

Comparing the Effect of Teaching Aids, Review Session, and Practical Session on Learning Anatomy

Mohammad Mohsen Taghavi¹, Reza Vazirinejad², Khalil Komlakh³, Ahmad Shabanizadeh⁴, Zahra Taghipour⁴, Hamid Reza Jafari-Naveh⁴, Akram Mollahoseini², Mahdi Shariati Kohbanani^{1*}

1. Department of Anatomy and Social Determinants of Health Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

2. Department of Social Medicine and Social Determinants of Health Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

3. Department of Neurosurgery, School of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

4. Department of Anatomy, School of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

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Dr. Mahdi Shariati Kohbanani is an assistant professor of anatomy department in Rafsanjan University Of Medical Sciences and teaching anatomy and histology course for medical and paramedical students. His interest focus is on histology and human molecular biology.

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ABSTRACT

Introduction: We compared the effect of the teaching aids and review sessions on learning anatomy subjects by the medical students of Rafsanjan University of Medical Sciences.

Methods: In this study, during each semester, practical anatomy courses were presented by using different teaching aids such as, cadaver, bones, and training videos to the students. For all studied groups, at the end of each semester and a few days before the final exam, the regular review sessions were held by course lecturers. Then, student's viewpoints about the effect of both teaching aids and review sessions on their learning process were investigated, using the study checklist. Finally, the mean final scores of students who participated in the review session were compared with those who did not.

Results: The mean scores of anatomy practice exam (range 1-20) of students who did not participate in review sessions were significantly lower than the student who did participate in these sessions. Among the medical and dental students, a significant difference was reported with regard to the effectiveness of teaching aids and review sessions on learning process. Viewpoint of senior students in comparison to junior students were more positive about practical courses and review sessions. Overall, students' viewpoints about the effect of both teaching aids and review sessions on their learning process were positive and there was no significant difference between them with regard to their gender or field of study. However, medical and dental students believed that using teaching aids such as bones and models was very effective in their learning process of head and neck course. These opinions were significantly different between students of these two courses compare to students in the other courses (for models: $P=0.022$, for bones: $P=0.007$).

Conclusion: Practical anatomy and review sessions play an important role in the learning process of different subjects. Therefore, we suggest that practical courses and review sessions be held with greater emphasis and for a longer time.

Key Words:

Anatomy, Learning, Teaching

* Corresponding Author:

Mahdi Shariati Kohbanani, PhD

Address: Department of Anatomy, School of Medicine, Rafsanjan of University of Medical Sciences, Rafsanjan, Iran.

Tel: +98 (913) 1935168

E-mail: shariatik@gmail.com

1. Introduction

Students' lack of motivation to study is one of the issues that faculty members are currently concerned about and it is more evident in basic sciences of medicine and dentistry. Medical students come to wrongly believe (or at least, the senior and graduate students induced them) that the basic sciences are only a bunch of theoretical knowledge, which have no practical value on their future profession, in other words, are useless. Thus, finding new ways to boost student's motivation, and improve the current learning methods would help with student's learning. Some reports indicate that medical students face with various problems such as financial problems, depression, and lack of motivation in learning scientific courses. Furthermore, many medical students have a negative attitude toward basic sciences such as anatomy and assume that these courses despite their high volume do not apply to clinical practice [1, 2]. Because the quantity of educational programs in basic sciences seems to be satisfactory, the emphasis must be put on their quality [3].

Other studies show that whenever these lessons are presented with teaching aids and practical methods, they will become more attractive to students and their learning motives will increase [2]. It is reported that if anatomy topics and physical examination skills were taught together, the learning outcome would be the best [4]. With regard to these issues, it is recommended that new methods be used in teaching the medical students to promote their motivations [2, 5]. Apparently, medical students learn easier anatomy topics in practical sessions and with using teaching aids. The findings of other studies suggest that students' satisfaction with interactive and task-based teaching methods may result in their deeper learning compared to the conventional unidirectional methods [6]. Experts in education emphasize that class lessons should be held in such a way that students be the core and active member of learning process. In this regard, it is necessary to encourage students in different ways. Resorting to traditional methods such as giving lectures, do not provide the main goal of education i.e. learning [1, 2, 7].

At the end of each semester, a review session is presented and medical students review all contents of related anatomical course. Some students believe that the review session is more useful than other sessions of the course. Some are satisfied with the number and quality of educational aids and some are not. Finally, some students express that the number and quality of training aids in some courses such as head and neck are enough and in others not. The present study aimed to evaluate and

compare the views of medical students on the number and quality of anatomical teaching aids such as moulages, bones, cadavers, and so on as well as their effect on learning. In addition, the students' viewpoint about practical and review sessions were asked.

