



Updates in Cancer Rehabilitation Telehealth

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Abstract

Purpose of Review To describe the various uses of telehealth as it applies to cancer rehabilitation and to review recent findings since the onset of the COVID-19 pandemic.

Recent Findings Telehealth has numerous applications in cancer rehabilitation including physiatry services, skilled therapies, exercise interventions, symptom management, and support groups. Numerous studies have shown that regular physician and skilled therapy services can be provided through telehealth platforms, though certain clinical situations may require in-person visits. Telehealth exercise-based interventions are feasible, safe, and can improve quality of life. Telehealth also may be an effective tool in symptom management and as a medium for support groups.

Summary Telemedicine and telehealth platforms are effective tools in the field of cancer rehabilitation that not only provide increased safety and convenience for a burdened patient population but may also hold the potential to elevate beyond the current standard of care.

Keywords Telemedicine · Telehealth · Cancer rehabilitation · Telerehabilitation

Introduction

Telehealth is the practice of delivering healthcare services at a distance utilizing information and communication technologies. Telehealth is often used interchangeably with telemedicine although the latter more often refers to clinical services, while telehealth may describe non-clinical activities [1]. The COVID-19 pandemic and subsequent need for isolation have resulted in a surge of telehealth use. Additionally, numerous patient populations have been categorized as being at increased risk for severe illness from COVID-19, including people with cancer [2, 3]. A systematic review at the height of the pandemic assessed the prognosis of COVID-19 infection in those with cancer and found a severe

disease rate of 45.4% and a mortality rate of 21.1% [4]. These sobering numbers were prior to widespread vaccination campaigns and represented early strains of the virus.

Telehealth and particularly telemedicine have been paramount in allowing us to deliver rehabilitation services while maintaining safety for patients and providers. Services ranging from prehabilitation to physician services to home exercise programs for survivors have been described and effectively delivered [5, 6]. At the onset of the pandemic, telemedicine usage soared and continues to remain high compared to pre-pandemic levels [7–9]. Much of the continued demand may be associated with accumulated care debt and the interruptions that have occurred in both acute and chronic care over the past 2 years [10]. Additionally, as providers increasingly recognize additional benefits of telehealth for cancer patients including decreasing travel time for physically burdened patients [11, 12] and delivery of specialized cancer rehabilitation services that are often sequestered [13], these platforms will hopefully remain an integral part of our system. We write this review to summarize the evidence for the ways telehealth can be used in cancer rehabilitation practice.

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Physiatry Practices

Although data is limited, the use of telemedicine in physiatry practices appears both feasible and by some metrics effective. One study examined patient and provider satisfaction in an outpatient sport and musculoskeletal practice and found high rates of satisfaction (> 90%) among patients [14]. Interestingly, most physicians had no prior experience with telemedicine; however, 71% became comfortable with it after completing 1–4 sessions, indicating a relatively low learning curve [14]. A similar study was performed in an outpatient cancer rehabilitation practice, and results were also positive, with over 94% of patients reporting that their telemedicine visit was a good experience and providers reporting that over 83% of telemedicine encounters addressed the patient's main problem [15]. Although all parties were overall satisfied with most encounters, satisfaction rates among physicians decreased when patients presented for new or worsening problems compared to stable problems [15]. Furthermore, services such as making a new diagnosis, ordering an interventional procedure, and referring to a subspecialty occurred in less than 6% of encounters [15]. These findings indicate that telemedicine visits may be more appropriate in specific clinical situations, while in-person visits may be preferred in others.

One of the reasons for these discrepancies is likely the challenge in performing a musculoskeletal physical exam through telemedicine. Physiatry may be more dependent on the physical exam compared to other specialties, and physicians may feel less comfortable with their diagnoses and management when they are unable to examine patients in-person. Resources in how to conduct and optimize a comprehensive telemedicine musculoskeletal physical exam are available [16, 17]; however, how often providers actually perform them is uncertain. A multimethod study conducted interviews with patients and cancer rehabilitation healthcare providers regarding their experience with telemedicine during the pandemic. One of the themes that emerged was “confidence with assessment and care plan,” and both patients and providers noted difficulty with assessing swelling and lymphedema [18]. This theme was reinforced as the same study found that 11% of all assessments and follow-ups completed virtually required an in-person assessment usually for evaluation of a musculoskeletal or neurologic impairment [18]. An initial telemedicine visit can certainly lead to a quicker in-person follow-up encounter when indicated but raises the question of whether an initial in-person encounter in place of a telemedicine visit is more time efficient and less costly overall.

