

Original Research Article

DISSECTION: BEFORE OR AFTER LECTURE IS EFFECTIVE IN TEACHING ANATOMY: PERCEPTION OF UNDERGRADUATE MEDICAL STUDENTS

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ABSTRACT

Background: In Undergraduate Medical Education, understanding Anatomy is the basic step for studying other branches of Medical Science. Traditionally Gross Anatomy has been taught by lectures and cadaveric dissection. Currently no particular format is being followed in understanding Anatomy using Lecture classes and Dissection of particular organ or body area. This research work has been planned to find the more effective method of teaching/learning Gross Anatomy using lecture and cadaveric dissection.

Objectives: 1. To compare 'Lecture after cadaveric Dissection' of body parts and 'Dissection after Lecture' as an effective method for comprehension of Anatomy 2. To find the perception of the study participants regarding Lecture after cadaveric dissection and dissection after lecture as a better method for understanding Anatomy

Methodology: Quasi experimental study was conducted among MBBS Students of 2016 batch posted in the department of Anatomy, Dr.SMCSI Medical College, Karakonam, Thiruvananthapuram district, Kerala, India during the period of 5 months from April 2018. Post procedural test scores for 'Dissection after Lecture' was compared with that for 'Lecture after Dissection'. Perception of the study participants on the two learning procedures was studied by a Likert-type questionnaire

Results: Post procedural test scores were calculated and compared between 'Dissection after Lecture' and 'Lecture after Dissection' using Unpaired 't' test. 'Lecture after dissection' was found to be a better method than Dissection after Lecture ('t' 39.536;26.128; P < 0.001) in teaching/learning Anatomy. Students felt that the method of 'Lecture after Dissection' helped in better Cognitive gain, Easiness in learning, Retention of memory, Drawing diagrams, and in Securing higher marks.

Conclusion: 'Lecture after dissection' was found to show higher post procedural test scores than 'Dissection after Lecture' and this difference was statistically significant. Perception of the study participants about the two learning methods was studied and 'Lecture after dissection' was found to be the better teaching learning method that reflected positive perceptions.

KEY WORDS: Cadaveric Dissection, Lecture, Perception.

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INTRODUCTION

Anatomy, the study of the structure of the human body is one of the most basic and important subjects studied by the undergraduate

medical students in their medical career [1]. The discipline of anatomy forms the basis for learning other disciplines such as physiology, pathology as well as clinical specialties includ-

ing clinical medicine, surgery and radiology. Teaching and research in Anatomy is based mainly on dissection of cadaver. A sound knowledge of Anatomy is essential from the beginning of medical education. The knowledge obtained through dissection of human body is an indispensable part of undergraduate medical education for creation of efficient health care professionals.

Thus, a thorough knowledge of Anatomy is imperative for crucial medical skills that include eliciting a clinical history and examination as well as clinical reasoning that would contribute to diagnosis of disease and management of patients.

Recently, the medical education programs have necessitated a drastic reduction in time and resources dedicated for teaching Anatomy, compared to the traditional typical five-year undergraduate medical program [2].

Anatomy has been taught using different approaches including didactic lectures and cadaveric dissection. Traditionally, cadaveric dissection has been the mainstream of delivering Anatomy curriculum in medical colleges [3].

The usefulness of anatomical dissections to reinforce the compassionate attitudes among medical students has been discussed in the literature [4].

Even though different methods are available, Gross Anatomy has been taught in medical schools by lectures and cadaveric dissection⁵. In teaching Anatomy, anatomists are of opinion that it is not about which method is being used, but about how the methods are being used⁶. Currently no particular format is being followed in using Lecture classes and Cadaveric Dissection for understanding Anatomy of particular organ or body part [3].

This research work has been planned to find whether 'dissection after lecture' or 'lecture after dissection' is the more effective method for teaching/learning gross Anatomy using lecture and cadaveric dissection. Aims of the study were planned: 1.To compare 'Lecture after cadaveric Dissection of body parts' and 'Dissection after Lecture' as an effective method for comprehension of Anatomy and 2. To find the perception of the study participants regard-

ing 'Lecture after cadaveric dissection' and 'dissection after lecture' as better method for understanding Anatomy.

METHODOLOGY

Study Design: Quasi Experimental study

Study Duration: Five months from April 2018

Study Area: Department of Anatomy, Dr.SMCSI Medical College, Karakonam, Thiruvananthapuram district, Kerala, India .

Study population: 150 Students of 2016 batch MBBS

Inclusion criteria: MBBS students belonging to both genders who gave consent for participating in the study and were present during the day of data collection.

Exclusion criteria: Those students who were not willing to participate in the study and those who were absent on the day of data collection were excluded from the study.

Sampling Method: Random sampling method.

Sample size = 150

Study Tool: Pretested, Semi structured Questionnaire

Methods of Teaching/Learning compared were:

1. Lecture after Dissection
2. Dissection after Lecture

Data collection method

- Students selected were sensitized about the project.

- Topics for study were selected

- After getting consent, the students included were given Lecture followed by Dissection on one topic (Topic 1) selected.

