



Original Research Article

Evaluation of teaching methods in anatomy : A study on first year medical students

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ABSTRACT

Introduction: Anatomy is widely studied subject amongst the medical students. Anatomy has maximum hours in preclinical subjects to be studied by first year students of medical, dental and physiotherapy as well as occupational therapy. As anatomy is taught under many headings like gross anatomy, embryology, histology, osteology, radiology, living and surface anatomy, students spend maximum time in understanding anatomy. So considering these facts and time constraints teaching – learning methods needs to be updated and evaluated. So in the present article a study was conducted on I year MBBS students (n =250) and a questionnaire was given them to answer. In that they were asked to give their preferences to the method of teaching in every head in anatomy.

Result: Almost 70.4 % students chosen cadaveric dissection as preferred method to study gross anatomy. Others suggested that it should be assisted by audiovisual aids. Most students preferred 3 D animations and models to study embryology. For studying histology 59.2 % students preferred slide projection or power point presentation as method of choice.

Conclusion: Cadaveric dissection remains the choice through years to learn gross anatomy whereas other heads are to be taught by combination of traditional methods and newer instructional methods. This will result in medical graduates committed to continuous improvement in skill and knowledge.

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1. Introduction

Anatomy is most widely studied subject amongst the medical and allied students. It is a vast subject having multiple subheadings. All first year students spend most of their study time in reading Anatomy. In spite of studying more, students find it difficult to reproduce and recollect Anatomy. It has maximum hours of teaching among preclinical subjects. So considering all these facts it is essential to make subject easy for students. Teaching learning in Anatomy can be made easy by modifying the traditional anatomy education delivered by didactic lectures and cadaveric dissection. Curriculum in Anatomy should be delivered by combining different methods of teaching like computer assisted, problem based learning, self-directed and directed self-learning in addition to traditional one.

So the purpose of this study was to find out best possible methods to teach every head of Anatomy by compilation of

students preferences and teachers experience.

2. Materials and Methods

In the present study, a questionnaire was prepared mentioning different methods of teaching every head of Anatomy. This was given to 250 students of first year MBBS 2017 batch in our medical college in the department of Anatomy after they have finished their histology practical's for preliminary exams. They were told to answer the questionnaire. Study was carried out batch wise over the period of eight days. Survey was carried out on their preferences given to the method of teaching. After completion of the survey, observation and result were tabulated.

3. Observation and Results

The questionnaire consists of methods of teaching theory and practical. The teaching theory includes didactic lectures

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Table 1: A: Theory: Method of teaching and response of students in didactic lectures in different categories

Method of Teaching		Lectures			
		Gross	Histology	Embryology	Genetics
Chalk and Talk	1	166 (66%)	59 (23.6%)	56 (22.4%)	60 (24%)
	2	70 (28%)	96 (38.4%)	60 (24%)	66 (26.4%)
	3	24 (9.6%)	60 (24%)	114 (45.6%)	84 (33.6%)
	4	12 (4.8%)	35 (14%)	20 (8%)	40 (16%)
TOHP	1	24 (9.6%)	34 (13.6%)	20 (8%)	68 (27.2%)
	2	30 (12%)	60 (24%)	54 (21.6%)	56 (22.4%)
	3	119 (47%)	67 (26.8%)	80 (32%)	84 (33.6%)
	4	77 (30.8%)	89 (35.6%)	96 (38.4%)	42 (16.8%)
PPT and 3D	1	72 (28%)	135 (54%)	169 (67.6%)	146 (58.4%)
	2	115 (46%)	65 (26%)	38 (15.2%)	60 (24%)
Animation	3	45 (18%)	38 (15.2%)	30 (12%)	37 (14.8%)
	4	18 (7.2%)	12 (4.8%)	13 (5.2%)	7 (2.8%)

and problem based learning. Practicals in anatomy are taught by cadaveric dissection, histology practicals, embryology models, demonstrations in osteology, radiology, and surface and living anatomy. All the possible and feasible methods of teaching were included in the questionnaire. Students' responses were noted and tabulated and result prepared.

4. Method of teaching

Responses: - 1. Best 2. Good 3. Average and 4. Bad

Problem based learning was preferred by 60 (24%) over didactic lectures. Students preferred problem based learning in gross anatomy only.

As it seen from above tables, students have preferred didactic lectures over problem based learning provided that it should be associated with computer assisted methods.

