

Exploration on the Scientific Setting of Human Anatomy Courses in Traditional Chinese Medicine Colleges

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Abstract: Human anatomy is a fundamental and core course in medical education. However, in the educational process of traditional Chinese medicine colleges and universities, the realistic predicament of emphasizing classics over forms often appears. Based on the perspective of the integration and connection of traditional Chinese medicine and modern medicine, this research proposes that the curriculum reconstruction should take “morphological support for clinical practice and classic correlation structure” as the main principle. By using strategies such as modular integration, the combination of virtual and real practices, and interdisciplinary evaluation, a human anatomy curriculum system that meets the needs of cultivating talents in traditional Chinese medicine in the new era is proposed. This study provides a reference for the modernization of traditional Chinese medicine education.

Keywords: Chinese medicine colleges and universities; Human anatomy; Curriculum design; Integration of traditional Chinese and modern medicine

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1. Introduction

Human anatomy is the science that studies the morphology, structure, location, adjacency, and the relationship between structure and function of various parts of the normal human body. It is the core hub for the transformation of the basic theories of traditional Chinese medicine into clinical practice. The anatomy teaching in traditional Chinese medicine colleges and universities had the problem of disciplinary fragmentation. On the one hand, the classic theories of traditional Chinese medicine (such as the theory of meridians and the theory of zang-fu organs) need anatomy as the morphological support. On the other hand, traditional anatomy courses focus more on the modern medical system and have insufficient connection with clinical skills of traditional Chinese medicine (such as acupuncture and massage). This results in a cognitive gap among students where they learn but do not apply. Under this background, reconstructing the scientificity, practicality, and traditional Chinese medicine characteristics of the anatomy course has become a key breakthrough for improving the

quality of traditional Chinese medicine talent cultivation.

2. Reconstruction of course positioning and objectives

2.1. Re-understanding of disciplinary attributes

The classic literature of traditional Chinese medicine contains rich anatomical descriptions^[1]. The *Huang Di Nei Jing* records that the stomach is one foot and five inches in length and five inches in diameter. This is highly consistent with the modern anatomical shape of the stomach (25–30 cm in length and 1.5 L in volume)^[2–4]. This course needs to guide students to understand the morphological basis of the “Zangxiang” theory by comparing the records of the internal organs in the *Huang Di Nei Jing* with modern anatomical data. For example, the physiological function connection between “the liver governs the free flow of qi” and the intrahepatic bile duct system.

Traditional Chinese medical techniques such as acupuncture, massage, and bone setting rely heavily on anatomical knowledge. For instance, when needling the Fengchi point, it is necessary to master the course of the greater occipital nerve and the vertebral artery to avoid accidental injury to the blood vessels. When treating cervical spondylosis with massage, it is necessary to clearly identify the starting and ending points of the trapezius muscle and the levator scapulae muscle. When correcting the disorder of thoracic facet joints, it is necessary to clarify the positional relationship between the spinous processes and transverse processes of the thoracic vertebrae. Therefore, the course of human anatomy needs to strengthen the teaching logic of the trinity of “structure–function–disorder,” and transform anatomical knowledge into clinical operational ability.

2.2. Three-dimensional target system design

- (1) Knowledge objective: Master the composition of the nine systems of the human body, organ morphology, and the correspondence between Chinese and Western medical terms (such as the division of triple energizer and body cavity).
- (2) Competency objective: Through experiments related to systemic anatomy and regional anatomy, develop students’ core skills such as clinical palpation and judgment of needle insertion levels in acupuncture.
- (3) Quality objective: Through memorial ceremonies for body donation and historical case studies of Chinese anatomy, cultivate students’ professional spirit of respecting life, upholding tradition and innovation.

