Pre-test paper is beneficial for testing the student's knowledge about the content of the lecture before delivering it. With answering the pre-test paper students were more concentrated on the lecture to find out the correct answers to the questions. In the post-test paper, students were applied what they learnt and scored more compared to pre-test paper. Giving pre-test paper and post-test paper will enhance the students concentration on the lectures especially in a didactic lecture and it will improve the knowledge they gained at the end of the lecture. Post-test paper will improve the immediate memory and it will help to remember the content of the lecture for a longer period. Therefore, it is strongly recommended that giving a pre-test and a post-test will enhance students' knowledge and the memory in a didactic lecture.

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REFERENCES

- Cramer, J.S., Mahoney, M.C., 2001. Introducing evidence based medicine to the journal club, using a structured pre and post test: a cohort study. *BMC Medical Education*; 1:6.
- Kornell, N., Hays, M.J., Bjork, R.A., 2009. Unsuccessful retrieval attempts enhance subsequent learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*; 35: 989-998.
- Penner, J., 1984. Why many college teachers cannot lecture. Springfield, IL: Charles C. Thomas.
- Stuart, J., Rutherford, R., 1978. Medical student concentration during lectures. *Lancet*; 23; 514-516.
- Verner, C., Dickinson, G., 1967. The lecture: An analysis and review of research. *Adult Education*; 17: 85-100.