- Students' knowledge Topic 1 was assessed by questions including short answer questions and Multiple choice questions prepared on the Topic1.

- Subsequent week, the Study participants were given Dissection followed by Lecture on another topic (Topic 2) selected

- Students' knowledge on Topic 2 was assessed by questions including Short answer questions and Multiple choice questions prepared on the Topic 2.

- Perception of the study participants on these

two learning methods was studied by a Likert-type questionnaire (Appendix II)

Data analysis: Data were entered in Microsoft EXCEL and analyzed using SPSS 20.0.

Mean Scores of the marks secured by the participants for both the methods were compared using 'paired t test'. Percentage of Perception was calculated.

Ethical Considerations: Informed consent from the study participants and Ethical Committee clearance from the Institutional Ethics Committee were obtained before conducting the study.

RESULTS

A total of 150 students that corresponds to the total number of students enrolled in the 2016 batch MBBS participated in the study. Students participated in the study were of the age group of 19 to 20 years. 46% of them were males and 54% females.

Students were subjected to Dissection followed by lecture on one topic and Lecture followed by dissection on another topic of equal importance. The post procedural knowledge of the study participants was assessed and compared. The

questionnaire on perception evaluated the concerns and feelings of the students on the two methods of teaching/learning Anatomy.

Comparison of Post- procedural test scores:

The marks obtained by the study participants for Dissection after Lecture and Lecture after Dissection were compared .

Table 1: Post-procedure Evaluation scores (Unpaired t-test).

Topic	Teaching/Learning method	Mean \pm SD	t	P value
Topic 1	Dissection after Lecture	71.78 \pm 3.38	39.536	P < 0.001 (significant)
	Lecture after Dissection	92.16 \pm 2.58		
Topic 2	Dissection after Lecture	70.79 \pm 4.20	26.128	
	Lecture after Dissection	90.19 \pm 4.09		

The average scores for both the methods were calculated and compared between 'Dissection after Lecture' and 'Lecture after Dissection' using Unpaired 't' test. Lecture after dissection was found to be better teaching/learning method in comparison to Dissection after lecture. This difference was found to be statistically significant ('t' 39.536 and 26.128 for Topic 1 and Topic 2 respectively with p value <0.001) as shown in Table1

Table 2: Comparison of perception about Dissection after Lecture and Lecture after Dissection.

T/L Method	Perception	Strongly Agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)	Total N (100%)
Lecture after Dissection	Better Cognitive	115(76.7)	34(22.7)	0%	1 (0.6)	0	150
	Easiness in learning	102(68)	30(20)	0%	18(12)	0	150
	Retains memory	99(66)	33(22)	0%	12(8)	6(4)	150
	Secure more marks	132 (88)	12(8)	0%	6(4)	0%	150
	Helps drawing diagrams	102(68)	15(10)	0%	30(20)	3(2)	150
Dissection after Lecture	Better Cognitive	30(20)	18(12)	0%	102(68)	0	150
	Easiness in learning	1 (0.6)	34(22.7)	0%	115(76.7)	0	150
	Retains memory	6(4)	33(22)	0%	99(66)	12(8)	150
	Secure more marks	6(4%)	12(8)	0%	132 (88)	0%	150
	Helps drawing diagrams	15(10)	30(20)	0%	102(68)	3(2)	150

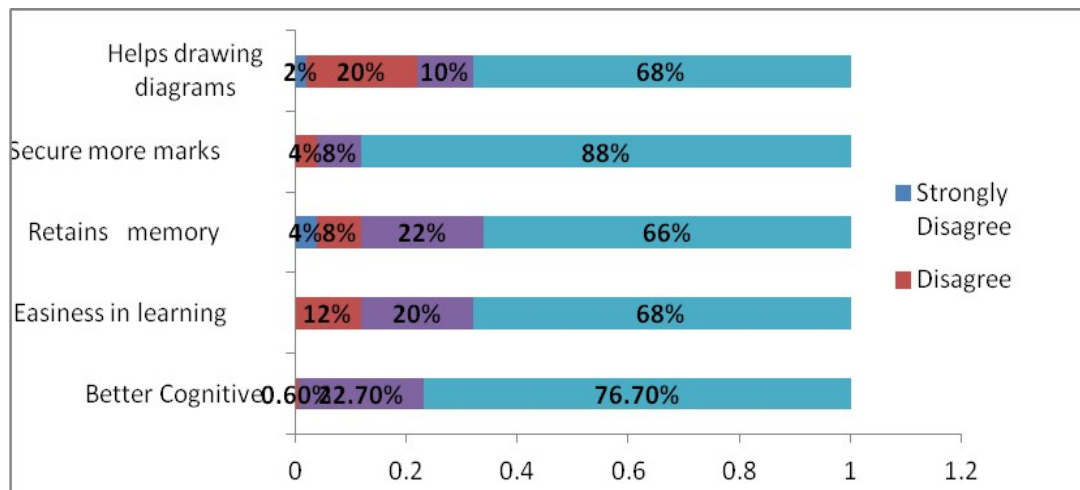
Table No. 2 shows Comparison of perception about 'Dissection after Lecture' and 'Lecture after Dissection'. It showed that the method of 'Lecture after Dissection' helped in better Cognitive gain, Easiness in learning, Retention of memory, Drawing diagrams, and in Securing higher marks than 'Dissection after Lecture'. This difference was found to be statistically significant.