While the evidence is limited, approaches to triaging patients to the most appropriate visit type in cancer

rehabilitation practices have been suggested (Box 1) and may include stable or benign issues. On the other hand, indications for an in-person visit may include decision on administration of an interventional procedure, concern for pathologic fracture, or evaluation of a new/worsening musculoskeletal/neurologic complaint [19]. Despite the drawbacks and potential need for additional in-person encounters, telemedicine visits in cancer physiatry practices can be effective and easily adopted by most physicians.

Box 1 Suggested indications for telemedicine visits

Cancer related fatigue
 Follow-up for stable problems
 Education and counseling
 Medication rotation/titration
 Pre-operative counseling
 Cancer related cognitive impairment

Adapted with permission [19]

Skilled Therapies

Neuropsychology

Neuropsychology has also been deployed via telehealth for patients with cancer. A recent study involving semi-structured interviews with twenty-one psycho-oncology clinicians found both benefits and difficulties in the use of telehealth for mental health services. Geographic isolation was no longer a barrier for patients who previously had to travel long distances or were too ill to leave their home. Some clinicians noted that it allowed patients to feel more comfortable discussing sensitive topics in therapy. Like other studies that identified the benefits of in-person interactions [15, 18], clinicians in this study also noted that telehealth did not allow them to assess body language or other visual cues [20]. Technology failure and lack of digital literacy were also noted to be barriers [20].

Psychotherapy

A recent systematic review of randomized controlled trials determined that telehealth programs were helpful in addressing mental health issues of women with breast cancer. These telehealth programs included a cognitive behavioral therapy-based online self-help training, an online symptom self-management curriculum that taught coping skills, an internet-based special exercise program, and even a self-directed intervention training with mobile games. The review concluded that there was strong evidence for use of telehealth programs in reducing depression, the fear of cancer relapse, anxiety, and sleep disorders and was effective at improving

quality of life, cognitive function, gaining optimism, and sleep [21].

Telemedicine for mental health has also been found to be useful in young adults with cancer, a population that frequently experiences barriers to receiving appropriate psychotherapy support through cancer treatment [22]. Young adults with cancer participated in weekly group psychotherapy sessions and found it convenient, especially for those who lived far away or were immunocompromised [23]. A separate study that compared an online group cognitive behavioral therapy intervention with an online peer-support group and a waitlist control found that young adult cancer survivors may benefit from telehealth interventions, but that time since cancer treatment may affect their response to intervention. In the study, survivors who had treatment completed closer to the time they underwent psychological intervention seemed to find most benefit in managing anxiety from the peer-support groups, while those further from treatment had better coping strategies and greater self-efficacy with the online group cognitive behavioral therapy. Interestingly, quality of life did not improve over the intervention period as expected [22]. This suggests that telemedicine is not a one size fits all. Additional studies are necessary to determine what types of neuropsychological treatment options are most suitable for patients with cancer, and when these should be implemented in their cancer trajectories.

Occupational Therapy

There are a limited number of studies specifically looking at the use of telehealth in occupational therapy for patients with cancer. The American Occupational Therapy Association (AOTA) has recommended the use of telehealth in occupational therapy services, but there are only a small number of studies assessing its use specifically in cancer populations. In a 2020 systematic review of fifteen studies, there was evidence that physical activity interventions had a positive effect on physical and cognitive function and symptom self-management. Occupational therapists were also able to help their patients successfully participate in occupational activities [24]. A separate prospective study using videoconferencing for perioperative breast surgery occupational therapy services found that it was feasible, effective, and acceptable to patients, allowing improved patient access, reduced cost, and high patient satisfaction [25].

Physical Therapy

Telehealth physical therapy interventions have been shown to be useful in a variety of patient populations, including evidence of positive effects in patients with cancer. Studies during the COVID-19 era have shown the effective use of physical therapy services for lymphedema assessment

and management [26], enhancement of physical activity for geriatric patients with gastrointestinal and lung cancers [27], and patients' ability to exercise correctly at home [28]. Similar to psychiatry telehealth practices, barriers to adequate physical therapy have also been noted, including the inability to objectively measure range of motion, strength, and restrictions due to pain or tissue characteristics [29]. Adaptive measures have had to be taken, including therapists demonstrating on themselves trigger point release, manual lymphatic drainage, and self-myofascial release to patients virtually [29].

Speech-Language Pathology

Speech-language pathology telehealth services have primarily been studied in the head and neck cancer population. In one study, semi-structured interviews with head and neck cancer patients who completed a telepractice application called "SwallowIT" found that most patients thought the application was not only easy to use but motivating for completing their swallow exercises. However, some thought it may not be suitable for every patient, with a recommendation for a hybrid virtual and clinician model [30]. More recently, speech-language pathologists have used telehealth to perform services. Initial and follow-up swallowing evaluations and treatment plans have been carried out successfully using video [29].

