

Integrative learning in morphology: philosophical grounds of the founding educators of the *Santa Casa School of Medical Sciences*, Sao Paulo, Brazil

Curcio, DF. *, Macéa JR. and Barros MD.

Department of Morphology, Santa Casa School of Medical Sciences, Rua Dr. Cesário Motta Junior, 61, 11º andar,
CEP 01221-020, São Paulo, Brazil
E-mail: daniellacurcio@hotmail.com; jrmacca@hotmail.com; m_d_barros@ig.com.br

Abstract

This aim of this paper is to briefly report the education methodology employed at the Santa Casa School of Medical Sciences' undergraduate program, founded in 1963, Sao Paulo, Brazil. Some relevant historical aspects are also brought out in order to provide readers with a glimpse of the social scenario that have yielded such successful model, based on integrative, practice-based strategies. Developed from simple concepts, innovative at that time, the educational system, the building structure of the hospital-university facilities and the pedagogical method remains modern and still inspires educators nowadays. The Department of Morphology is in alignment with these principles, working with the minimum possible lectures and exploring practical experience to the maximum. The disciplines of anatomy, histology and embryology comprise the curricular unit, elaborated per organ system, in a pedagogical program based on: timeline organization of the disciplines, strong theory-practice linkage, and a proactive learning system. The faculty members are trained in multiple areas to be as versatile as possible, delivering lectures and assisting in the practical training. New teaching methods may aggregate value to this model. We believe that such didactic approach can provide students with a realistic perspective of the main purpose and applicability of the basic sciences.

Keywords: integrative education, practice-based learning, tutoring model, morphology, basic science.

1 Introduction

1.1 *Early 1960s: a medical college is created in São Paulo, Brazil*

Historically originated from Portuguese colonization, the *Santas Casas* (literally translated as *holy houses*) are traditional institutions in Brazil. Their main mission is to provide costless health attention at all levels to the general population. In Sao Paulo, the *Santa Casa School of Medical Sciences* undergraduate program was created in 1963 by a group of physicians involved with the Santa Casa Hospital of Sao Paulo. Emílio Athié, MD, PhD, emeritus physician and surgeon, has dedicated a lifetime of work to the Santa Casa Hospital and was the mentor of this group of pioneer educators. Concerned with the turnover rate of the hospital's clinical team, Emílio Athié could persuade the directive committee of the Santa Casa Hospital into the idea that to incorporate an undergraduate school into the hospital facilities would ensure the quality control of the medical staff and patient's care (ATHIÉ, 1998).

From the first idea of a university-hospital complex, the Santa Casa School of Medicine was created and has been ever since embedded within the hospital facilities, thus fully supporting early and well monitored experience in medical practice to its students. Emílio Athié and his group have replaced the regent's chairs with individual departments and organized a system to mentor studies throughout the undergraduate course, from basic sciences to clinical and even surgical practice.

This integrative practice-based concept was novel at that time and still seems to be a worldwide trend nowadays. In the US, for example, in the timeline between the early 1930s and late 1980s, most anatomy and basic sciences were taught in a passive, lecture-based format, although anatomy was and still is considered to be as an essential requirement in the medical curriculum (DRAKE, McBRIDE, LACHMAN et al., 2009; McCROIRE, 2000). Ever since the late 1990s, however, such conventional model has been replaced by a multi-subject integrated approach, where anatomy is part of a setting in the morphological sciences, also comprised by embryology and histology, and trends are that such scenario continues to change as to include interactive and integrative team-based learning methods (SCHMIDT, 1998; LING, SWANSON, HOLTZMAN et al., 2008; DRAKE, McBRIDE, LACHMAN et al., 2009).

2 Development

2.1 *The role of basic sciences and the Department of Morphology of the Santa Casa School of Medicine*

The inaugural class was delivered on April 1963, by the faculty members of the Department of Morphology, headed by Orlando Jorge Aidar, MD, PhD.

