Videoconferencing of Movement-based and Psychologically Informed Interventions for Chronic Pain: A Systematic Review and Horizon Scan

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PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted health care topics of importance to clinicians, managers, and policymakers as they work to improve the health and health care of Veterans. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The program comprises four ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, interface with stakeholders, and address urgent evidence needs. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the program website.

The present report was developed in response to a request from the Office of Rehabilitation and Prosthetic Services. The scope was further developed with input from Operational Partners (below), the ESP Coordinating Center, the review team, and the technical expert panel (TEP). The ESP consulted several technical and content experts in designing the research questions and review methodology. In seeking broad expertise and perspectives, divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Ultimately, however, research questions, design, methodologic approaches, and/or conclusions of the review may not necessarily represent the views of individual technical and content experts.

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Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

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Technical Expert Panel

To ensure robust, scientifically relevant work, the TEP guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress. TEP members are listed below:

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The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence (see Appendix D for disposition of comments). Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center works to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

EXECUTIVE SUMMARY

Key Findings

- One VA-based randomized non-inferiority-controlled trial was included that studied the delivery of acceptance and commitment therapy in person compared with videoconferencing. Pain interference improved within both treatment arms at 8 weeks and 6-month follow-up. No statistically significant difference in outcomes was found between treatment delivery modalities.
- A scan of future research yielded 6 registered protocols, 3 protocol papers, and 1 published pilot study, indicating that future research on this topic is forthcoming.
- Future research should focus on comparative, adequately powered study designs with well-described interventions of both psychologically informed and movement-based approaches to pain management delivered via videoconferencing and assessing patient-important and health care systems-important outcomes.

INTRODUCTION

With the onset of the COVID-19 pandemic, one of the biggest changes in practice has been to the delivery of care. Telehealth technology has been an important mode to maintain the availability and continuity of care during these times for providers across the health care continuum—from physicians to nurses to therapists—in settings ranging from primary care to specialty care. The Veterans Health Administration (VHA) was uniquely adept at applying this change in delivery, as it has long utilized telehealth services to deliver care to Veterans across the country. This enabled the VHA to implement programs that were already in place to quickly provide Veterans with the necessary technology and to deliver care through telehealth. Currently, the VHA offers telehealth services and communication with providers via instant messaging on MyHealtheVet, telephone calls, and videoconferencing on VA Video Connect (VVC). Early in the pandemic, telephone appointments made up a significantly greater share of virtual care, likely due to their being less complex in nature and having fewer barriers to implementation. Implementation barriers for VVC include that both the patient and the provider need camera-enabled devices, access to adequate connectivity for streaming video, and a certain level of comfort navigating a telehealth platform.

Like other types of care, treatment for chronic pain quickly adopted remote practice. While face-to-face visits were discouraged, public health recommendations continue to encourage nonpharmacological pain management approaches such as behavioral therapy, exercise-based therapies, and self-management approaches to stem the use of prescription opioids. This meant a shift to virtual pain management to meet the continued demand for these services during the pandemic.

Nonpharmacological approaches to pain management may be well suited for the virtual care environment. Yet it is not widely understood if the effectiveness of this treatment modality translates to the virtual environment when delivered via videoconferencing. Thus, the purpose of this review is to examine the effectiveness of chronic pain management interventions delivered via videoconferencing compared to in-person care.

Key Questions

At the request of the Office of Rehabilitation and Prosthetic Services, the Office of Patient Centered Care and Cultural Transformation, and the Office for Pain Management and Opioid Safety, we conducted a systematic review to address the following key questions (KQ):

KQ1: Among patients with chronic pain, what is the effect of videoconference-delivered psychologically informed interventions for nonpharmacological chronic pain on pain, functionality, quality of life, and patient engagement?

KQ2: Among patients with chronic pain, what is the effect of videoconference-delivered therapeutic exercise and movement interventions for nonpharmacological chronic pain on pain, functionality, quality of life, and patient engagement?

METHODS

We developed and followed a standard protocol for this review in collaboration with operational partners and a technical expert panel (PROSPERO registration number CRD42021279069).

Data Sources and Searches

We searched MEDLINE (via Ovid), Embase (via Elsevier), CINAHL Complete (via EBSCO), and Cochrane Central Register of Controlled Trials (via Ovid) from inception to June 10, 2021. We hand-searched previous systematic reviews conducted on this topic for potential inclusion.

Study Selection

In brief, study eligibility included randomized designs that evaluated the effect of synchronously delivered videoconferencing interventions explicitly focused on pain management. We excluded studies that evaluated videoconferencing pain management compared to other video-based controls (*ie,* not in person), as the operational partners who commissioned this report were keenly interested in the comparison of videoconferencing care with in-person care.

Studies identified through our primary search were classified independently by 2 investigators for relevance to the KQs based on title and abstract. All citations classified for inclusion by at least 1 investigator were reviewed at the full-text review level. If both investigators agreed on exclusion, the study was excluded at the full-text level. All articles meeting eligibility criteria were included for data abstraction.

Data Abstraction and Quality Assessment

Data elements include descriptors to assess applicability, quality elements, intervention details, and outcomes. Study risk of bias was assessed using the Cochrane EPOC risk of bias 2 (ROB 2) tool, which is applicable to randomized studies. The strength of evidence as assessed using the approach described by Grading of Recommendations Assessment, Development and Evaluation (GRADE). We limited GRADE ratings to those outcomes identified by the stakeholders and technical expert panel as critical to decision-making.