Exercise-Based Interventions

Exercise is universally recommended for cancer survivors with guidelines in place from multiple organizations including the National Comprehensive Cancer Network, the American Cancer Society, and the American College of Sports Medicine [31–33]. Regular exercise has been shown to prevent the occurrence of seven common cancers and reduce the risk of all-cause mortality in breast, prostate, and colon cancers [33]. Furthermore, numerous quality-of-life benefits have been demonstrated including strong evidence that exercise in the setting of cancer reduces fatigue, improves mood, increases physical function, and alleviates lymphedema [33].

In light of the incredible benefits awarded by a free and readily available intervention, the American College of Sports Medicine was deliberate in stating that they did not want to create barriers to patients engaging in an exercise program. They state that preparticipation guidelines for medical clearance for comorbidities other than cancer should be applied to cancer survivors and refer to the National Comprehensive Cancer Network for additional recommendations on clearance [33].

For survivors who have received or do not require clearance, telehealth-based exercise interventions may be a

suitable option. Yoga sessions delivered through video during the pandemic were found to be widely acceptable among cancer survivors, caregivers, and instructors although in-person interventions were favored [34]. Pilot studies in both adolescent and older adult populations found telehealth physical activity interventions to be feasible and generally accepted among participants [35, 36]. A recent review on telehealth-based exercise interventions in cancer survivors evaluated 29 studies encompassing more than 3600 participants and found that overall patients were compliant, experienced symptom relief, and had no adverse events [37]. Although initial studies have focused on feasibility and are characterized by marked heterogeneity in both specific exercise activities and telehealth modalities, the initial results show promise as this field is likely to continue to grow.

Symptom Management

Cancer survivors at all phases of illness frequently experience symptoms whether secondary to malignancy or treatments. Common symptoms include pain, fatigue, nausea, difficulty sleeping, gastrointestinal issues, and cancer-related cognitive impairment. Telehealth platforms have allowed for unique opportunities in managing these and other symptoms and, in many cases, empower patients towards self-management.

One study assessed the feasibility of using a health application in helping 57 adults with gastrointestinal malignancies to monitor symptoms and manage their medications [38]. A total of 93% of patients used the application at least once with patients most often using the feature of symptom monitoring and reporting [38]. Clinicians also reported good acceptability of the application as it helped to facilitate in-person interactions [38]. Another study adapted a psychoeducation-based cognitive rehabilitation intervention for breast cancer survivors experiencing cognitive complaints to a telehealth format [39]. The delivery of the program through telehealth conferencing was shown to be feasible in regard to patient adherences, satisfaction, and self-report of perceived cognitive function [39]. A randomized clinical trial with over 1100 patients found that weekly electronic symptom monitoring led to improvements in quality of life outcomes [40]. A recent review evaluated 10 studies on nurse-led telehealth interventions for managing symptoms in patients receiving systemic therapy or radiation therapy. Although no difference in the utilization of healthcare services was found, the telehealth groups demonstrated improved quality of life, reduction of most symptoms, and significantly reduced pain compared to usual care which was most often patient-initiated phone calls [41]. Another review looked at 25 randomized control trials on the efficacy of telehealth

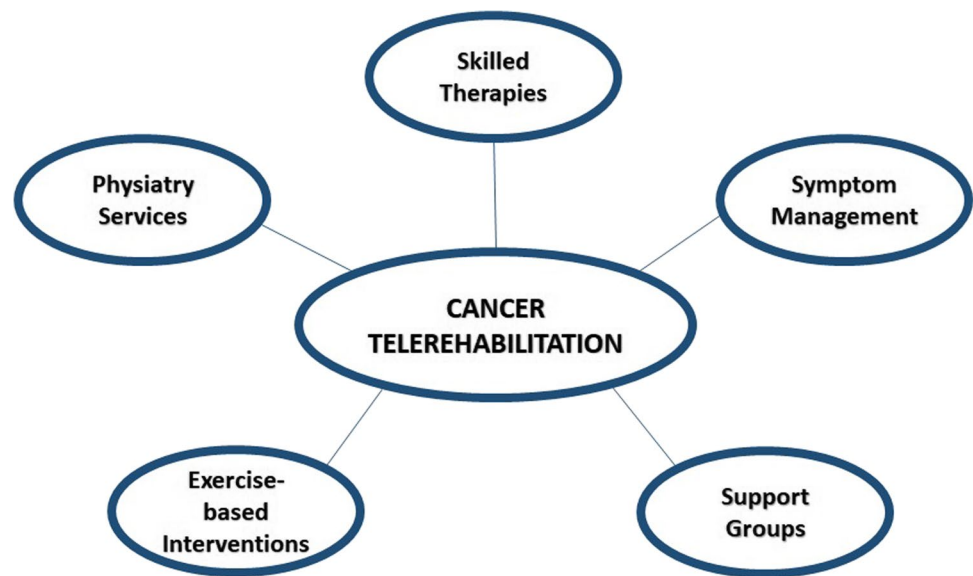
interventions on fatigue, pain, and sleep disorders in cancer survivors. Although positive impacts were not seen on pain severity or fatigue, significant impacts were found on pain interference and sleep [42]. Interestingly, two studies demonstrated a survival benefit with telehealth symptom monitoring [43, 44].

