

Anatomy Museum: Influence on First Year MBBS Students

SACHIN TOTE¹, DARSHANA TOTE²

ABSTRACT

Introduction: Museum is display of collection of artifacts of scientific significance to specific group of visitors. Anatomy museum plays a vital role in the career of medical student. It allows first hand visual impression to the student and thus, helps in understanding the dissection well.

Aim: To study impact of early exposure of anatomy museum on first year MBBS students.

Materials and Methods: This was a cross-sectional study including first year medical students (n=70). Students were

split into two groups. Group A students were directly subjected to dissection after theory teaching while Group B was shown museum prior to dissection. Understanding was assessed by pre and post-questionnaire.

Results: In Group A, there was significant rise in mean post-test score from 4.38 to 5.46 while in Group B the rise was from 4.43 to 7.86.

Conclusion: There appears to be a significant advantage for students, of anatomy museum exposure, before the dissection in learning anatomy.

Keywords: Artifact, Didactic lecture, Medical education, Specimen

INTRODUCTION

The word museum is derived from the Greek word "mouse ion" which means "seat of the Muses" (Muses are the patron divinities in Greek mythology of the arts) and hence, a place is set for the study and display of the arts related to any faculty is termed museum [1]. In the present context, the term represents a collection of models representing human anatomy.

A display of collection of artifact of scientific or artistic significance to specific group of visitors is defined as a Museum [2]. Museum plays a dominant role in educating the community by displaying the intricacy of human anatomy to medical students and public [3]. The concept of Anatomy museum was first conceived by Edinburg Surgeons during 1700-1763 AD. "Cabinet of Curiosities" were made that contained anatomical pictures, books and few specimen [4].

In the life of medical students first year plays a crucial role in his medical career through-out his life. The medical student gets exposed to totally different world. The study pattern and material are varied in nature. Among these, Anatomy museum plays a major role in medical curriculum by contributing to the field of research and education from time immemorial, by understanding the various aspects of Human Anatomy [5]. It allows a first-hand visual impression to the student. The use of modern technology is making Anatomy Museums more advanced, thus it helps to established contemporary syllabus in the subject of anatomy for First year MBBS students and students undergoing postgraduate education [6]. It also establishes a fresh tissue dissection laboratory to them.

Hence, study was conducted with the broad aim to assess the impact of exposure to anatomy museum prior to dissection in better understanding of subject.

MATERIALS AND METHODS

This was a cross-sectional study conducted among the first year medical students (n=70) from Jawaharlal Nehru Medical college Sawangi Meghe Wardha from the 2018 academic year. The study proposal received Institutional Ethical Committee approval with letter number DMIMS (DU)/IEC/2018-19/4563 dated 07/08/2018.

Total 70 students were distributed in two groups by computer generated random allotment. Two Groups A and B of 35 students

each were made. A topic of spleen was taught by means of didactic lecture over period of 1 hour by the primary researcher. A pre-test questionnaire was administered to both groups. Group A was taken to the Dissection hall directly while Group B was shown Museum Specimen initially, followed by the actual dissection. Briefing regarding the specimen and dissection was done by single evaluator to avoid any bias. Museum specimen was briefed to the group for 15 minute prior to start of dissection session. Then, both the groups were subjected to same questionnaire as post-test, immediately after the dissection session.

The questionnaire was prepared by researcher and was validated by scientific scrutiny committee of the institute with 90% validity by Average Conguency Percentage score (ACP). The questionnaire was objective type based on the topic covered and content was spleen. The answers were assessed by a single evaluator to avoid any bias.

STATISTICAL ANALYSIS

t test was applied to test the level of significancy. p-value less than 0.05 was considered as statistically significant.

RESULTS

All the students' belonged to first year MBBS, so in between 17-20 years of age with mean of 18.5 years and SD 1.29. In the study population, 45% were female while 55% were male students.

On comparing the result of pre-test of both group A and B, a statistically not significant p-value of 0.806 was observed. This shows that both the groups were comparable.

When the group A students were subjected to didactic lecture for 1 hour followed by dissection, they were able to understand the topic significantly as is seen in [Table/Fig-1].

	Mean	N	Std. deviation	t-test	p-value
Group A post-test	5.46	35	0.605	16.029	<0.001
Group A pre-test	4.38	35	0.924		

[Table/Fig-1]: Group A assessment.

After exposing the Group B students to Didactic Lecture for 1 hour followed by museum specimen briefing for 15 minutes followed

by dissection. There was noticeable rise in knowledge in group B students due to exposure of museum [Table/Fig-2].

	Mean	N	Std. deviation	t-test	p-value
Group B post-test	7.86	35	0.822	16.436	<0.001
Group B pre-test	4.43	35	0.959		

[Table/Fig-2]: Group B assessment.

On comparing the result of pre-test of both group A and B, the p-value was 0.806 which was statistically not significant.

While the mean values of the post-test of both Groups, A and B is 5.46 and 7.86 shows that there is huge advantage of the museum exposure before the dissection in learning anatomy. The p-value <0.001 signifies the statistical importance of the new learning methodology [Table/Fig-3].

