African Physiotherapy Research (Clinical)

The Efficacy of Virtual Reality Distraction Therapy for Procedural Pain During Burn Dressing Changes: A Meta-Analysis with an African Perspective

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Abstract

Procedural pain during burn dressing changes presents a major clinical concern, frequently necessitating substantial analgesic use. Virtual reality distraction therapy is a non-pharmacological intervention of growing interest, yet its effectiveness within African healthcare contexts, characterised by common resource constraints, remains unclear. This meta-analysis aimed to synthesise global evidence on the efficacy of virtual reality distraction therapy for procedural pain during burn dressing changes. A further objective was to interpret these findings through the specific lens of applicability to resource-limited settings, informed by a case study from a specialised burn unit in Africa. A systematic search of electronic databases was conducted for randomised controlled trials and quasi-experimental studies. Eligible studies investigated immersive virtual reality distraction during burn dressing changes. Standardised mean differences for pain scores were pooled using a random-effects model. The applicability of the synthesised evidence to resource-limited settings was critically appraised. The pooled analysis demonstrated a consistent, moderate reduction in self-reported pain scores during virtual reality distraction compared to standard care. The mean reduction in pain intensity was equivalent to 1.8 points on a 10-point visual analogue scale. The adjunctive case study highlighted practical implementation considerations, including headset maintenance and staff training requirements. Virtual reality distraction therapy is an effective adjunct for managing procedural pain during burn dressing changes. However, its successful implementation within typical African clinical settings requires deliberate adaptation to local infrastructure and training capacities. Future research should prioritise conducting robust clinical trials within African burn units. Prior to wider clinical implementation, pilot studies are recommended to address factors such as sustainable cost, infection control protocols, and the development of contextually appropriate virtual reality content. virtual reality, pain

management, burn care, wound dressing, distraction therapy, meta-analysis, Africa This work synthesises global evidence on virtual reality for burn care pain and provides a critical framework for evaluating its potential translation into resource-limited clinical settings in Africa.

Keywords: *virtual reality, distraction therapy, procedural pain, burn care, meta-analysis, Sub-Saharan Africa*

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