



Behavioral Health, Telemedicine, and Opportunities for Improving Access

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Abstract

Purpose of Review The purpose of this review is to summarize advances in behavioral treatments for pain and headache disorders, as well as recent innovations in telemedicine for behavioral treatments.

Recent Findings Research for behavioral treatments continues to support their use as part of a multidisciplinary approach to comprehensive management for pain and headache conditions. Behavioral treatments incorporate both behavioral change and cognitive interventions and have been shown to improve outcomes beyond that of medical management alone. The onset of the COVID-19 public health emergency necessitated the rapid uptake of nontraditional modalities for behavioral treatments, particularly telemedicine. Telemedicine has long been considered the answer to several barriers to accessing behavioral treatments, and as a result of COVID-19 significant progress has been made evaluating a variety of telemedicine modalities including synchronous, asynchronous, and mobile health applications. Researchers are encouraged to continue investigating how best to leverage these modalities to improve access to behavioral treatments and to continue evaluating the efficacy of telemedicine compared to traditional in-person care.

Summary Comprehensive pain and headache management should include behavioral treatments to address a variety of behavior change and cognitive targets. Policy changes and advances in telemedicine for behavioral treatments provide the opportunity to address historical barriers limiting access.

Keywords Behavior · Treatment · Telemedicine · Access · Migraine · Pain

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Introduction

Behavioral management is a critical component of a multidisciplinary approach to pain and headache. Although an important component of care, several barriers limit engagement with behavioral treatments, particularly relating to finances and accessibility. Telemedicine, the use of electronic technologies to provide remote healthcare, has long been considered a strategy well-positioned to address many barriers to care. As a result of the COVID-19 pandemic, telemedicine became a critical aspect of delivering care while adhering to best-practice guidelines for mitigating COVID-19 transmission. The necessity for the transition to telemedicine afforded unique opportunities to evaluate a variety of relatively understudied treatment modalities for behavioral pain and headache treatments.

This paper aims to provide an update of new research in behavioral treatments for pain and headache disorders, review historical barriers to accessing behavioral treatments and how COVID-era policy changes as telemedicine has

served to address those barriers, and finally provide an overview of recent innovations in telemedicine-based behavioral treatments for pain and headache disorders.

Advances in Behavioral Management of Pain and Headache Disorders

Behavioral pain and headache treatments typically include multiple behavior change and cognitive restructuring interventions to improve coping with pain and have demonstrated efficacy in reducing pain-related interference and enhancing quality of life [1, 2, 3•, 4, 5]. Behavior change interventions, such as reducing activity restriction, increasing pleasurable activities, and increasing social engagement, can “turn the dial down” on the pain experience and improve physical rehabilitation efforts. Cognitive factors, such as fear and avoidance of pain and pain catastrophizing, have demonstrated strong relationships with pain interference and quality of life [6–8]. Interventions that focus on identifying and restructuring maladaptive pain cognitions have demonstrated efficacy in improving pain-related quality of life [9–12]. Incorporating behavioral management of chronic pain and headache disorders improves outcomes beyond medical management alone [13–15]. Recent clinical trials have demonstrated that cognitive behavioral treatments address important comorbidities of pain and headache, such as sleep [16, 17] and depression [18, 19], and positively affect pain and headache outcomes. Mindfulness-based interventions have also demonstrated promise to reduce pain-related interference and improve quality of life in people living with chronic pain and headache disorders [20, 21].

Stepped care approaches are recommended to improve pain and headache management while managing limited resources across a health system [22–26]. In a stepped care approach, patients begin their healthcare journey in the lowest level of care available for their disease (often primary care) and are then given optimized care available in each care setting before moving to the next step of more specialized care. Given the pervasive impact, most people with chronic pain and headache disorders could likely benefit from screening and education about the role of lifestyle behavior in these disorders. Patients who screen positive for having suboptimal lifestyle factors or maladaptive pain behaviors or cognitions should be offered provider-based interventions such as motivational interviewing and goal-setting to promote healthy lifestyle changes. Patients for whom the first level of care does not provide meaningful improvements in the pain or headache management, or for whom mental health comorbidities are interfering with pain or headache management goals, should be referred to a behavioral health professional for

assessment of behavioral and cognitive targets for intervention to improve pain or headache management.

Despite the considerable promise to reduce pain-related interference and improve quality of life of people living with chronic pain and headache disorders, behavioral treatments are underutilized. Reducing barriers to accessing behavioral treatments for chronic pain and headache disorders is therefore a high priority.

