ABSTRACT 07

ARENAL: A Supplementary Tool in Learning Anatomy and Common Acquired Diseases of The Human Urinary System

Nurul Hayati Mohamad Zainal[1], Muhammad Haris Naim[2], Nurul Huda Mohd Nor[1], Suryati Mohd Thani[1], Rahmita Wirza O.K. Rahmat[3]

Objectives: Augmented reality (AR) is an interactive three-dimensional (3D) experience that uses computers to overlay virtual information in the real world. ARENAL is an Android application that aims to facilitate students and patients understand the human urinary system (US) by implementing AR. It is an original work of 3D models, diagrams, pictures, notes and self-recording videos. The ARENAL interface icons contain anatomy, commonly acquired diseases of the kidney including acute kidney injury (AKI) and chronic kidney disease (CRD), quizzes and a manual. The AKI and CRD diseases information includes definition, causes and pathogenesis, signs and symptoms, pathophysiology, investigations, complications and management. The study aims to provide supplementary aid in learning human US anatomy and common acquired diseases for medical students and patients. *Methods:* Medical health students and patients can access learning materials and use AR tools to learn kidney anatomy and common acquired diseases on an Android with either a smartphone or tablet. They can visibly observe the kidney and its anatomical position through a detailed 3D kidney model instead of 3D on paper. For patients, as compared to reading hospital pamphlets, ARENAL enables them to augment the learning process better due to its accessibility and interactivity. *Results:* The user acceptance testing (UAT) (n= 10) revealed that this was their first interaction with AR (60%), strongly agreed that ARENAL is functioning smoothly (60%) and strongly agreed on its easiness to use (50%). Most respondents have a higher acceptance of ARENAL and suggested complementing more quizzes, games, activities, colours and additional functions to the 3D model for more interactivity. *Conclusion:* In conclusion, most respondents were satisfied with ARENAL, thus, ARENAL has the potential to be used as a supplemental tool in learning the anatomy and common acquired diseases of human US.

Keywords: augmented reality; ARENAL; android application; human urinary system and supplemental tool.

1. Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.
2. Bachelor of Computer Science (Multimedia), Faculty of Computer Science and Information Technology, Universiti Putra Malaysia.
3. Department of Multimedia, Faculty of Computer Science and Information Technology, Universiti Putra Malaysia.

Correspondence to: Dr. Nurul Hayati Mohamad Zainal, Senior Medical Lecturer (Physiology). Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. Email: mz_nurul@upm.edu.my