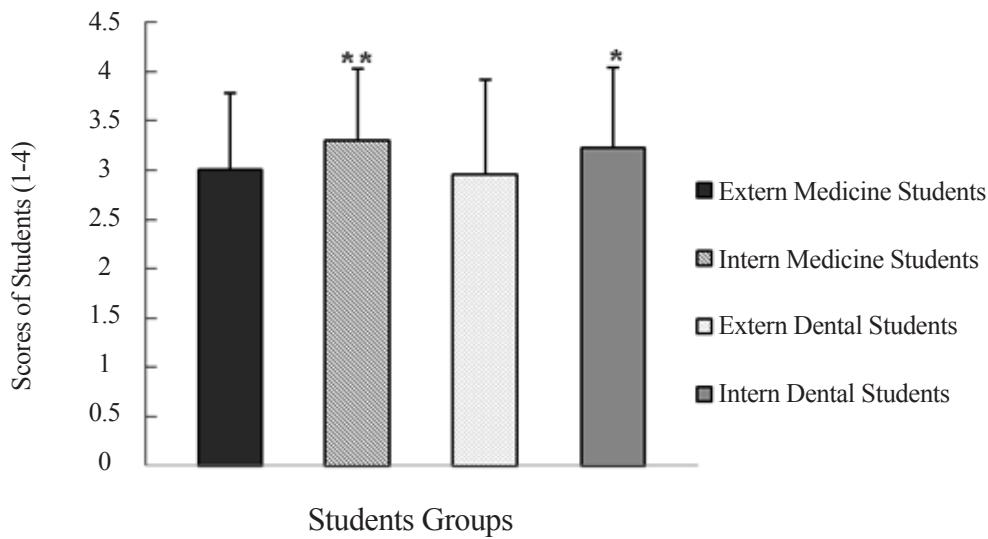
2. Materials and Methods

This descriptive study was conducted on midwifery, radiology, dental, and medical students of Rafsanjan University of Medical Sciences. Given that the students' viewpoints are different in each course, students in radiology, midwifery, dental, and medical courses were selected from paramedical, nursing, dental, and medicine schools, respectively. Filling out the checklists was done in different ways. For example, the authors of study filled out the checklists at different times. A number of checklists were given to a few interested and trusted students. Then, in a proper time and place, they were asked to fill out the checklists. At the hospitals, the clinical colleague filled out the checklists by interview with senior students. Moreover, because participation in the review sessions were voluntary, after the final practice exam, the mean scores of students were calculated in two following groups: first group included students who participated in review sessions and second group included students who did not. After collecting all checklists, the extracted data were analyzed by SPSS. The results are presented with chart and mean values. The significance level was considered at $P < 0.05$.

3. Results

The results showed that different students had a positive view about the anatomy practical courses, especially about the review sessions held at the end of the semester and before the anatomy exam. The majority of them (regardless of their field of study) believed that these sessions played a major role in their learning. So that, out of 360 students who had completed the checklists, the opinion of 341, 319, and 343 students were good or excellent about anatomy practice sessions, review sessions held in dissecting room, and anatomy museum, respectively. This matter was regardless of the study field or gender of the students. There was a significant difference between the students' opinions about bones and moulages with regard to their effect on learning in head and neck teaching courses ($P = 0.022$ for moulages and $P = 0.007$ for bones).

However, there was no significant difference between the students' opinions with regard to trunk and extremities anatomy courses. Of 360 students, 27 students were satisfied with using cadavers in trunk anatomy course. In head and neck and extremities anatomy courses, more than half



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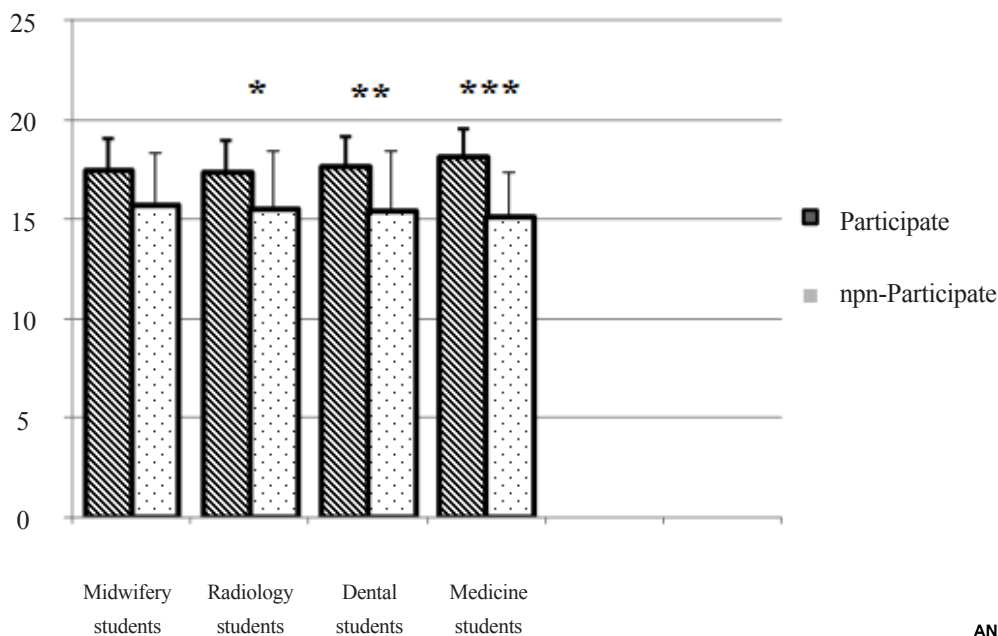
Figure 1. Bar diagram presenting mean scores of junior and senior medical and dental students with respect to anatomy and review sessions.