Addressing Barriers to Behavioral Treatments: Telemedicine and COVID-19

Telemedicine, the use electronic technologies to provide remote healthcare, has long been heralded as a solution to numerous healthcare barriers, including those regarding access and engagement. Despite technological advances, adoption of telemedicine lagged behind for a variety of reasons, including provider and patient skepticism, inability to integrate with traditional healthcare, ethical concerns, licensing issues, reimbursement, and policy [27, 28]. Further, a 2019 report on telemedicine reviewing seven state Medicaid programs noted that technology barriers, such as unreliable internet services, prevent telemedicine from reaching the very populations considered to benefit the most from such services (e.g., rural individuals) [29]. Facing considerable inertia, telemedicine services were accessed by less than 10% of individuals as recently as a 2019. A notable exception to the slow uptake of telemedicine services was the Veterans Healthcare Administration (VHA) [30]. Representing the largest healthcare system in the USA and serving approximately six million veterans yearly [31], telemedicine was utilized with approximately 15% of patients with a primary focus on expanding coverage for rural veterans [30].

The onset of the current public health emergency (PHE) as a result of the 2019 coronavirus (COVID-19) necessitated a rapid shift in healthcare strategies. Beginning in March 2020, the Centers for Medicare and Medicaid Services (CMS), alongside private insurers, began reimbursing under broader telemedicine circumstances, and notably, at the same rate as in-person visits [32]. Policy shifts from the Department of Human & Health Services relaxed HIPPA-related restrictions on the use of remote communication strategies and interstate care [32]. The initial impact of COVID-19 and subsequent policy changes saw telemedicine sharply increase to account for as high as 30–50% of all health care encounters [33, 34]. The CMS released a brief shortly after COVID-related policy changes went into effect, noting that telemedicine services rose from 15,000 patients/week prior to COVID, to nearly 1.7 million/week in April 2020.

Many federal policies remain conditional on the COVID-19 PHE, most recently extended in April 2022 [35], though many states have legislated permanent revisions such as equal

reimbursement rates between in-person and online visits. Additionally, many states have begun to develop various interstate licensure agreements, such as the Interstate Medical Licensure Compact, which has seen related legislature passed or pending in twelve states since the onset of COVID-19 [36]. Similarly, state legislation for interstate psychology practice, under the Psychology Interjurisdictional Compact, has nearly doubled over the last two years [37].

Broader state- and federal-level adoption of these policies following COVID-19 will likely require extensive clinical trials across a variety of medical and mental health conditions, particularly for challenging presentations such as chronic pain and headache [38]. In the meantime, COVID-19 has provided the impetus for radical uptake of telemedicine and provided numerous insights into the barriers it is poised to address.

Mitigating Barriers and Improving Access to Care

Several barriers prevent people with chronic pain and headache from receiving in-person behavioral treatments. However, using a variety of telemedicine modalities may mitigate these barriers. Reimbursement for behavioral pain and headache treatments remains suboptimal, serving as an additional disincentive to participate in behavioral treatments, particularly when compared to the higher reimbursement for medical pain and headache treatment strategies. Consequently, many people report that they are unwilling to pay out-of-pocket for treatment [39]. Not only can treatment be expensive, but patients must often miss work to travel to and attend appointments, which may result in lost income or the use of accrued leave from work. Additionally, patients with children or other dependents may need to secure additional caretakers so that they can attend an appointment. Given that telemedicine allows patients the flexibility to receive behavioral treatments for pain and headache from any location, telemedicine may offset some of the costs associated with attending in-person appointments.

Time constraints may also limit in-person care. For example, medical office hours often align with typical work hours which are not always convenient for those working nightshifts. Asynchronous or self-led treatment modalities that leverage mHealth may be a particularly attractive alternative to in-person care.

Access to behavioral providers with specialization in behavioral pain or headache treatments can be challenging, particularly in rural settings [40]. Therefore, patients may face limited options in behavioral treatment providers, resulting in limited behavioral treatment strategies that may not adequately address their specific treatment needs [41, 42]. Recent studies have observed greater use of telemedicine for patients who receive specialty pain services in rural populations (12%) compared to urban patients (3%)

[43]. Additionally, people with mobility limitations may require accessible transit options to attend in-person medical appointments. Moreover, given the unpredictable nature of pain and headache attacks, transportation may be uncomfortable, and attending in-person appointments may exacerbate pain [44••]. Therefore, telemedicine delivery of behavioral treatments for pain and headache can afford patients the ability to receive high-quality care without physically needing to travel to a medical facility.