Perception of students on Lecture after Dissection and Dissection after Lecture

Perception of the study participants on the two learning procedures was studied by a Likert-type questionnaire.

Majority of the study participants perceived Lecture after Dissection as the better teaching / learning method in comprehending Anatomy. Among the two methods, majority of the participants (>75%) agreed or strongly agreed with Lecture after Dissection as the better teaching learning method that reflected positive perceptions (Fig. 1)

Fig. 1: Perception of the participants on Lecture after Dissection.



DISCUSSION

A sound knowledge of anatomy is essential from the beginning of a medical education program and knowledge obtained through dissection of human body is an indispensable part of the undergraduate medical curriculum.

Relevance of dissection of human body through the proper use of cadavers is of prime importance before learning living anatomy.

Traditionally Gross Anatomy has been taught in medical schools by lectures and cadaveric dissection. In teaching Anatomy, anatomists are of opinion that it is not about the methods being used, but about how the methods are being used [6]. Previous studies have revealed that students rated cadaveric dissection as an important method of learning anatomy [7].

The experience and education gained through the use of human cadaver through dissection is far superior and very much different than the learning provided by artificial substitutes and textbooks [8].

Early systematic human dissection were carried by Greek physicians Herophilus of Chalcedon and Erasistratus of Chios in the early part of third century BC [9]. Even now, many anatomists believe that practice of dissection is an invaluable tool for teaching Anatomy [10].

In the present study, the test scores on the knowledge of the study participants following the two methods revealed that Lecture after dissection was a better teaching/learning method in comparison to Dissection after lecture.

Eventhough a number of studies have been published comparing different modalities for teaching anatomy including dissection, generalization of results is difficult owing to the heterogeneity of study methodologies and the lack of use of standardized assessment of knowledge in Anatomy [5].

A review of cadaveric dissection as a teaching method in medical schools reported that a number of studies supported dissection as a better method of learning when compared to non-dissection-based methods although some authors were of a contradictory opinion [5].

The participants in previous studies recognized that dissection made learning of anatomy more interesting whilst providing a deeper understanding of human anatomy [5].

Reviews done by Winkelmann [6] have shown that previous studies comparing different forms of anatomy teaching methods have provided mixed results. But the methods used in these studies to assess and compare different approaches of anatomy teaching were not uniform and they might not have comprehensively assessed the strengths and weaknesses of different methods. So the effectiveness of a particular mode of learning could vary across the curriculum, limiting the reliability of direct comparisons.

Anatomical dissection is systematic exploration of preserved human cadaver by sequential division of tissue layers and liberation of certain structures by removal of regional fat and connective tissue with the aim of supporting the learning of gross Anatomy by visual and tactile

experience. Learning on human cadavers is complex learning experience and is not easy to quantify and evaluate objectively [11].

A recent study has shown that students exposed to Power Point-based small group sessions performed better in written type of exams than the oral exams and those who took part in cadaveric dissection performed well in both written and oral exams [12].

According to a study by Joughin G (2000), Viva-voce has been considered an effective mode of testing knowledge essential for solving clinical problems as well as means of testing rational and well-articulated answers [13].

MacKenzie L (2000) found that Anatomy models including 3D computer graphic programs can be a useful tool for beginners to understand basic anatomy as well as to understand complex anatomical relationships and cross-sectional anatomy [14].

Limitations: Study setting was conveniently chosen and was done only in one centre, Study was done only on selected topics in Anatomy.

Implications: With the medical education field facing changes in the last decades, radical changes have to be introduced in the way the medical educators teach and students learn. Innovations like introducing newer methods or changes in the curriculum are done so that students can understand the subject very well. Better teaching/learning methods will help the students understand Anatomy well as it forms the basis for learning all other disciplines related, thereby helping the students to be competent medical graduates efficient to provide quality health care services to the community.

CONCLUSION

The present study showed that in comparison, Lecture after Dissection is a more effective method over Dissection after Lecture for teaching Anatomy for second year MBBS students. From the student's perception also, it was found that Lecture after Dissection to be more effective method than Dissection after Lecture. In the present study, only a few topics could be covered from the total content of second year MBBS curriculum. A study of longer duration covering a wider range of topics and preferably

integrated into the routine teaching schedule may be required to ascertain the efficacy of Lecture after Dissection as a better method for comprehending Anatomy

Recommendations: Lecture after Dissection can be introduced for some selected topics in Anatomy in the MBBS curriculum. But further studies are needed to see whether it can be introduced for all topics in Anatomy. A judicious combination of teaching/learning methods may be preferred over implementing one method alone.

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Conflicts of Interests: None

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