Acceptance of Home Telemanagement is High in Patients with Multiple Sclerosis

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Abstract. We assessed acceptance of Home Automated Telemanagement (HAT) in patients with Multiple Sclerosis (MS). The patients were asked to complete their prescribed exercises and track the results with the assistance of the HAT system on a daily basis for 12 weeks. The HAT system generated alerts in the case of patient non-compliance. The attitudinal survey indicated that 83% of participants found the system “not complicated at all” to use. The majority of the patients (83%) indicated that they would most likely or definitely use the system again, and 100% of the patients claimed that they would most likely or definitely advise other patients to use the system. The Six-Minute Walk Test and Berg Balance scale showed statistically significant improvement in patient functional status.

Introduction. Multiple Sclerosis (MS) is a chronic debilitating disease of the central nervous system which may result in significant damage to the neuromuscular system, vision, affective and cognitive functions. Lifelong rehabilitation measures together with medication treatment are the major components of patient management. Interventions supporting patient self-management and facilitating patient-provider communication have been shown to be effective in a variety of chronic conditions. Home Automated Telemanagement (HAT) is a telemedicine system designed to assist health care practitioners in treating and monitoring their patients according to evidence-based guidelines and to assist patients in following individualized self-care plans. In this study, we attempted to assess feasibility and patient acceptance of home telemanagement in patients with MS and to estimate the magnitude of clinical impact of the HAT system in MS patients. Though telemanagement may support multiple components of patient care, in this feasibility pilot study we focused on a rehabilitation component based on individualized exercise plans prescribed by a physical therapist. We hypothesized that home telemanagement using a daily exercise diary and monitoring of compliance with a tailored exercise program combined with computerized decision support would be feasible and accepted by patients with multiple sclerosis, and would positively affect patient functional status.

Methods. All patients received a comprehensive baseline evaluation conducted by a physical therapist who specializes in the treatment of MS patients. Based on this evaluation, each patient received an individualized exercise plan and was trained how to perform the exercises. After the baseline evaluation, patients received a HAT Home Unit to support them in following their exercise plans. Each patient was instructed on how to use the equipment during the 30-40 minute home installation visit. The patients were then asked to complete their prescribed exercises and track the results with the assistance of the HAT system on a daily basis, as possible, for 12 weeks. Patient exercise logs were transmitted by the Home Unit to the central HAT server after each exercise session. Exercise safety and compliance was monitored and analyzed by the HAT system in real time. If a patient was non-compliant, the system alerted the case manager or physical therapist. The patient was then contacted by clinical staff and possible treatment issues were addressed in a timely manner. Each patient was reassessed at the mid-point of the study (six weeks) and at the end of the study (twelve weeks). All patients continued to receive their regular medical care.

Results. Twelve MS patients used the MS HAT system for 12 weeks. Their functional disability as defined by Disease Steps was in the range of 2 to 5. Mean age of the study populations was 52 ± 4 years. Patients’ average number of years with MS was 13 ± 7. The majority of participants were female (83%) and white (83%). Mean education in years was 15 ± 2. Most patients self reported their MS severity as moderate (75%) and their MS as “somewhat controlled” (83.4%). Preliminary analysis indicated several significant improvements in outcomes. The Six-Minute Walk Test measured how far a patient could walk for six continuous minutes. Data analysis determined that patients were able to walk an average of 123.25 feet farther at 12 weeks than at baseline which was a statistically significant change (p=0.024). The mean improvement on the Berg Balance scale was 4.33 (p=0.0002). The attitudinal survey indicated that 83% of participants found the system “not complicated at all” to use. The majority of the patients (83%) indicated that they would most likely or definitely use the system again, and 100% of the patients claimed that they would most likely or definitely advise other patients to use the system. When asked to rate the system overall, 75% of the subjects rated it as “good” or “excellent”.

Conclusion. Acceptance of Home Telemanagement is high in patients with multiple sclerosis. This approach has significant potential for improving clinical outcomes and functional capacity in MS patients.