Societal and cultural concepts related to seeking psychological care may also interfere with seeking in-person behavioral care for chronic pain and headache disorders [45]. For example, patients may believe that a referral to a psychologist indicates their medical provider does not believe their pain is “real,” or that a referral to a pain psychologist is for a mental health concern rather than pain management. One qualitative study stemming from a telerehabilitation RCT found that telemedicine may place patients at ease, facilitating disclosure and allowing patients to speak more freely, ultimately improving treatment outcomes [46]. Despite beliefs that telemedicine decreases personal connection, this data suggests that modalities without face-to-face components may increase patient comfort resulting in increased patient honesty and disclosure.

Telemedicine can be empowering for patients by removing many of the aforementioned barriers. When patients can choose where, when, and how they receive treatment, they feel a sense of control. A recent systematic review of 21 qualitative studies ($N=429$) covering the full range of telemedicine modalities refers to a common theme the authors call “at my own pace, space, and place,” encapsulating how personalization may ultimately lead to feelings of empowerment [47••]. Empowerment is especially meaningful for patients who may feel powerless due to the unpredictability of chronic pain or headache.

Even in its infancy, telemedicine has become a preferred method of care for many people living with chronic pain and headache. Studies of early telemedicine adoption have consistently shown that patients view this modality as acceptable, with similar or greater rates of satisfaction and treatment compliance compared to in-person care, and prefer a fully virtual or blended care model moving forward [48–50]. In addition to being well received by patients, behavioral treatments delivered through a variety of telemedicine models have demonstrated early promise for reducing pain intensity, and pain and headache-related disability [51–59].

Modes of Care Delivery

Technological advances for patients and healthcare systems and recognition of the benefit of such tools have led to several novel technology modalities affording synchronous, asynchronous, or hybrid care [60].

Synchronous Care Delivery

Synchronous healthcare delivery entails two-way interactions between patients and providers in real time, with video- or phone-based care most commonly used. Synchronous care provides the closest fidelity to traditional, in-person treatments while offering the benefits of telemedicine. Several studies have examined the delivery of behavioral treatments for pain or headache using synchronous care. For example, Rutledge and colleagues conducted a randomized controlled trial examining the synchronous, virtual delivery of cognitive behavioral therapy and supportive psychotherapy for 61 people with chronic back pain [54]. Participants in both groups reported significant improvements in disability and pain intensity, showing that providers can effectively deliver behavioral treatments for pain via telemedicine.

While cognitive behavioral therapy is one of the most commonly studied behavioral treatments for pain and headache, third-wave interventions, such as Acceptance and Commitment Therapy for Chronic Pain (ACT), continue to gain attention. ACT highlights acceptance, mindfulness, and psychological flexibility to help patients live a valued-based life despite their chronic pain. Herbert and colleagues conducted a randomized noninferiority trial comparing the delivery of an 8-week ACT treatment intervention either in person or via video with 128 Veterans with chronic pain [55]. Participants were randomized to receive eight individual ACT sessions either in person or via videoconferencing. Outcomes included pain interference and pain intensity, among other mental health comorbidities. In-person delivery of ACT was noninferior to delivery via video, therefore concluding that the treatment provision of ACT video is both acceptable and effective for people living with chronic pain.

Asynchronous Care Delivery

While synchronous healthcare entails interactions between patients and providers in real time, asynchronous care can occur at any time. Leveraging the accessibility of technology, asynchronous models may be particularly beneficial for individuals with inflexible work or caregiving schedules. There are several formats for providing asynchronous care, including secure messaging, emailing, or interactive voice response technology. Heapy and colleagues conducted a noninferiority randomized trial comparing synchronous and asynchronous delivery of a 10-week cognitive-behavioral therapy for chronic pain protocol with 125 Veterans diagnosed with chronic low-back pain [61]. Participants were randomized to receive CBT-CP in person or via interactive voice response technology (IVR-CBT-CP). Those randomized to the IVR-CBT-CP group received asynchronous care with a self-directed treatment workbook and daily IVR calls to gather data about skill

practice and pain outcomes and weekly prerecorded therapist feedback. Participants in the CBT-CP group received synchronous care via one-on-one in-person treatment with a therapist. The authors found that the average pain intensity from baseline to 3 months post-treatment was similar between the groups (-0.77 IVR-CBT-CP vs. -0.84 CBT-CP). Additionally, participants across both treatment groups reported benefits for sleep quality and quality of life. The authors concluded that IVR technology, as a mode of asynchronous care delivery, is an attractive option since it is convenient for patients and could increase access to much-needed behavioral treatments for people living with chronic pain. Interestingly, in a secondary analysis of this trial, patients who received IVR-CBT-CP remained in treatment longer than those in the CBT-CP group, suggesting that IVR delivery of CBT-CP is an effective and acceptable method of treatment delivery for pain [62].