The pedagogical method implemented by Orlando Aidar was in alignment with the integrative model. Lectures were limited to a very strict number, conceived as simple

guidelines to a mentored practical learning experience at the lab. Class contents were necessarily concise, and their purpose was to provide the fundamental information in a very objective way, so that to enhance student's practical experience to the maximum level. Students were requested to carefully read the subject chapters in anticipation to each specific lecture. The premise for this system is that students would anticipate their professional lives, in a smaller scale, at least in what concerns the involvement with medical sciences, the self-learning obligations and the responsibility to maintain a good performance as future physicians.

Differently from what is commonly observed in many medical universities and teaching institutions, the Santa Casa School of Medicine's Department of Morphology is comprised by a setting of correlate subjects: anatomy, histology and embryology and the curricular units were designed to develop each one of them as complementary aspects of each organ system. The concept of morphological sciences is understood as a whole system of correlate subjects in what concerns both teaching and research. The teaching staff is also unified. Besides the solid formation in health field and biological sciences, faculty members are very well trained since they must be ready to deliver lectures in the different subjects and to be fully involved with the mentored study in the laboratory practical activities. The basic requirement for the faculty members would be, therefore, versatility.

Even the evaluation process was first elaborated in order to favor such integrative characteristics and this system has been maintained ever since. Weekly tests are performed in the laboratory and the questions are fundamentally theoretical. More complex written tests are bimestrial and each question of such evaluations is usually related to some practical knowledge.

In the Department of Morphology, the disciplines – or subjects – comprise a curricular unit in a pedagogical program based on:

- Timeline organization of the disciplines: classes on the subjects of anatomy, histology and embryology are delivered in this sequence, per organ system. Such organization reflects the concept of morphological sciences as a setting of articulated subjects that yield a dynamic knowledge on each organ system of the human body.
- Strong theory-practice linkage, emphasizing the experience with prosected (previously dissected and labeled) anatomical specimens, with dissection activity or with laboratorial practice with histological microscope slides.
- Active learning system: students have permanent access to the didactic material and rely on constant assistance of the faculty members, always available and ready to advise and lead them through the process where “students learn their way to learn” (AIDAR, BARROS, MACÉA et al., 1996).

Throughout the years, the pedagogical method implemented by the founders has been slightly adapted to incorporate some technological advances, such as digitalization of the microscope slides and high quality printed charts, used in the laboratory – in the disciplines of histology, embryology and neuroanatomy, which have also been reported as a global trend in medical teaching institutions (STEFAN, WEIGLEIN, MARTINO et al., 2009). The

inclusion of medical imaging classes on neuroanatomy, skeletal system, muscular system and regional anatomy, is also an interesting feature to introduce clinical aspects to which the anatomical concepts are applied. The continuous contact between faculty members and students allows specific adjustments throughout the course.

Such paradigm, on which the Santa Casa School of Medicine has based its educational model, continues to inspire educators nowadays to elaborate didactic methods with the same integrative purpose (DARDA, 2010) to support the acquisition of knowledge on correlate areas concomitantly, as well as to promote an intense interaction between the theory on basic sciences and clinical practice, as students and future health professionals.

3 Final considerations

Medical education has to immediately respond to the demands required by the vertiginous scientific advances applied to the healthcare environment. These transformations undoubtedly affect the teaching process, and therefore, great professors and educators are valuable commodities for any good medical university more than ever before (PAWLINA and DRAKE, 2010).

The interest in basic sciences education has increasingly grown and has received space in the literature, with scientific journals exclusively dedicated to promote intellectual exchanges and debates, working as an international forum where it is possible to share evidence-based scholarly activities and to discuss innovative initiatives that take place in different institutions throughout the world.

