Investigación en
Educación Médica

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ORIGINAL ARTICLE

Anatomical knowledge in veterinary medical students in Chile

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Abstract

Introduction: Anatomy is considered a cornerstone in human and veterinary medical education, as this basic science discipline provides a vital foundation on which to build the knowledge of the clinical practice of medicine.

Objective: The aims of this study were: 1) to collect information on first year veterinary student preference, and use of supportive educational tools, and 2) to assess long-term knowledge retention in senior veterinary students who successfully completed the bovine anatomy course.

Method: A survey was administered to first-year veterinary students in order to identify their learning tools of choice, and a diagnostic examination was designed to reflect highly relevant basic anatomy knowledge was administered to senior veterinary students.

Results: Besides the regular cadaver-dissection laboratories, textbooks were the tool used most frequently by first-year students to learn bovine anatomy. Computer technology was used by only 12.2% of the students. When evaluating knowledge retention of bovine anatomy by fourth year (senior) students, only 33.2% of the questions were answered correctly in the fourth year examination.

Conclusions: These results were interpreted as a low long-term retention of knowledge in Chilean veterinary medical students.

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  Peer Review under the responsibility of Universidad Nacional Autónoma de México.

Conocimiento de anatomía en estudiantes de medicina veterinaria en Chile

Resumen

Introducción: La anatomía es considerada una piedra angular en la educación médica humana y veterinaria, ya que esta disciplina científica básica proporciona una base fundamental sobre la que se construye el conocimiento de la práctica clínica médica.

Objetivos: Los objetivos de este estudio fueron: 1) recoger información en estudiantes de primer año de medicina veterinaria sobre el uso de herramientas educativas de apoyo en el aprendizaje de anatomía y 2) evaluar la retención de conocimientos de anatomía a largo plazo en los estudiantes de veterinaria de niveles superiores y que hayan completado con éxito el curso de anatomía del bovino.

Método: Para ello se aplicó una encuesta a estudiantes de primer año para identificar sus metodologías de aprendizaje, y adicionalmente un examen de diagnóstico que fue diseñado y aplicado a estudiantes de niveles superiores con el fin de reflejar el conocimiento de anatomía fundacional de relevancia.

Resultados: Los resultados indicaron que, además de los laboratorios regulares de disección, los libros de texto eran la herramienta más utilizada por los estudiantes de primer año para aprender anatomía del bovino. Las tecnologías informáticas fueron utilizadas por solo el 12.2% de los estudiantes. Las tecnologías informáticas fueron utilizadas por solo el 12.2% de los estudiantes.

Al evaluar la retención del conocimiento de la anatomía del bovino en estudiantes de cuarto año, solo el 33.2% de las preguntas fueron contestadas correctamente.

Conclusiones: Estos resultados fueron interpretados como una baja retención a largo plazo de los conocimientos de anatomía en estudiantes chilenos de medicina veterinaria.

Introduction

On a global scale, the higher education systems in medical and veterinary colleges are facing significant challenges in how to most efficiently impart large volumes of medical knowledge to their students in such a way that promotes long-term retention of the material, inter-disciplinary integration of the material, and effective clinical application of the material. These institutions are actively seeking to integrate conventional teaching practices such as lecture-based information transfer and required textbook reading, use of experiential learning tools such as cadaver labs and plastinated specimens, and application of novel technologies of information and communication (TIC) to optimally prepare students to serve the community in health care in the 21st century. Considering the rapid changes that are taking place in the use of information technology by our students, educational institutions are being challenged with the responsibility of assuming a role of leadership in the transformation of educational materials to maximize efficiency of learning and retention of medical knowledge for clinical application by our millennial students.[1]

Historically, anatomy has been considered to be a keystone discipline in the medical professions, as this basic science discipline offers vital foundational knowledge of how the structure of an organism relates to its function in health, and the appreciation of how the three-dimensional structure of the organism relates to physical and radiological diagnosis of disease, as well as surgical and medical approaches to treatment of the disease. Until recently, the combination of cadaveric dissection, required reading, and didactic lectures were the primary effective methods used for teaching anatomy.[2] Recently, as the availability of adequate specimens for dissection has become more limited or cost-prohibitive, and the time allotment for anatomy laboratories in the curriculum has become more restricted,[3] anatomy instructors have searched for novel methods to impart vital anatomical knowledge. Many anatomy programs rely only on use of anatomy books and atlases for student instruction, in the absence of cadaveric dissection, because of space, time, and financial constraints, and this is believed to be suboptimal for anatomy learning.[4] Other programs utilize preserved or plastinated anatomy specimens (cadaveric material processed to remove water and fat, and replace it with a permanent synthetic polymer) to improve the quality of their teaching.[5] However, use of plastinated sections reduces the opportunity for students to prosect and dissect cadaveric material, which limits the effectiveness of anatomy instruction as it relates to appreciation of the three-dimensional orientation of organs in a system. Additionally, compelling evidence suggests that these methods of instruction may be inadequate, and result in poor long-term retention of anatomical knowledge, which was the motivation for the present study.[6]

Many colleges and universities have endeavored to improve the process of learning anatomy for long-term retention and effective clinical application, by developing novel computer technology. In 1996, instructors affiliated with the Austral University of Chile developed a photographic software of Bovine Osteology, and although this