Almost 166 (66%) students found chalk and talk method best for gross anatomy lectures whereas 70 (28%) found it good and 12 (4.8%) found it bad. Transparency and overhead projector was average method 119 (47%) and bad by 77 (30.8%). Power point and 3D animations were good method according to 115 (46%) and best by 72 (28%) students. For teaching histology, 135 (54%) students found power point and 3 D animation as the best method whereas chalk and talk as good method by 96 (38.4%). TOH was graded as bad method by 89 (38.4%). Lectures in embryology need models to explain to the students. As taking models to lecture hall is not possible every time, 3D animations can be shown to them. 169 (69.6%) students selected PPT and 3D animation as the best method for lecture followed by chalk and talk as average by 114 (45.6%). Lectures on genetics according to 146 (58.4%) students were best taught by power point, 3D animations. Chalk and talk and TOHP are graded as average methods by 84 (33.6%) of students (Table 1).

When the question of teaching practicals in Anatomy comes, dissection stands the method of choice for gross anatomy. 176 (70.4%) students preferred cadaveric

dissection over videos or power point presentation of dissection. Histology practical was best taught by observing slide under light microscope as stated by 148 (59.2%) students. But students have also suggested that the photomicrograph of the slides should be shown prior to practicals (Table 2).

Demonstrations in Anatomy are very important as it involves small group teaching and rapport between student and teacher. 216 (86.4 %) and 231 (92.4%) students preferred real bones and real organs respectively for study over pop models. According to 189 (75.6%) students, surface and living anatomy are best taught on living subjects and should be associated with prior videos demonstrating the methods.

5. Discussion

Anatomy takes the major share in the preclinical subjects. Teaching and learning anatomy and making it easier for students, remains the challenging task for teachers. In the present study, it was observed that students preferred didactic lectures (76%) over problem based learning. According to students, problem based learning lacks detailed description of anatomy of particular topic. Bergman et al¹ noted that innovations in undergraduate medical education like integration of disciplines and problem based learning concerned, student perceived deficiencies in their anatomical knowledge when started clinical training. For studying gross anatomy, maximum number of students preferred chalk and board method of lecture delivery (66%) followed by Power Point and 3 D animations. According to Singh et al,² traditional chalkboard method using simple diagrams which students can draw are excellent teaching tool ensuring active participation of learners. In current study, it is seen that for teaching histology (54%) and embryology (69.6%) students preferred teaching by Power Point and 3D animations followed by slide observation under microscope and studying embryology models for embryology. Boddeti et

Table 2: B: Practicals: Method of teaching and response of students in practicals in different categories

Practicals		No. of students (%)
Dissection	Cadaveric	176 (70.4%)
	Virtual	74 (29.6%)
Histology Practical	Light Microscopic	148 (59.2%)
	Computer Assisted	102 (40.8%)
Osteology Demonstrations	Real Bones	216 (86.4%)
	Pop Models	34 (13.6%)
Organs	Real Organs	231 (92.4 %)
	Pop Models	19 (7.6%)
Surface And Living Anatomy	Real Subjects	189 (75.6%)
	Computer Assisted	61 (24.4%)

al³ had same observations as in present study for teaching histology and embryology.

As far as conduct of practicals are concerned cadaveric dissection stood the most favored method to learn gross anatomy by students. Patel et al⁴ observed that cadaveric dissection gained importance as skill base approach rather than only knowledge base teaching in Anatomy. Samy et al⁵ stated that students agreed that dissection deepened their understanding of anatomical structures, provided them with a three dimensional perspective of structures and helped them of recall what they learnt. Students found real bones and real organs best for studying rather than pop models. According to Patil et al,⁶ pop models cannot replace real viscera but they can be shown during lectures. Huitt et al⁷ found that implementing problem based learning has been a challenge, as the first year medical students have had little or no previous exposure to active learning and team work. As stated by Ghosh et al⁸ innovative methods of teaching and learning are very important as they promote critical thinking, problem solving skills, communication and team work.

As physicians daily come across anatomy in their everyday clinical practice through living anatomy, it is therefore essential to teach students anatomy right from the beginning.⁹ It is a widely held view that dissection gives students a 3D view of human anatomy and reinforces knowledge acquired in lectures.^{10,11} According to John et al¹² any teaching material that engage students in activities in which they must interact with the material are worth investigating.

6. Conclusion

There is no single best method for teaching and learning Anatomy as observed from above discussion. Considering the objectives of anatomy curriculum most of the academicians suggest integrated approach to the Anatomy. It will procure interest in the subject as against monotonous didactic lectures. Teaching and learning Anatomy remains the most challenging task for teachers and students considering the time constraint and scarcity of cadavers. In this particular study cadaveric dissection

remains the method of choice for learning and teaching gross anatomy as it gives hands on fee. For teaching theory combination of more than one method, old and new should be employed. However, the learning benefits of every method should be evaluated and learners should be provided with multiple resources. This approach will lead to production of competent medical graduates.

7. Source of funding

None.

8. Conflict of interest

None.

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