As a hospital-university complex, the Santa Casa School of Medicine comprise more than one graduation course and supports clinical practice in health assistance, from surgery to rehabilitation, thus providing the students with the opportunity to have a realistic perspective for the applicability of the theoretical knowledge, acquired from the basic sciences that comprise the area of morphology. We trust that this integrative model means a significant benefit not only to students, but also to faculty members and healthcare staff of the hospital, since it yields professionals with a broaden view of their practice and of their patients. Students, educators, teaching assistants, residents, instructors, experienced volunteers and other fellows who are driven by the same passion of teaching and who share the responsibilities of this career have the space to play their roles as unique parts of a complex and beautiful system that leads to excellence in health attention, despite the limited resources imposed by the financial restrains of the Brazilian social, economical and political reality, in what concerns the education and public health areas.

As educators, fully committed to lead students to make their way through the endless learning process inherent to the health professions, we endeavor to continuously improve our system, by sharing our educational initiatives and learning from peers with the same intent. Our constant experiments and careful evaluation of our results, by adequately measuring the evolution of the learning process of our students, are indispensable in our striving for excellence in medical education.

Our medium to long term goals include the general development of our methods and the elaboration of new

didactic approaches, with plans to increase the number of clinical lectures, on imaging evaluation for example, the employment of more advanced technological resources, such as the integration of the internet as a learning feature, and the development of integrative research projects involving students and professionals from other educational institutions in partnership programs (BARROS, 2010).

References

- AIDAR, OJ., BARROS, MD., MACÉA, JR. and MACÉA, MIM. Método de ensino desenvolvido e utilizado no Departamento de Morfologia da Faculdade de Ciências Médicas da Santa Casa de São Paulo. In *Anais do XVII Congresso Brasileiro de Anatomia*, set. 2-6, 1996. Fortaleza: Sociedade Brasileira de Anatomia, 1996. Resumo TL6-S39.
- ATHIÉ, E. *Faculdade de Ciências Médicas da Santa Casa de São Paulo – 35 anos*. São Paulo: Massa Ohno, 1998. 82 p.
- BARROS, MD. Ensino de Morfologia para Medicina na FCMSCSP. In *Anais do I Encontro Internacional de Ensino em Anatomia ICB/ USP*, mar. 8-13, 2010. São Paulo, 2010.
- DARDA, DM. Observations by a university anatomy teacher and a suggestion for curricular change: integrative anatomy for undergraduates. *Anatomical Sciences Education*, 2010, vol. 3, p. 73-76. PMID:20084670.
- DRAKE, RL., McBRIDE, JM., LACHMAN, N. and PAWLINA, W. Medical education in the anatomical sciences: the winds of change continue to blow. *Anatomical Sciences Education*, 2009, vol. 2, p. 253-259. PMID:19890982. <http://dx.doi.org/10.1002/ase.117>
- LING, Y., SWANSON, DB., HOLTZMAN, K. and BUCAK, SD. Retention of basic science information by senior medical students. *Academic Medicine*, 2008, vol. 83, p. S82-58. PMID:18820508. <http://dx.doi.org/10.1097/ACM.0b013e318183e2fc>
- McCROIRE, P. The place of the basic sciences in medical curricula. *Medical Education*, 2000, vol. 34, p. 608-613. PMID:10964207.
- PAWLINA, W. and DRAKE, RL. Anatomical Sciences Education: A Partner on the Road to Scholarship in Teaching and Learning. *Anatomical Sciences Education*, 2010, vol. 3, p. 1-2. PMID:20095027. <http://dx.doi.org/10.1002/ase.130>
- SCHMIDT, H. Integrating the teaching of basic sciences, clinical biopsychosocial issues. *Academic Medicine*, 1998, vol. 73, p. S24-31. PMID:9759115.
- STEFAN, C., WEIGLEIN, A., MARTINO, E., BARROS, MD. and MARTINEZ, FB. Trends in Neurosciences Education in Medicine. In *Anais do I Congreso Argentino de Anatomía Clínica*, set. 23-26, 2009. Huerta Grande, Córdoba, 2009.

Received December 15, 2011
Accepted February 2, 2012