

REVIEW ARTICLE

The Necessity of Anatomy Practical in Nursing Education: Enhancing Competence and Clinical Skills

Razif Abas¹

¹ Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia.

ABSTRACT

This narrative review explores the necessity and impact of anatomy practical in nursing education. As a cornerstone of effective patient care, a comprehensive understanding of human anatomy is crucial for nursing professionals. The review highlights how practical anatomy sessions, through cadaver dissections, 3D models, and virtual simulations, provide hands-on experiences that enhance theoretical knowledge and foster a deeper understanding of the human body. These practical significantly improve retention and recall of anatomical information, crucial for everyday clinical tasks such as administering injections and inserting intravenous (IV) lines. Despite their clear benefits, implementing anatomy practical faces challenges, including high costs, ethical considerations regarding the use of cadavers, and time constraints within dense nursing curricula. Nevertheless, the advantage such as enhanced clinical skills, increased confidence, and better interdisciplinary collaboration underscore the importance of incorporating practical anatomy training in nursing education. This hands-on approach prepares nursing students to deliver high-quality patient care, communicate effectively with healthcare teams, and navigate clinical complexities. Thus, anatomy practical is vital for developing competent and confident nursing professionals, despite the challenges associated with their implementation.

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Corresponding Author:

Razif Abas, PhD

Email: razifabas@gmail.com

Tel :+603 97692479

INTRODUCTION

The field of nursing is fundamentally built on a comprehensive understanding of human anatomy, a cornerstone that supports the delivery of effective patient care (1). As nursing education evolves, the integration of practical anatomy training remains a pivotal component (2). Practical sessions, whether through traditional cadaver dissection, advanced 3D models, or innovative virtual simulations, offer an experiential learning approach that is often deemed essential for developing a nuanced understanding of the human body's structure and function (3).

In nursing education, theoretical knowledge provides the foundation upon which practical skills are built. However, theory alone often falls short in fully preparing students for the complexities of clinical practice (4).

Practical anatomy sessions bridge this gap, offering a tangible context that enhances learning outcomes (5). By engaging in hands-on experiences, nursing students can observe and manipulate anatomical structures directly, leading to improved retention of information and a deeper understanding of the spatial relationships within the human body (6). These experiences are crucial for translating theoretical knowledge into practical skills that are vital in patient care settings.

Despite the clear advantages, the implementation of anatomy practical in nursing education is not without its challenges. High costs associated with resources such as cadavers and technological tools, coupled with ethical considerations surrounding the use of human remains, pose significant hurdles (7). Additionally, the dense curriculum of nursing programs often leaves limited room for extensive practical sessions (8). Nonetheless, the potential benefits such as enhanced clinical skills, increased confidence, and better interdisciplinary collaboration underscore the importance of addressing these challenges. This narrative review aims to provide a comprehensive analysis of the role of anatomy practical in nursing education, demonstrating their influence on

clinical competence, interdisciplinary collaboration, and professional development.

BENEFITS OF ANATOMY PRACTICAL

Anatomy practical significantly enhance nursing students' understanding of the human body. Through hands-on experience with cadavers, 3D models, and virtual simulations, students gain a concrete sense of the body's structures and their spatial relationships (7). This tactile learning process enables students to better grasp complex anatomical concepts that are often abstract and challenging to visualize through textbooks alone. The opportunity to physically interact with anatomical specimens helps bridge the gap between theoretical knowledge and real-world application, making it easier for students to understand and retain information (9).

The retention and recall of anatomical knowledge are markedly improved through practical sessions (10). Engaging actively with the material reinforces learning in a way that passive reading or lectures cannot. Studies have demonstrated that students who participate in practical anatomy sessions are more likely to retain information over the long term and recall it accurately when needed (11, 12). This improved retention is crucial for nursing professionals, who must draw upon their anatomical knowledge daily in clinical settings to assess patients, perform procedures, and make informed decisions.

Anatomy practical also directly enhance clinical skills and overall nursing competence (13). By practicing with real or simulated anatomical structures, students develop a better understanding of how the body's systems are interconnected, which is essential for performing medical procedures accurately and safely (14). For instance, understanding the spatial relationships of anatomical structures is critical for various clinical procedures, such as administering injections, inserting intravenous (IV) lines, performing catheterizations, and conducting respiratory assessments. In respiratory care, knowing the precise location of the lungs and airway passages assists in performing interventions such as suctioning or oxygen therapy. Similarly, during catheterization, anatomical knowledge of the urinary system ensures proper insertion and minimizes the risk of injury to the bladder or urethra. Anatomy practical also contribute to improved patient assessments, enabling nurses to better locate anatomical landmarks for procedures such as auscultation, palpation, and wound care (15).

DEVELOPMENT OF CRITICAL THINKING SKILLS

Critical thinking is a vital skill in nursing, and anatomy practical provide the foundation for making informed clinical decisions. For instance, a nurse must understand the spatial relationships of the heart and lungs when assessing a patient with chest pain, ensuring the

correct identification of symptoms related to cardiac or respiratory issues (16). Practical anatomy helps students develop these diagnostic skills, enabling them to apply theoretical knowledge in real-world situations.

In one case study, nursing students trained in practical anatomy were better prepared for emergency catheterization, where understanding the anatomy of the urinary tract was essential to avoid complications (17). This hands-on knowledge directly improved patient outcomes, as students could apply their understanding confidently and accurately in high-pressure clinical situations.

