

Ultrasound approach as integration of gross anatomy educational path for medical students

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For physicians, the human body is the focus of investigation and intervention on a daily basis. It follows that the study of anatomy will continue to be essential to safe medical practice [1]. Anatomical education represents the cultural path that includes the best coexistence of old techniques, and avant-garde. Thus teachers forming future physicians are imposed to find new strategies for the acquisition of adequate professional competences [2].

The gross anatomy course attended by medical students was integrated by ultrasound training. Students were trained either in palpating and recognizing surface body-landmarks, or in the detection of different viscera. Their abilities were then evaluated. For three academic years (since 2009-10 to 2011-12), all the 262 students enrolled in the first year of Medicine and Surgery degree ("San Paolo" Hospital, Università degli Studi di Milano, Italy) participated. Of them, 16 volunteered in 2009-10, and 17 in each of the next two years, to preliminarily attend ultrasound training that their fellows would attend later. After this preliminary training, volunteers tutored their course fellows as peer tutors. All participants were either models or users.

Each training presented three modules: 1) information about ultrasound scanning; 2) musculoskeletal system, major arterial and venous vessels, major nervous trunks, thyroid gland; 3) most thoracic, abdominal and pelvic viscera. Modules 2 and 3 were attended by small groups (6 students, assisted by 2 peer tutors). In module 2, topographical anatomy and subsequent recognition and palpation of surface body-landmarks were also taught. The study of musculoskeletal system, major vessels and nerve trunks, and thyroid gland was supported by a multi-frequency probe equipped ultrasound machine. Thoracic, abdominal, and pelvic viscera were explored by a new generation pocket-sized ultrasound machine.

Acquired skills were verified. The levels of expertise obtained by peer tutors and students were generally satisfactory. Students understood the importance of operative knowledge in human anatomical context. Anatomists found a valid method to consolidate the professionalizing quality of the topic.

References

- [1] Turney BW. (2007) *Ann R Coll Surg Engl.* 89:104-107.
[2] Badea R. (2012) *Med Ultrason* 14:175-176.

Keywords

Anatomy teaching, human anatomy, image anatomy.