Significant difference between mean scores of junior and senior dental students ($P=0.042$).

Significant difference between mean scores of junior and senior dental students ($P=0.007$).

of the students were satisfied with the number of cadavers. The significant difference was observed between four groups with regard to the number of moulages ($P=0.001$). The viewpoint of male and female students about ques-

tions of study was similar. The mean scores of junior and senior medical students with regard to the effectiveness of anatomy and review sessions were 3 and 3.3, respectively ($P=0.007$)(Figure 1). The mean scores for dental junior



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Figure 2. Bar diagram of the mean scores of anatomy practice exam of four groups of students who participated in review sessions and who did not.

*Significant difference between the mean scores of students ($P\leq 0.05$).

* Significant difference between the mean scores of students ($P\leq 0.01$).

* Significant difference between the mean scores of students ($P\leq 0.001$).

and senior students were 2.96 and 3.21, respectively which showed significant difference with low intense ($P=0.042$).

The mean scores of anatomy practice exam (range 1-20) of midwifery, radiology, dental, and medical students who did not participate in review sessions were significantly lower than the mean scores of students who participated in the mentioned sessions. For medical students, there was more difference in comparison to other 3 fields ($P<0.0001$) and less differences were seen between midwifery and radiology students ($P=0.0113$ for midwifery and $P=0.0117$ for radiology) (Figure 2).

4. Discussion

Generally, the quality of education should be reviewed continuously. This review could be done from different aspects such as teaching method or the curriculum. At one time teaching method or curriculum could be satisfactory, but in another time and for various reasons such as new findings and information, changing condition of society and failure to achieve the educational goals, they must be reviewed. For these reasons, the teaching methods should be evaluated from time to time.

With regard to anatomy, students will become familiar with basic terms of medical vocabulary [8]. Some students believe that anatomy is about lifeless bones and dissecting a cadaver [8]. In anatomy, students must learn a wide range of knowledge, which most of it will be forgotten after some time. Medical students in different fields, at the beginning of their studies face a large volume of complex and difficult anatomical terms. Anatomy like other basic courses is taught in the first three semesters, so its learning is very hard, because students are not familiar with difficult Latin terms yet. In high school, students become familiar with a few of these terms in Persian [7] and some of them may be wrong.

In recent decades, education of anatomy has changed. This change is due to two facts: first, different ways of learning among new generation of students, and second, the major advances in the field of teaching aids such as using three-dimensional anatomical plastination. With regard to this new situation, it is not possible to hold the anatomical teaching sessions by using the traditional methods. In fact, teaching anatomy and other basic science courses with lecture method must be held in such a way that the students understand the relationships between the content, medical profession, and their application in clinical practice.

In anatomy education, besides using traditional lecture method, other new methods should be used to make students

remember the educational subjects easier. Practical methods such as using three-dimensional figures, moulages, bones, and cadavers are the most important methods [9]. If students could not understand the anatomical structure and their application in live and healthy people, learning anatomy is in vain [7]. Inability of students to memorize all subjects, their low motivation to learn basic science courses, and their failure to use learned clinical teachings (including performing physical examination), all represent shortcomings in traditional method of teaching i.e. lecture style [10].

Acquiring a deep knowledge of anatomy depends on the correct way to teach these lessons. One of the most important factors in this context is practical assignments which involve the students. If students understand the basic sciences such as anatomy, they will be able to relate this information to clinical findings and patients' diagnosis and treatment [11]. Previous studies have shown that theoretical and practical teaching of anatomy topics together with using anatomical teaching aids and various radiological images, lead to better understanding of anatomy, lasting learning, encouraging students toward self-directed learning, and understanding the role of anatomy in the interpretation of preclinical items [11, 12].

