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The Paradigm Shift with the Uses of AI-Enhanced Virtual Patients in the Medical Education for Clinical Reasoning

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Abstract

Clinical diagnosis is a key determinant in healthcare quality and patient safety. Learners need exposure to a wide variety and quantity of patient to gain experience, plus the deliberated practices. Unfortunately, traditional medical education and clinical internships remained struggling to achieve the goals. The emergence of the COVID-19 pandemic has further exacerbated the situations. NLP(Natural Language Processing)-enhanced virtual simulation delivers participating model of training, which provides virtual patient, virtual hospital and experts behind the screen. The system allows hand-on practices on clinical decision making anywhere anytime, which brought a new opportunity for educational improvement during the pandemic and post-pandemic period. The virtual simulation training system can be used on teaching the many clinical tasks, including history taking, physical examination, laboratory examination/image studies, differential diagnosis and medical documentation. The technology highlights the importance of introducing clinical reasoning as the foundation for conducting all the above clinical tasks. The virtual simulation training system on clinical reasoning is expected to facilitate the learning effectiveness on clinical competency.

Keywords: clinical reasoning, clinical diagnosis, medical education, virtual patient, simulation education

智慧型虛擬病人帶來臨床推理訓練的新視野

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摘要

臨床診斷是提升醫療品質及確保病人安全的一個關鍵，學員需要經驗眾多病人情境的量與種類，又需被觀察與指導，傳統醫學教育教育與臨床實習不容易達到這些目的，COVID-19疫情造成空間隔離等多重問題，帶來了更大的學習困境。虛擬智慧型參與式擬真訓練，提供了虛擬病人、虛擬醫院及系統中的專家，可以讓學員隨時隨地演練臨床決策能力，在疫情中和疫情後提供了臨床思辨教育的轉機。教學上的應用，可以將臨床思辨架構導入診療照護任務中的各步驟，例如：病史詢問、進行檢查／檢驗探索、身體檢查、診斷分析及病歷寫作的教學訓練，藉此基礎而精進醫療人員之臨床診療能力。

關鍵詞：臨床思辨、臨床診斷、醫學教育、虛擬病人、擬真教育