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Therapists' perceptions and insights into implementing mixed reality in neurorehabilitation: A mixed methods service evaluation

Abstract:

Background: Neurological disorders are leading causes of disability and mortality. NHS neurorehabilitation delivery is limited by finite numbers of occupational therapists (OTs), physiotherapists (PTs) and speech and language therapists (SLTs).

Immersive technologies such as Mixed Reality (MR) could complement delivery and gain efficiencies with the available in-person resource – however, limited evidence exists for its utility in healthcare. Prior to efficacy studies, a feasibility study would inform implementation.

Objective: To investigate the feasibility and barriers of implementing MR, specifically Microsoft HoloLens-2 (HL-2), in neurorehabilitation, by analysing the perceptions of PTs, OTs and SLTs.

Methods: Mixed-methods, prospective cohort study utilising maximum variation purposive sampling. Neuro-therapists at a tertiary NHS Hospital Trust (Leeds) trialled HL-2 and completed a questionnaire and semi-structured interview. Quantitative and coded thematic analyses were conducted.

Results: The sample (n=22) was predominantly female (n=20), ≤40 years old (n=17) and highly qualified.

81.8% of therapists perceived HL-2 useful; 77.3% would adopt it into their practice – PTs most likely, OTs least.

68.2% found HL-2 easy to use, but only 18.2% thought their patients would. Aspects of HL-2's hardware and software were considered strengths. However, there were concerns regarding patients with severe cognitive/visuospatial/depth perception impairments.

Motion sickness and disorientation (typically experienced in virtual reality) were reported by 0% and 13.6% (median severity=3/10, IQR=4) respectively. 22.7% reported impaired vision (median severity=5/10, IQR=3.5). No other adverse effects were reported.

Conclusions: Therapists' perceptions of HL-2's complexity, relative advantage and safety are likely to facilitate implementation. However, HL-2's compatibility requires further investigation. Overall, a follow-on study is justified.

Biography

***Sophie C.A. Price**, is affiliated with the University of Leeds, United Kingdom, and contributes to academic research and development in her field of study.

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