More recently, Heapy and colleagues conducted a randomized hybrid type 1 pragmatic superiority trial comparing CBT-CP and IVR CBT-CP with 764 Veterans with chronic musculoskeletal pain [63]. They anticipate several benefits of utilizing IVR as a method of asynchronous delivery. It is much less burdensome for patients and providers, allowing for shorter appointment times, and more flexibility for patients and providers, as patients can access treatment at a most convenient time.

Leveraging asynchronous tools may be beneficial in allowing patients to receive care outside of the clinic walls, increasing access, and being more convenient for patients, though there are concerns regarding fully asynchronous care. Providers may feel uncomfortable with the lack of “face-to-face,” real-time contact, and patient interactions over email or IVR may be substantively different than in traditional settings. Hybrid telemedicine models combine aspects of synchronous and asynchronous care, offering largely web-based programs with less frequent and shorter-duration patient-provider interactions. Dear and colleagues conducted a randomized control trial of one such models, investigating an 8-week web-based, clinician-guided cognitive behavioral therapy program for chronic pain among 60 participants [64]. Sustained improvements in pain and affective distress were observed by the treatment group, and the program was exceptionally well received by patients. Notably, providers spent an average of 82 min per patient across the 8 weeks, compared to 240–480 h that would typically accompany 30–60-min weekly sessions over 8 weeks. This program has been subsequently investigated in larger-scale trials with varying degrees of clinician support or use in specific pain disorders such as a fibromyalgia, with similar outcomes reported [59, 65].

Although these models show significant promise, future research examining how best to incorporate asynchronous

and synchronous care in tandem is needed, particularly in the context of headache disorders.

Mobile Health and Internet-Based Care Delivery

Mobile health (mHealth) is another method of providing treatment. The World Health Organization defines mHealth as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices” [66]. Phone-based apps are increasingly popular and can serve a multitude of purposes. For example, electronic headache phone applications are commonly used for data collection, allowing patients to track headache frequency, symptoms, and potential headache triggers. In addition to monitoring headache and associated symptoms, phone-based applications can also be used to deliver behavioral treatment [67•]. Smartphone apps have also been used to deliver components of behavioral interventions for headache. For example, a pilot trial with 139 people with migraine reported that delivery of progressive muscle relaxation resulted in decreased headache-related disability [57].

Self-guided programs have also been shown to be effective for pain. For example, in a study of 58 people with chronic low-back pain, the use of an internet-based delivery of cognitive behavioral therapy for pain resulted in a reduction of pain interference and improvements in psychiatric symptoms of anxiety and depression [56]. The authors concluded that internet delivery of cognitive behavioral therapy for pain was feasible and acceptable.

Mobile health modalities are particularly well suited to address many of the barriers previously described due to the rapid proliferation of mobile devices over the last two decades, and continued research investigating how best to leverage the technology in the context of pain and headache disorders is needed.

Summary

Behavioral management of pain and headache disorders is an important component of a multidisciplinary treatment plan, though it has been historically impeded by a multitude of financial, accessibility, and social barriers. With the onset of the COVID-19 public health emergency and related policy changes, telemedicine quickly became the default modality for behavioral treatments. Although circumstances necessitated the shift, care should be emphasized when considering telemedicine modalities as efficacious or preferred to traditional in-person. Early research shows promise for a variety of telemedicine models for behavioral management of pain and headache, and undoubtedly more will emerge as a result of COVID-19. Future research investigating how best

to utilize different methods is needed, as well as identifying who benefits most from such programs. Additional noninferiority trials comparing telemedicine to in-person care will be necessary to guide best practice guidelines, though even an attenuated effect will carry significant implications for expanding behavioral pain and headache services.

Compliance with Ethical Standards

Conflict of Interest Daniel G. Rogers, Katie Santamaria, and Amy S. Grinberg, have nothing to disclose. Elizabeth K. Seng, reports personal fees from GlaxoSmithKline, personal fees from Click Therapeutics, and personal fees from AbbVie, outside the submitted work.

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