Multicomponent home-based treatments improve mobility in older adults after hip fracture

September 10 2019

Credit: CC0 Public Domain

Each year more than 260,000 older Americans are hospitalized for hip fractures, a debilitating injury that can severely and permanently impact mobility. Researchers at the University of Maryland School of Medicine (UMSOM) studied two types of home-based interventions and discovered that these treatments are effective in helping individuals regain their ability to walk, but not enough to do every day functions like crossing the street.

Jay Magaziner, Ph.D., MSHyg, Professor and Chair of the Department of Epidemiology and Public Health at UMSOM was the Principal Investigator for this research and Rebecca L Craik, PT, Ph.D., FAPTA, Dean of the College of Health Sciences at Arcadia University was Co-Principal Investigator. The research was a multidisciplinary partnership involving investigators from epidemiology, physical therapy, geriatrics, orthopedics, gerontology, health economics, biostatistics and health services research. It was conducted at UMSOM, Arcadia University and UConn Health at the University of Connecticut. The research compared two different types of multi-component home-based physical therapy programs, both of which showed significant improvements in the ability to walk but not enough to be independent in the wider community.

This research, which was published today in *JAMA*, involved 210 participants 60 years old and older recovering from hip fractures. One group received aerobic, strength and balance training. The other group received nerve stimulation and active range of motion exercises. Both groups received as many as three regular weekly home visits from a physical therapist over a 16-week period. In addition, the participants received nutritional counseling and daily vitamin D, calcium and multivitamin supplements.

The research measured the participants so-called "community ambulation," which is the ability to cross a street before a traffic light changes. To determine community ambulation, participants were timed

to see how far they could walk 300 meters (approximately the length of 3 football fields) in a six-minute period after the 16-week treatment. Researchers found that after all the regular in-home interventions, 23 percent of the participants in the group receiving aerobic, strength and balance training could walk more than 300 meters in six minutes. In the other group, which received nerve stimulation and range of motion exercises, 18 percent of the participants could walk 300 meters or more in a six-minute timeframe, a difference that was not considered statistically significant.

"Both groups showed significant improvement, which highlights the importance of multi-component home-based interventions," said Dr. Magaziner. "The equal level of professional attention both groups received may explain why the difference in the percentage of patients becoming community ambulators between the two groups was relatively small."

This Community Ambulation Projected tested the effectiveness of a home-based multicomponent 16-week intervention that addressed specific walking-related abilities such as endurance, balance, strength and lower extremity function. Both treatment groups were provided regular 60-minute in-home interventions for 16 weeks. The patients were then tested to determine if they could walk more than 300 meters in six minutes.

"Many older adults face challenges regaining mobility after hip fracture. We were pleased that in this study a sizeable number of participants achieved community ambulation capacity. However, much more needs to be done to develop and carry out targeted and creative rehabilitation programs that will benefit greater numbers of older adults who strive to become community ambulators following hip fracture." said Richard Fortinsky, Ph.D., Professor and Health Net, Inc. Endowed chair in Geriatrics and Gerontology at UConn Health, who was the study's lead

researcherat the UConn Health Campus of the University of Connecticut.

During the 16-week period, physical therapists were engaged actively with the study participants, providing motivation and positive reinforcement throughout the exercise sessions. This therapeutic alliance may have also contributed to improved walking ability, the research showed. Going forward, this research could help shed light on improving home-based interventions. For example, future research could assess the influence of factors such as the amount of exercise, how patients adhere to the treatments, behavior and environmental factors, and body composition in response to in-home interventions.

"The number of hip fractures throughout the world is increasing, and nearly half of those individuals who have a fracture will not be able to walk independently a year later. To date, no single intervention has been able to provide a remedy to this growing problem. Our research here at the University of Maryland can help set a clear path for treating the most challenging mobility cases," said UMSOM Dean E. Albert Reece, MD, Ph.D., MBA, who is also the Executive Vice President for Medical Affairs, University of Maryland, and the John Z. and Akiko K. Bowers Distinguished Professor.

More information: Jay Magaziner et al, Effect of a Multicomponent Home-Based Physical Therapy Intervention on Ambulation After Hip Fracture in Older Adults, *JAMA* (2019). DOI: 10.1001/jama.2019.12964

Provided by University of Maryland School of Medicine