	Group A	Group B	p-value (A vs B)	p (pre vs post-test)
Pre-test score	4.38±0.924	4.43±0.959	0.806 NS	<0.001 S (Group A)
Post-test score	5.46±0.605	7.86±0.822	<0.001 S	<0.001 S (Group B)

[Table/Fig-3]: Comparison between both groups.

On comparing pre-test and post-test scores in both groups individually both showed statistically significant difference in score of both tests.

DISCUSSION

In the present study, exposure of candidates to museum specimen before dissection session was found to be very useful in understanding the topic.

Nwachukwu C et al., stated that learning anatomy by active exploration through cadaveric dissection actually contributes to improvement of anatomic knowledge. Medical students also feel that dissection deepens their knowledge regarding anatomical structures and provide them with 3D perception of structure and thus helps in recalling what is learnt [7]. Similarly, in the current study, the post-test score improved significantly after dissection session stating that dissection is an effective tool in understanding anatomy.

But as a limitation, some medical students find it difficult to adjust to dissection hall atmosphere and here come the role of museum and models. The Anatomy museum plays a vital role in the learning process of medical student and public too.

Patil S et al., in his study of 150 students stated that 71.3% students faced major difficulty in assessing the relations of viscera, so they preferred original specimen of viscera for studying relations of viscera. In present study, when students were taught on specimen prior to actual dissection the learning and recollection was more as compared to direct subsection to dissection [8].

Kramer B and Soley JT, on basis of his survey of medical students stated that on basis of just lecture student's face difficulty in having 3D assessment of viscera relations hence, keeping the viscera model from museum for studying relations is a better way for understanding the concepts [9].

With the advent of new technology, the anatomy museums are becoming outdated and hence are been replaced in the medical curriculum. But as per study by Mareez YM et al., after some modifications and addition of technology, it can become more useful like in Leiden University students felt that audio guided museum tours were useful in understanding the topic and was also clinically relevant. Similarly, in the current study, the detailed explanation of museum specimen was found to be effective in understanding the topic [10]. Similar suggestion is by Yehia MA et al., that if the museums are equipped with state of art technology then their utility in medical curriculum will be enhanced [11].

Limitation(s)

Small sized study group and single centre study was the limitation. Need to have a study with larger population and variety of topics.

CONCLUSION(S)

Didactic lecture of atopic followed by dissection of the tissue gives good information about the topic covered. But, addition of museum specimen demonstration helps more to recollect the learnt information.

REFERENCES

- [1] Findlen P. The Museum: Its classical etymology and renaissance genealogy. *J Hist Collections*. 1989;1:59-78.
- [2] Alexander EP, Alexander M Museums in motion: An introduction to the history and functions of museums. Row man & Littlefield, North America, USA. 2008;2:1-6.
- [3] Kamath VG, Avadhani R. Archives of Anatomy from the 17th to 21st century. *Arch Med Health Sci*. 2016;4:135-43.
- [4] Kemp D, Barner S. Surgeons' Hall: A Museum Anthology. Royal College of Surgeons, Edinburgh, UK. 2009: 1-10.
- [5] Maraldi NM, Mazzotti G, Cocco L, Manzoli FA. Anatomical wax work modeling: The history of the Bologna Anatomy Museum. *Anat Rec*. 2000;261(1):5-10.
- [6] Walker JF. Formaldehyde. Reinhold Publishing Corporation, New York, USA, 1944;1: 2-3.
- [7] Nwachukwu C, Lachman N, Pawlina W. Evaluating dissection in the gross anatomy course: Correlation between quality of laboratory dissection and students outcomes. *Anat Sci Educ*. 2015;8:45-52.
- [8] Patil S, Quadir N, Deopujari R, Gajbhiye V. Perception of medical students towards artificial bones and pop models of viscera. *Int J Anat Res*. 2015;3(1):869-72.
- [9] Kramer B, Soley JT. Medical Students Perception of problem Topics in Anatomy. *East African Medical Journal*. 2002;79(8):408-14.
- [10] Mareez YM, Willems LN, Wells MR. The role of medical museums in contemporary medical education. *Anat Sci Educ*. 2010;3(5):249-53. doi: 10.1002/ase.168.
- [11] Yehia MA, Mareez MD, Luuk NA, Willems. The use of medical school museum in teaching anatomy within an integrated medical curriculum. *Teaching Anatomy*. 267-275. DOI: 10.1007/978-3-319-08930-0-30.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Anatomy, Jawaharlal Nehru Medical Collage, Sawangi (Meghe), Wardha, Maharashtra, India.
2. Professor, Department of Surgery, Jawaharlal Nehru Medical Collage, Sawangi (Meghe), Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr Sachin Tote,
Shree Hospital, Bachelor Road, Wardha-442001, Maharashtra, India.
E-mail: drsachintote@gmail.com

PLAGIARISM CHECKING METHODS: [Lain Hei et al.](#)

- Plagiarism X-checker: Sep 17, 2019
- Manual Googling: May 15, 2020
- iThenticate Software: Jun 26, 2020 (17%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Sep 16, 2019**

Date of Peer Review: **Oct 10, 2019**

Date of Acceptance: **May 20, 2020**

Date of Publishing: **Jul 01, 2020**