Advantages and disadvantages of telerehabilitation for persons with neurological disabilities

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Telerehabilitation, the provision of remote medical rehabilitation services through electronic and communication technologies, is a rapidly expanding field of rehabilitation. Recent technological advances such as the development of videoconferencing, the increased speed of technologies, and the reduced costs of computing products have contributed to the growing popularity of the use of electronic and communication technologies in rehabilitation. Advocates of telerehabilitation suggest that the use of this service may result in shortened length of stays in hospital and long-term care facilities, and thereby reduce the cost of care for persons needing rehabilitation services. Research efforts examining telerehabilitation appeared in the literature in the mid 1990’s and discussed the use of telerehabilitation in the provision of services to patients who could not normally participate in therapy due to mobility or transportation restrictions. Currently, several rehabilitation programs employ telerehabilitation for administering therapy, assessing functioning, educating professionals, and monitoring patients. Researchers are now investigating the cost-effectiveness of telerehabilitation services and reimbursement practices for telerehabilitation. This article will briefly review types of telerehabilitation services, the incentives and disincentives for the use of telerehabilitation, and areas for further research.

Rosen [9] noted that telerehabilitation can serve assistive, evaluative and therapeutic roles. He indicated that it can assist the individual in activities such as daily living tasks and that it can serve as a complement to other therapies. Telerehabilitation may involve two-way or one-way videoconferencing as well as technologies for eye tracking to investigate visuospatial neglect [13], for orthopedic rehabilitation of ankles [3] and hands [4], for augmentative communication, and for home health technology that permits 24 hour monitoring of conditions of persons in wheelchairs [6]. Professionals have employed telerehabilitation for assessment and diagnosis in speech and language pathology [1], memory reminders, telecounseling, remote clinical supervision, education, consultation and training.

Overall, advocates of telerehabilitation have indicated that it allows for increased access to and frequency of services, reduction of travel costs, delivery of services to persons with transportation or mobility restrictions, and simulation of real-life tasks such as grocery shopping [5]. Telerehabilitation may also provide immediate objective feedback, be employed for assessment and treatment, and it may lead to reduced costs of care as it may allow for less experienced professionals to conduct telerehabilitation under supervision of more highly educated professionals. Cost of care may also be diminished through telerehabilitation, which may allow the patient to be discharged earlier from long-term or acute care facilities. Telerehabilitation may allow for efficient uses of clinical supervision, education, consultation and training. Persons with acquired brain injury indicated interest in using telerehabilitation [8] and they noted that it may help them feel less isolated from others. Individuals with motor and
cognitive limitations may use a touchscreen to compensate for their deficits [11]. Strand et al. [12] noted that virtual environments can be used for teaching individuals with cognitive deficits but they stress that this learning should be guided by human interaction.

Disadvantages of telerehabilitation include difficulties encountered by the user as well as with the equipment. User problems may be classified as cognitive, motor, and social. In terms of cognitive factors, technological and communication devices may be extremely difficult for an individual with a neurological disability to operate. For example, many brain injuries involve disturbances in an individual’s ability to plan, organize, initiate activities, control impulses, concentrate, problem solve, and recall information [2].

Professionals employed in community based rehabilitation programs for persons with brain injuries have often reported that patients have had difficulty operating machines such as computers due to a loss of the instructions to operate the equipment or a perseverative process which impaired problem solving. In addition, unexpected changes, such as computer freezes or interruptions in provider services, may easily overwhelm the individual with brain injury, who already experiences difficulties with sudden changes and changing cognitive set. Deficits in abstraction may also interfere with the individual’s ability to profit from the often very abstract technical support interventions. Moreover, an individual with a brain injury may have impairments in initiating activities and may not employ the telerehabilitation devices unless physically assisted. Despite the use of “sticky keys” some individuals with motor deficits have noted that the keyboard and mouse is very difficult to operate [14]. Technological difficulties include concerns about security and confidentiality of information, provider difficulties, and concerns about technical support.

Nadell [7] indicated that persons with traumatic brain injuries may feel alienated and that social support may help ameliorate this sense of isolation. Group approaches to rehabilitation often provide a support network for individuals who may vicariously learn behaviors and gain insight from these group experiences which provide visual, auditory, tactile, and olfactory stimuli. It is likely that telerehabilitation would not provide this experience to concentrate on the pragmatics of communication and identifying nonverbal cues. Deficits in these areas often create difficulties for the social functioning and well being of the individual with brain injury. Further, the action of getting dressed and preparing to leave to attend rehabilitation may help patients who would not normally dress, groom themselves, and commit to therapy, if they were to remain at home. Persons on a fixed income may not be able to afford the high speed access connections and equipment needed for telerehabilitation. Other user problems include mental fatigue, eyestrain, and excessive computer use. Programs employing telerehabilitation should also carefully monitor the provision of services by less educated professionals to ensure that quality of care is provided to patients. Finally, a disadvantage of telerehabilitation is that this mode of service may not allow the professional to observe important indicators of clinical functioning such as the condition of the patient’s home environment, noises or extraneous irritating stimuli that may be affecting his or her status, and relationship issues with family members.

The field of telerehabilitation offers significant promise as an adjunct to traditional rehabilitation services. Bills regarding telerehabilitation and reimbursement issues are currently under review in several state legislatures. Due to the potential disadvantages of telerehabilitation, it is suggested that this mode of rehabilitation be complemented by face-to-face therapeutic interventions when possible. Given the rapidity with which technological advances have occurred, it is likely that telerehabilitation is going to become more efficient and comprehensive in the future. Studies demonstrating the clinical and cost-effectiveness of telerehabilitation efforts need to be conducted to support this promising field.

References


