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Is There a Place for Innovative Approaches in Learning Anatomy

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The increased exchange of medical professionals in the process of globalization pose a question of minimum requirements in medical education. The main recommendations of some international documents are moving towards more student-centered and self-directed learning, utilization the advances in computing and other technologies in delivering the material, early clinical contact and development of Clinical skills learning centers. We shear our experience of applying active learning approaches in teaching anatomy. The active learning methods are well accepted from students and the teaching staff. We steadily believe that there is a place for innovative approaches in learning anatomy. This is an appropriate way to overcome the gap between the basic sciences and clinic and will contribute to training good doctors who could be able to practice allover the world.

Key words: learning anatomy, active methods.

Introduction

The process of globalization led to increased free exchange of medical professionals. Our medical education needs conformation to the world standards. There are several international documents concerning main principles and educational goals that have to reach at 2010: "Global Essential Minimum Requirements for Medical Education" set of global minimum learning outcomes which students of medical schools must demonstrate at graduation; "Global standards for medical education and better health care" recommendations is the re-examination of the medical school educational strategy in reason the educational methods and the assessment to be confirmed with the new educational aims [12].

Applying the "Global standards" vary in different countries depending of specific health needs. To meet the challenges of increasing health needs permanent curriculum changes has inquired. Stress must be given to self-learning and early clinical contact which increases motivation and enriches pre-clinical education.

International experience

The answer of the basic question WHY will motivate students to study so bulky subject. In many medical schools a new approach of teaching and learning has searched.

Anatomy curriculum has structured to show examples of disordered structures because the most of symptoms have better accepted in the anatomy context [2].

Because of these pressures, anatomy experts have endeavored to implement several approaches of teaching and learning, such as self-directed learning [8], dissection repeated in the clinical year [7], case-based anatomy course and clinical anatomy with PBL [9].

The publication of "Tomorrow's Doctors" by the General Medical Council in 1993 has triggered a variety of responses from UK medical schools [1].

The recommendations are decrease the curriculum overloading, implementation the clinical aspects in teaching anatomy [3, 5], "vertical" and "horizontal" integration and early clinical contact for better understanding in the context of basic disciplines.

In UK different approaches are used. Integration is most appropriately achieved by a case-based or a problem-based approach (in Liverpool and Manchester) rather than a strictly system-based approach. In the University of Dundee the "spiral approach" has devised and is favoured — in the progression through the course (the same topic is visited several times in increasing level of complexity — through normal structure and function to abnormality and clinical practice).

In the University of Pretoria, South Africa, a clinical anatomy practicum for clinic is developed. It is conducted to prepare students for the inspection, palpation, percussion and auscultation of the cardiovascular, respiratory, abdominal and urogenital systems. Standardized patients, cadavers, skeletons, prosected specimens, plastinated specimens, X-ray, computed tomography, magnetic resonance images, multimedia programs and clinical case studies has used as resources [6].

Anatomy course has integrated in the curricula of many medical schools by implementing Clinical anatomy [4, 7, 8, 9, 10].

The human anatomy course in the Youngstown State University, US, is centered over a computer software program that presents detailed "step by step" cadaver dissections added with anatomy drawings, models and skeletons [11].

Our experience

From 1990/1991 academic year the anatomy curriculum in Medical University of Pleven includes 322 academic hours divided in three semesters. The restriction necessitated some changes in the curriculum. During the first semester the anatomy lectures was reduced to 8 hours — 4 hours basic knowledge about bones and 4 - about bone connections. This material is thought in details in osteology and artrology practicals and the student's knowledge is assessed in two colloquiums. The topograph anatomy course has removed from the regular lecture course and has proposed as facultative during dissections.

We implemented some active approaches in teaching anatomy by which we are trying to higher the quality of anatomy knowledge acquired. During first semester, we apply elements of self-studying in the courses of osteology and artrology. In a part of groups the students are "self-studied" — divided in subgroups they work with textbooks, atlases, anatomy preparations (bone and joint samples) and software and try to find and learn the objects. Assistants do not explain and show anything and only help the students. At the end of the practical different subgroups present some objects — bones or joints. The role of the assistant is to coordinate and to control the work and to support students when need to specify something. Thus, "the micro-lectures" about the simple anatomical objects, which students can see and fine easily

has avoided. Through a kind of "discovering", we want to stimulate the curiosity and to drive on the self-studying. The most positive in this stile of learning is the relatively individualization in studying process — the opportunity different subgroups to work with there owns speed and way convenient for students.