3. Innovation in teaching content and methods

3.1. Modular curriculum design integrating traditional Chinese and modern medicine

Organically associate the knowledge of systemic anatomy with the classic theories of traditional Chinese medicine. Combine the description of the functions of the internal organs in the *Huang Di Nei Jing* with the anatomical characteristics of the organs. For example, combining with the theory that the lungs govern qi and respiration to analyze the alveolar structure and gas exchange mechanism. In the meridian system, by using vascular casting specimens and 3D imaging technology, the course relationship between the twelve meridians and vascular nerve bundles (such as the overlapping distribution of the hand Taiyin Lung Meridian and the lateral cutaneous nerve of the forearm) was visualized. When explaining the temporomandibular joint, the location of acupoints such as “Dicang” and “Jiache” in traditional Chinese medicine is introduced. This way, the

relationship between the masseter muscle fascia and the layers of acupoints can be analyzed. When dissecting and observing the positions of the diaphragm and the gastric body, designing abdominal palpation simulation training can enhance the connection of palpation in traditional Chinese medicine.

3.2. Innovation in teaching methods combining virtual reality

Task-driven practice approach involves designing experimental tasks of anatomy oriented towards clinical problems. For example, mark the hierarchical structure of the “Zusanli” acupoint (skin–fascia–tibialis anterior muscle–deep peroneal nerve) on the anatomical specimen and analyze the risks of different needle insertion depths. The pathological model of lumbar intervertebral disc protrusion can also be reconstructed through virtual anatomy software (such as Visible Body), and the massage techniques can be designed in combination with the positioning of the “Yaoyangguan” acupoint.

The application of AR/VR technology makes it possible for information technology to empower morphological cognition ^[5]. The augmented reality dissection table is used to achieve the superimposed display of meridian directions and blood vessels and nerves. Students can hold virtual probes to simulate acupuncture operations, and the system provides real-time feedback on the depth of needle insertion and the risks of adjacent structures. The anatomical atlas from the representative work of traditional Chinese anatomy, “Medical Forest Correction” ^[6], can also be combined with modern CT tomographic images and three-dimensional models of acupoints to build an open integrated learning platform for traditional Chinese and Modern medicine.

4. Evaluation system and teaching quality assurance

4.1. Multi-dimensional dynamic assessment mechanism

In the theoretical examination, set questions about the connection between Chinese and modern medicine, such as “Explaining the scientific nature of the liver’s blood storage theory from the anatomical characteristics of the portal vein of the liver.” In practice assessment, adopt the OSCE (Objective Structured Clinical Examination) model, and set up sites such as “anatomical hierarchy identification of Fengchi point needle insertion” and “palpation location of abdominal mass.” In the ideological literacy assessment, the level of humanistic literacy can be evaluated through reflections on ideological and political micro-lessons in courses, reports on ethical reflections on autopsy operations, etc.

4.2. Feedback-driven continuous improvement

Establish a two-way feedback mechanism. At the end of each semester, collect students’ course suggestions (such as “Difficulty in Understanding the Conduction Pathways of the Nervous System”), and optimize teaching resources (add a 3D dynamic demonstration of nerve bundles).

Establish a clinical connection mechanism. Invite physicians from the acupuncture department and traditional Chinese medicine surgeons to participate in the revision of the curriculum standards to ensure that the teaching content is in line with the “Standardized Training Standards for Resident Physicians of Traditional Chinese Medicine.”

5. Discussion

The basic theoretical systems of traditional Chinese medicine and modern medicine are inconsistent. However, traditional Chinese medicine students have to study a series of modern medical courses including anatomy.

Integrating the relevant content of traditional Chinese medicine throughout anatomy is of vital importance for enhancing the learning interest of undergraduate students majoring in traditional Chinese medicine. Chinese medicine colleges and universities still need to build an interdisciplinary faculty team. Cultivate “dual-qualified” teachers who are proficient in both traditional Chinese medicine classics and modern anatomical techniques. We also need to prepare anatomy textbooks with a focus on integrated traditional Chinese and modern medicine and case studies. We also need to carry out “life and humanity” theme education activities to improve the medical ethics education system.

6. Conclusion

With the continuous development of science, the curriculum positioning and goals of human anatomy in traditional Chinese medicine colleges should be reconstructed. The teaching modules are designed by integrating the theories of traditional Chinese medicine and modern medical knowledge, and combining the latest scientific and technological means. It might be a feasible means to improve the teaching quality of human anatomy in traditional Chinese medicine colleges.

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