According to some studies on depression, lack of motivation, and negative attitude in our students towards studying medicine, most students like to learn clinical skills in the early years of university. Students express that learning clinical skills increases their motivation and pleasure of studying medicine [11-16]. Results of the present study show that senior medical students have a more positive view toward practical sessions, because of the following reasons: they have faced with the sick and occupational therapy and they believe that visual learning is more efficient than auditory learning. If students see anatomy topics on the moulages and cadavers, later on and in the face of patients, they will not have any problems with regard to anatomy issues. Senior medical students believe that practical sessions stay longer in the mind and in their next study periods, such as pre-internship period, there will be no need to refer to these contents, again.

Present study showed that medical students (especially senior students) are interested in practical teaching methods, so in providing educational aids should attend more, especially in head and neck courses.

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Conflicts of Interests

The authors declared no conflict of interest.

References

- [1] Michel MC, Bischoff A, Heringdorf DZ, Neumann D, Jakobs K. Problem-vs. Lecture-based pharmacology teaching in a German medical school. *Naunyn-Schmiedeberg's Archives of Pharmacology*. 2002; 366(1):64-68. doi: 10.1007/s00210-002-0570-x
- [2] Mehdizadeh M, Haghiri H, Joghtai MT, Shayan SH. [Educational needs and practical skills of master anatomy students considering the needs of the community (Persian)]. *Iranian Journal of Medical Education*. 2004; 4(2):85-93.
- [3] Shariati M, Jafarinaveh H, Bakhshi H. [The role of anatomy course in achieving clinical objectives: The viewpoints of Rafsanjan Medical University students in clinical settings (Persian)]. *Iranian Journal of Medical Education*. 2005; 5(2): 176-80.
- [4] Adibi I, Hasani N, Sadre Arhami S, Ashourioun V, Monajemi AR. [Teaching integrated course of physical examination and trunk anatomy to second year medical students (Persian)]. *Iranian Journal of Medical Education*. 2006; 6(1):7-13.
- [5] Forrester-Paton C, Forrester-Paton J, Gordon AL, Mitchell HK, Bracewell N, Mjojo J, et al. Undergraduate teaching in geriatric medicine: mapping the British Geriatrics Society undergraduate curriculum to Tomorrow's Doctors 2009. *Age & Ageing*. 2014; 43(3):436-439. doi: 10.1093/ageing/afu024
- [6] Mirzaei M, Azizian F. [Assessment of interactive and Task-Based Learning (TBL) methods compared to the conventional method of undergraduate teaching (Persian)]. *Journal of Medical Education & Development*. 2012; 7(1):10-17.
- [7] Reidenberg JS, Laitman JT. The new face of gross anatomy. *Anatomical Record*. 2002; 269(2):81-88. doi: 10.1002/ar.10076
- [8] Azer SA, Eizenberg N. Do we need dissection in an integrated problem-based learning medical course? Perceptions of first-and second-year students. *Surgical & Radiologic Anatomy*. 2007; 29(2):173-80. doi: 10.1007/s00276-007-0180-x
- [9] Lempp HK. Perceptions of dissection by students in one medical school: beyond learning about anatomy. A qualitative study. *Medical Education*. 2005; 39(3):318-25. doi: 10.1111/j.1365-2929.2005.02095.x
- [10] Miller SA, Perrotti W, Silverthorn DU, Dalley AF, Rarey KE. From college to clinic: reasoning over memorization is key for understanding anatomy. *Anatomical Record*. 2002; 269(2):69-80. doi: 10.1002/ar.10071
- [11] Lachman N, Pawlina W. Integrating professionalism in early medical education: the theory and application of reflective practice in the anatomy curriculum. *Clinical Anatomy*. 2006; 19(5):456-60. doi: 10.1002/ca.20344
- [12] Cho MJ, Hwang YI. Students' perception of anatomy education at a Korean medical college with respect to time and contents. *Anatomy & Cell Biology*. 2013; 46(2):157-62. doi: 10.5115/acb.2013.46.2.157
- [13] Mitchell R, Batty L. Undergraduate perspectives on the teaching and learning of anatomy. *ANZ Journal of Surgery*. 2009; 79(3):118-21. doi: 10.1111/j.1445-2197.2008.04826.x
- [14] Lam TP, Irwin M, Chow LW, Chan P. Early introduction of clinical skills teaching in a medical curriculum-factors affecting students' learning. *Medical Education*. 2002; 36(3):233-40. doi: 10.1046/j.1365-2923.2002.01142.x
- [15] Tavares MA, Silva MC. Evaluation of the Clinical Anatomy Program in the Medical School of Porto by two cohorts of students. *Clinical Anatomy*. 2002; 15(1):56-61. doi: 10.1002/ca.1093
- [16] Allen SS, Roberts K. An integrated structure-function module for first year medical students: correlating anatomy, clinical medicine and radiology. *Medical Education*. 2002; 36(11):1106-107. doi: 10.1046/j.1365-2923.2002.134127.x