During the second semester when students do dissections and study internal organs we use so cold "clinical questions". The clinical questions are short (in few words) clinical cases with steadying learning organ or system. On this base, questions about macro and microscopic structure of organs were formulated to help students in answering the clinical question. For instance, to count the layers of the stomach destroyed by perforated stomach ulcus. To answer the clinical questions students have to do some independent self-preparing. At the beginning of the practical, they do a short incoming test to identify the level of self-preparing and to specify the main terms. The work continues with studying preparations from internal organs and observation the histological slides. At the end students try to answer the clinical question. These elements of active learning are very well accepted by the students. They are very interested and active in self-preparing and practical work.

During the dissections, other active learning activities are applied. Student group are divided in subgroups of 2-3 persons. Each subgroup is given so cold "clinical tasks" — short clinical case about a disease in particular aria or an organ in it. Students have to study the area (by self-preparing), to discuss between each other and with the assistant what must be done, to dissect the area and at the end to present it the other students. After that, the clinical case is discussed. This way of working and appearance stimulates the competition ("who will do the work best"). Self-assessment is provided.

There is a practice in our department that demonstrators develop interesting anatomy objects. These elaborations later become interdisciplinary and are the basic point for scientific researches.

The assessment in our department is current — test, self-assessment and peer-assessment; periodic — tests and colloquiums and final exam which includes test, practical exam and viva voice.

The interim results of active-learning groups do not differ significantly comparing with other students (results are higher with a few per cent). Studying the final exam results is imminent and future development in clinic. PBL-groups show significant higher results in the final exam (Table 1).

Conclusions

There is a common tendency to:

- reduce the anatomy curriculum;
- stress to active learning activities;
- look for alternatives in delivering information and learning — internet and special software.

Table 1. Results from the final exam 2004 — 2006

Year	2003/04	2004/05	2005/06
Mean results	3.95	4.12	3.45
Active learning groups	4.35	4.28	3.63
Standard learning	3.44	3.94	3.38

Our proposals

• current optimizing of the basic anatomy course in three semesters by some program restructuring;

• implementation the active learning activities (PBL, active group learning and others) with including clinical aspects;

• try to find a way for some anatomy courses as modules in clinic — for instance CNS during studying neurology;

• short initiating anatomy courses for post-graduate trainers in sugary, orthopedics, radiology, obstetrics and others.

Our permanent goal is keeping traditions to enrich and modernize the anatomy teaching with new methods and approaches in reason to do it more attractive for students and post-graduate trainers, to help them in obtaining steady/stable knowledge for the human body which will be the base useful during there entire clinical practice.

References

1. Bullimore, W. Study skills and tomorrow doctors. WB Saunders Company Ltd, 1998. p. 170.
2. Eccles, S. Why anatomy should still be taught. — Student BMJ, **10**, 2002, 303-352.
3. Heylings, D. J. A. Anatomy 1999-2000: the curriculum, who teaches it and how? — Medical Education, **36**, 2002, No8, p. 702-710.
4. Kagan, I. I. Traditions and perspectives of clinical anatomy education in Russia. — Clin Anat., **15**, 2002, No2, 152-156.
5. Kennedy, D, M, Ip, N. Eizenberg, C. Adams. The text analysis object (TAO): Engaging students in active learning on the web. **www.ascilite.org.au/conferences/wollongong98/asc98-pdf**
6. Pabst, R. Gross anatomy: An outdated subject or an essential part of a modern medical curriculum? Results of a questionnaire circulated to final-year medical students. — Anat. Rac. **237**, 1993, 431-433.
7. Pepcac, S., D. A. Goodenough. Problem-Based Teaching and Learning as a Bridge from Basic Anatomy to clinical clerkships. — Surg. Radiologic, **20**, 1998, 203-207.
8. Peplow, P. V. Self-Directed Learning in Anatomy: Incorporation of case-based studies in to a conventional medical curriculum. — Medical Education, **24**, 1990, 425-432.
9. Rhoten, W. B. Guide to Gross Anatomy and Embryology. Joan C. Edwards School of Medicine, Marshall University, 2004, Huntington, WV.
10. Reidenberg, J. S., Laitman, J. T. The new face of gross anatomy. — Anat. Rec., **269**, 2002, No2, 81-89
11. Womble, D. Anatomy and computers: A new twist to teaching the oldest medical course. — Bioscene, **52**, 15-17. **www.ascilite.org.au/conferences/wollongong98/asc98-pdf**
12. Нарлиева, Н., В. Нишева, З. Радионова, С поглед към „Глобалните стандарти за медицинско образование и по-добра здравна помощ": перспективи и реалности но ВМИ — Плевен. 2003, ИЦ — „ВМИ — Плевен", 31—37.