

# A Survey of Augmented Reality/Virtual Reality Interest in Medical Settings

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AR and VR technologies are becoming widely used in several fields, including medicine. As this technology has become more accessible, powerful, and cheap, the potential exists for AR/VR to play a larger role in the future of medicine. While some studies have been conducted to assess how using these technologies in a surgical setting can prove beneficial to patients, physicians, and healthcare centers, there is little data concerning the level of interest, and the factors that modulate that interest in using AR/VR in medicine.

Previously, AR/VR has been used in 3 major areas in medicine: training, surgical planning, and surgical navigation. In training, users can simulate procedures repeatedly in a virtual environment with little cost or risk [1,2]. In preoperative planning, surgeons can use 3D renderings of patient anatomy to familiarize themselves with the unique challenges of their patients, potentially more so than with traditional imaging [3]. Finally, in surgical navigation, augmented reality (primarily) is used to overlay pertinent information in a surgeon's field of view that could contain imaging, comments from colleagues watching a live-stream, or any number of tailored items to improve the surgical experience [3,4].

Among studies that have a component analyzing general interest in AR/VR, we have seen promising results. In one such study over 90% of participants surveyed in an education setting reported that the integration of this technology into medical practice and curricula was valuable [1]. Another noted a consensus among its subjects praising AR/VR for its realism, haptics (physical feedback from the virtual system intended to reflect actual stimuli), and potential use as a training tool [2,6].

However, few studies have been published that provide deeper insight into clinical interest in using these technologies, particularly how various dimensions of the experience can influence perceptions. If there is a benefit to be gained from using AR/VR in medical practice, it is in the best interest of the field to understand how to further increase awareness, and approachability of these technologies so that benefit can be shared with patients. This study will assess the validity of certain survey topics and questions in evaluating user experience [7]. As with some of these other studies, the survey will evaluate this technology comparatively with more traditional methods (i.e., 2D and 3D imaging presented on a computer screen) [8] Questions in this study will be informed by the Technology Acceptance model (TAM), which argues that intention to use a new tool or device is correlated to perceived usefulness and ease of use [9].

Other novel areas of this study include gathering professional factors related to the use of AR/VR by care providers. Factors such as age, profession, and expected uses in practice will help bridge a gap in literature and point towards information or messaging differences regarding this technology across populations.