The understanding of anatomical structures such as blood vessels, muscles, and nerve pathways enables nurses to perform a wide range of procedures, from administering injections to conducting thorough patient assessments (18). In wound care, for instance, knowledge of underlying tissues aids in determining the depth of injuries and appropriate treatments. Anatomy practicals reinforce this understanding, preparing nurses for the diverse clinical scenarios they will face in their careers.

CHALLENGES OF ANATOMY PRACTICAL

Implementing anatomy practical in nursing education presents significant resource challenges. Cadaver dissection, often considered the gold standard for learning anatomy, requires substantial financial investment (19). Maintaining and acquiring cadavers, along with the necessary facilities and equipment for storage and dissection, can strain the budgets of educational institutions. To mitigate these expenses, many institutions have turned to virtual and augmented reality (VR/AR) platforms, such as the Anatomage Table and Complete Anatomy, which provide cost-effective and immersive learning experiences (20). These technologies simulate detailed anatomical structures, offering an interactive and sustainable alternative to traditional cadaver-based learning. Additionally, educational institutions are forming collaborative agreements to share resources, such as cadaver labs and simulation facilities, thereby distributing costs while ensuring access for students. Another cost-effective solution is the use of advanced 3D-printed anatomical models. These models, though initially expensive, are durable and reusable, making them a long-term investment for anatomy education.

Ethical considerations form another major challenge in the use of anatomy practical. The use of cadavers, in particular, raises sensitive issues regarding consent, respect for the deceased, and the psychological impact on students (21). Many nursing programs have adopted well-regulated body donation systems that emphasize informed consent and ethical transparency, ensuring that cadavers are obtained and used responsibly. Public awareness campaigns highlighting the importance of body

donation for medical education have also contributed to an increased number of donors (22). To support students who may feel discomfort when working with human remains, institutions now provide preparatory sessions, counseling, and structured debriefings. These initiatives help students process their experiences respectfully and constructively. Furthermore, the use of virtual dissection platforms addresses ethical concerns entirely, offering students high-quality learning experiences without direct exposure to human cadavers.

Time constraints within nursing curricula also pose a significant challenge for the inclusion of comprehensive anatomy practical. Nursing programs are typically packed with a wide array of subjects and clinical training requirements, leaving limited time for extended practical anatomy sessions (23). This often leads to a condensed anatomy curriculum where practical experiences are minimized or integrated into other courses in a way that may dilute their effectiveness. Ensuring that students receive adequate hands-on anatomy training while also fulfilling all other educational requirements demands careful curriculum planning and potentially innovative scheduling solutions to maximize the effectiveness of practical anatomy education within the constraints of a rigorous nursing program.

By implementing these strategies, nursing programs are transforming the challenges associated with anatomy practical into opportunities for innovation and improvement. These solutions highlight the adaptability of nursing education in addressing resource constraints while maintaining the quality and effectiveness of practical anatomy training.

IMPACT ON NURSING COMPETENCE

The integration of anatomy practical into nursing education has a profound impact on the clinical skills and overall competence of nursing professionals. By engaging in hands-on learning experiences, nursing students develop a detailed and practical understanding of the human body that is crucial for performing clinical procedures accurately (24). For instance, knowing the precise locations of veins, arteries, and nerves is essential for several routine tasks. This precise anatomical knowledge reduces the risk of errors and enhances the quality of patient care, as nurses are better equipped to navigate the complexities of the human body in a clinical setting.

Confidence is another significant benefit gained from anatomy practical, directly affecting nursing competence. Nurses who have undergone practical anatomy training are generally more confident in their abilities to perform various clinical tasks (24). This confidence stems from the familiarity and comfort developed through repeated, hands-on practice with anatomical models or cadavers. Confident nurses are more likely to perform procedures

correctly and efficiently, communicate more effectively with patients and colleagues, and take on leadership roles within healthcare teams (25). This assurance in their skills not only improves individual performance but also contributes to a more robust and capable nursing workforce.

Anatomy practical also enhance interdisciplinary collaboration, a crucial aspect of modern healthcare delivery (26). Nurses frequently work alongside doctors, physiotherapists, surgeons, and other healthcare professionals, requiring a shared understanding of anatomical concepts and terminology. Practical anatomy training ensures that nurses can effectively communicate and collaborate with other members of the healthcare team, contributing to cohesive and coordinated patient care (27). This collaborative competence is vital for developing treatment plans, conducting comprehensive patient assessments, and implementing effective interventions, ultimately leading to better patient outcomes and a more integrated healthcare system.

CONCLUSION

Integrating anatomy practical into nursing education is indispensable for fostering a comprehensive understanding of the human body, enhancing clinical competence, and preparing nursing professionals for real-world clinical challenges. Practical sessions reinforce theoretical knowledge and play a critical role in developing problem-solving and critical thinking skills necessary for effective patient care. Case studies demonstrate that hands-on anatomical learning enhances diagnostic accuracy and informs better decision-making in high-pressure clinical settings.

While challenges such as high resource costs, ethical considerations, and time constraints persist, innovative solutions like virtual simulations and 3D models provide viable alternatives to traditional cadaver dissections, expanding access to practical learning. These advancements, coupled with improved confidence, retention of anatomical knowledge, and interdisciplinary collaboration, justify the continued integration of anatomy practical into nursing curricula.

However, further research is needed to explore innovative teaching methods, assess the long-term impacts of practical training on nursing competence, and evaluate the effectiveness of alternative learning tools to fully realise the potential of anatomy practical. Policy changes at institutional and governmental levels should prioritize funding for anatomy education and support initiatives that promote ethical and accessible learning environments. By addressing these areas, nursing education can continue to evolve, equipping future nurses with the skills and knowledge necessary to excel in patient care

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