INPLASY

Effect of adherence levels to the rehabilitation process with virtual reality in people with chronic pain: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - No funding sources.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 August 2025 and was last updated on 30 August 2025.

INTRODUCTION

Review question / Objective The aim of this research is to evaluate the effect of adherence levels to the rehabilitation process with virtual reality in individuals with chronic pain, through a systematic review and meta-analysis.

Condition being studied Chronic pain constitutes a global public health problem that significantly affects quality of life and generates a high socioeconomic impact. It is estimated that more than 20% of the world's population suffers from some form of chronic pain, which limits functionality and increases the risk of psychological comorbidities such as anxiety and depression. Despite advances in pharmacotherapy and conventional rehabilitation, many patients do not achieve adequate relief, which has driven the search for innovative complementary interventions.

In this context, virtual reality (VR) has emerged as a promising tool for pain management, offering immersive environments that can modulate pain perception through mechanisms of distraction, neuroplasticity, and emotional regulation. Various studies have shown that VR can reduce pain intensity in different clinical conditions, including musculoskeletal pain, neuropathic pain, and pain associated with medical procedures. In addition, VR not only contributes to pain relief but also increases motivation and active patient participation in rehabilitation programs, thanks to gamification and real-time feedback.

Treatment adherence is a critical factor for the success of any therapeutic intervention, and in the case of VR, immersive environments have been observed to promote patient continuity and commitment to the program. However, the relationship between adherence levels and clinical outcomes in VR-based rehabilitation programs for people with chronic pain has not been systematically explored, even though lack of adherence may limit the effectiveness and sustainability of the benefits..

METHODS

Search strategy A systematic review of the literature will be conducted in the Scopus, PubMed, and Web of Science databases, focusing on high-impact studies examining the effect of adherence levels to the rehabilitation process with virtual reality in individuals with chronic pain, including publications indexed between quartiles Q1 and Q4. Boolean operators will be applied using the following search strategy:

(("chronic pain" OR "persistent pain" OR "long-term pain") AND ("virtual reality" OR "virtual reality therapy" OR "VR-based therapy" OR "immersive virtual reality" OR "non-immersive virtual reality")) AND ("adherence" OR "compliance" OR "treatment adherence" OR "patient adherence" OR "therapy adherence").

The identified manuscripts will then be analyzed in three phases: identification, eligibility, and inclusion, according to the predefined criteria for this review. Finally, methodological quality and publication impact will be systematically assessed.

Participant or population Patients diagnosed with chronic pain (regardless of the underlying cause).

Intervention Virtual reality therapies for the treatment of chronic pain.

Comparator Different VR modalities compared to each other (immersive vs. non-immersive). Other digital or conventional therapies reporting adherence levels, if applicable.

Study designs to be included Controlled ClinicalTrials (CCT) or Randomized Clinical Trials (RCT), published in English or Spanish.

Eligibility criteria P: Patients diagnosed with chronic pain (regardless of the underlying cause).
I: Virtual reality therapies for the treatment of chronic pain.
C: Different VR modalities compared to each other (immersive vs. non-immersive). Other digital or conventional therapies reporting adherence levels, if applicable.
O: Levels of adherence to VR therapies. Related factors are also considered: factors influencing adherence, effectiveness of VR in improving adherence, barriers, and facilitators.
T: During and/or after the VR intervention.

Information sources A systematic search strategy will be implemented in the Scopus, PubMed, and Web of Science databases, including studies published up to September 2025.

Main outcome(s) Levels of adherence to VR therapies. Related factors are also considered: factors influencing adherence, effectiveness of VR in improving adherence, barriers, and facilitators.

Quality assessment / Risk of bias analysis The risk of bias of individual studies will be assessed by the investigator independently, according to the recommendations suggested by the Cochrane Handbook for Systematic Reviews (Cochrane Handbook of Systematic Reviews of Interventions). In this way, the existence of selection, performance, detection, attrition, and reporting bias in the included studies will be determined. Each domain could be classified as 'low' RoB, 'some concerns,' or 'high.' A second reviewer (RV) will be involved if consensus cannot be reached.

Strategy of data synthesis Descriptive analyses will be conducted for studies that present insufficient data for overall grouping, and a descriptive synthesis will be performed following the guidelines of the Cochrane Collaboration.

Subgroup analysis Subgroups will be considered as differences in treatment methods between traditional treatment groups and intervention with VR.

Sensitivity analysis Sensitivity analysis will be performed using case-by-case exclusion analysis.

Country(ies) involved Chile, Colombia, Spain.

Keywords Virtual Reality Exposure Therapy; Chronic Pain; Rehabilitation; Treatment Adherence and Compliance.

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