Like telehealth exercise interventions, the array of symptom management applications is broad, diverse, and growing. Currently, applications tend to be focused on survivors with a specific type of malignancy and may differ in the kinds of symptoms they seek to manage. While we can hope for a more uniform future in which a few proven platforms take hold, what lays ahead in this sector and innovations to come remain an exciting prospect.

Education and Support Groups

Cancer causes both physical and psychological burdens for patients and can lead to feelings of isolation. Telehealth services have a unique place in providing access to important ancillary services such as support groups and mind-body therapy sessions to promote psychological health and community. During the COVID-19 pandemic, mind-body services were quickly implemented and included virtual sessions in fitness, meditation, yoga, dance, tai chi, and music therapy [45]. Participants were highly satisfied with the virtual classes and found them to be helpful in reducing anxiety and stress [45]. In addition, not only did they appreciate being able to perform the exercises in the privacy of their home, but despite this, they had feelings of connection during the classes [45]. A recent study aimed to assess the usage of a breast cancer e-program by patients with breast cancer undergoing chemotherapy. The program included a virtual Learning Forum, a Discussion Forum, an Ask-the-Expert Form, and a Your Story Forum. There was large variability in the use of the various components of the program depending on age, education, monthly income, and employment, demonstrating that people preferred particular components of the application that engaged them [46]. Older women spent more time than younger women on the user-friendly program, and women with higher levels of education used the program more frequently than those with lower levels of education [46]. There are clearly benefits in the use of telehealth to provide education and support for cancer patients, but the use of these services may differ depending on the characteristics of the individual patient. Providers who utilize these programs should be aware of this and provide the proper guidance and education on the use of these virtual platforms to engage patients.

Fig. 1 Services offered through cancer telerehabilitation



Future Directions

Within only a few years of widespread adoption, telemedicine has already shown great promise in the field of rehabilitation medicine. For cancer patients who are at high risk of contracting severe illness from COVID-19, the use of virtual platforms has become a safe alternative to in-person visits. Fortunately, the development of vaccines has been shown to be effective in those with cancer leading to high rates of seroconversion, although patients with hematologic malignancies and those receiving immunosuppressive therapies have somewhat blunted responses [47]. For those continuing to receive anti-cancer treatments, the data on adverse effects from COVID-19 are mixed with some studies demonstrating an increased risk [48, 49] and others showing no increase in risk [50, 51]. With additional questions including how long vaccines will last and what variants will emerge next, the only certainty appears that things will continue to be uncertain, giving more reason to further develop and improve cancer telerehabilitation (Fig. 1).

While early studies in telehealth have demonstrated feasibility, acceptance, and possibly efficacy in the previously outlined areas, well-powered studies are lacking. Given the numerous benefits for patients with cancer, studies examining the efficacy and overall cost of telehealth interventions versus traditional in-person care should be prioritized. Additionally, further studies are necessary to understand the types of platforms that are most effective for cancer subpopulations, so that telehealth options can be made accessible for the appropriate patients at the correct time points in their cancer trajectories. Finally, it is clear that telehealth has incredible potential to increase access to often sequestered cancer rehabilitation services. Perhaps most obviously, patients with previous geographic and transportation barriers

now have a means to receive care. There are concerns that telehealth may not be as accessible to patient populations without the financial resources or ability to utilize communication technologies. Such barriers may include lack of access to smartphones, computers, or a high-speed internet connection. Although telehealth can clearly be a tool to establish more equitable care, we must be careful as to not widen any existing care gaps.

Declarations

Conflict of Interest The authors declare no competing interests.

Human and Animal Rights and Informed Consent This article does not contain any new studies with human or animal subjects performed by any of the authors.

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