Data Synthesis and Analysis

We summarized the literature using relevant data abstracted from the eligible studies. Summary tables describe the key study characteristics of the primary studies: study design, patient demographics, and details of the intervention and comparator. We were unable to conduct quantitative synthesis (*ie*, meta-analysis) to estimate summary effects, given the paucity of literature that met eligibility criteria. We analyzed the data narratively, as quantitative synthesis was not feasible. The narrative synthesis focused on documenting the intervention components and outcome categories.

Given that little information was available in the published literature on this topic that met eligibility criteria, we conducted a horizon scan of published pilot studies and protocol papers. We also conducted a search of protocol registrations in Cochrane Central Register of Controlled Trials to forecast when future studies on this topic may become available in the published literature and the types of interventions likely to be forthcoming.

RESULTS

Results of Literature Search

We identified 8,252 citations, of which 142 were reviewed at the full-text stage. Of these, 1 study met eligibility criteria. The randomized trial was conducted within the VA. Due to the nascent literature, we conducted a horizon scan that included 6 protocols in trial databases, 1 pilot, and 3 published protocols.

Summary of Results for Key Questions and Horizon Scan

KQ 1

Only 1 noninferiority randomized trial met eligibility criteria for KQ1. This study compared the delivery of acceptance and commitment therapy in person compared with video teleconferencing. No statistically significant difference in outcomes was detected between the in-person and videoconferencing delivery modalities. Additionally, pain interference improved within both treatment arms at 8 weeks and 6 months follow-up. While no significant differences in patient satisfaction were found, a statistically significant number of patients withdrew from the videoconferencing group compared to the in-person group from baseline to posttreatment at 8 weeks (46% vs 23%; $p = 0.01$).

KQ 2

No studies met eligibility criteria for KQ2.

Horizon Scan

The horizon scan of the literature yielded 1 pilot study, 3 published protocols, and 6 protocols registered in trial databases of studies that are potentially relevant to this topic. Most of the studies on the horizon plan to use movement-based approaches to nonpharmacological pain management. Two describe a psychologically informed approach, and 2 identified protocols describe an intervention that uses a combination of behavioral and movement therapies. Most planned studies will be conducted outside the United States, but 2 identified registered protocols are for forthcoming studies within the VA.

DISCUSSION

Key Findings and Strength of Evidence

Only 1 study met inclusion criteria and evaluated acceptance and commitment therapy delivered via videoconferencing and in person. Findings from this single study indicate that the impact of virtually delivered pain management is a possible substitute for in-person care. The outcomes reported included 5 pain measures, 2 quality-of-life measures, and 1 function measure. The evidence was rated as low certainty. These categories were rated down for possible risk of bias and imprecision. Continued research in this area is likely to change the GRADE ratings.

To augment the dearth of identified literature, we conducted a horizon scan of planned studies. We identified 1 pilot study that assessed videoconferencing delivered prehabilitation. While underpowered to detect differences between arms for pain, function, disability, physical performance, or satisfaction outcomes, this study found the in-person and videoconferencing delivery to be equivalent. The 3 protocol papers identified on this topic indicate that future research will focus on real-time physiotherapy (physical therapy), group exercise, guided exercise, reflection, and relaxation techniques. Of the 6 protocols identified via trial registration databases, 2 are psychologically informed intervention studies, 3 are movement-based intervention studies, and 1 combines these approaches. These protocols similarly suggest that this is a burgeoning field of research likely to yield results in coming years.

Applicability

The findings of this review are directly applicable to the VA population. The 1 included study was conducted with Veterans and in the VHA. Of the 10 planned studies identified in the horizon scan, 2 will be conducted within the VHA. Additionally, 7 future studies will be conducted in countries with nationalized health care, which may make findings of these planned studies more applicable to the VHA health care environment.

Future Research

Given the paucity of evidence on this topic, several areas are in need of further exploration. In brief, further comparative and adequately powered studies that assess the impact of nonpharmacological pain management approaches delivered via videoconferencing are needed. Continued research is needed on interventions that utilize behavioral therapy, exercise-based therapy, and a combination of both approaches. Detailed descriptions of interventions are also necessary for future implementation and systematic reviews. Future research should focus on system-level (*eg*, no-show rates, unscheduled change of modality from videoconferencing to telephone) and patient-important outcomes (*eg*, pain interference, patient satisfaction, engagement). A key area of opportunity for future research includes describing differences in access across patient-level subgroups (*eg*, rural populations, underrepresented racial and ethnic groups, those with severe or treatment-resistant pain).

Conclusions

Further research is needed to investigate the effectiveness of behavioral and movement-based videoconference interventions for chronic pain. Additionally, research is needed to understand patient preferences as well as the facilitators and barriers for successful implementation and scalability of such interventions within a variety of settings. The VHA is well positioned to

conduct needed evaluations of chronic pain management care delivered via videoconferencing given its mission-driven focus, diverse patient populations, robust virtual care infrastructure, and wealth of administrative data. Such evaluations will be needed to guide clinical and operations practice to optimize equitable deployment and access to high-quality health care delivered via videoconferencing.