Fact Sheet: Highlights from the Assistive Technologies for Functional Improvement Technology Review

Why Assistive Technologies are Important for Fuctional Improvement

As individuals get older, they experience functional limitations associated with disabilities. Approximately 23% of adults aged 45-64 years have some form of disability; for those 65 to 69 years old, the likelihood of being affected by a disability nearly doubles to 45%.[1] Assistive technologies help persons with disabilities perform daily tasks by compensating for physical, sensory, and cognitive impairments, and by promoting self-management and independence. In severe cases, assistive technologies "make the difference between being able to live independently and having to get long-term nursing or home-healthcare."[2]

Assistive Technologies for Physical Function and Reducing Falls in Older Adults

Age-related decline in physical function affects a significant proportion of older adults. Muscle weakness limits the older adults' abilities to execute tasks and affects their balance and posture leading to mobility decline and concern over falls:

- According to two studies, falls and lack of balance are a major contributing factor in 40% of nursing home admissions.

- Over a third of older adults over age 65 fall each year in the United States.[3,4]

- Falls are the leading cause of injury in persons over age 65,[5] as a result most hospital admissions in the older adult population are connected to falls.

Fall detection technologies actively or passively evaluate whether a fall has taken place and alert others that an individual has fallen. The primary goals of fall detection technologies are to distinguish falls from activities of daily living (ADL) and then contact authorities who can quickly assist the individual. Fall detection systems can be active, passive or a combination and include personal emergency response systems (PERS) and passive sensors.

Mobility assistance technologies, such as power wheel chairs, wheelchair lifts, posture optimization devices, breathing assistive devices and neuro-protheses, help older adults cope with the loss of motor function and help them get around minimizing assistance from a caregiver.

Assistive Technologies for Hearing Loss in Older Adults

Hearing loss is a common disabling condition among older adults. Due to malfunctions in the inner ear or the auditory nerve, the prevalence of hearing loss increases with age:

- Approximately one-third of Americans between the ages of 65 and 74 and 47 percent of those 75 and older experience hearing loss.[6]

- Only 38 percent of adults over 70 years have had their hearing checked.[6]

Assistive listening devices including hearing aids, help overcome deterioration of hearing senses by enhancing hearing in noisy environments.[7] Examples of assistive listening devices include personal frequency modulation (FM) systems, infrared systems, induction loop systems, and one-to-one communicators.

Assistive Technologies for Improving Vision in Older Adults

Aging contributes to a reduction in visual acuity which is associated with an increase in functional dependence and a decrease in the quality of life.[8]

- Approximately 1.8 million US adults older than 65 years were estimated to have impaired visual acuity in 2000.[9]
- The prevalence of visual impairment rises with age in older adults, from 1.1% in 65 to 69 year olds to 16.7% in persons older than 80 years old.[9]

Visual assistive devices help older adults perform daily tasks with minimal assistance. Such technologies include video and screen magnifiers, text-to-speech devices, and larger sized equipment like a phone with enlarged numbers.

Assistive Technologies to Improve the Ability to Communicate and Access Information for Older Adults

Research indicates that there is a need to 'bridge the gap' between older adults and the Internet.[10] Various programs help older adults access the internet more easily through special software and modified hardware. Such systems can offer individualized support by collecting specific information about the user and storing it within the user model of an adaptive system.[11]

Challenges Hindering Adoption of Assistive Technologies

Many assistive technologies are available, but they are often underutilized. Several obstacles hinder the adoption of assistive technologies. These include consumer-related issues, such as the challenge of paying for assistive technologies; lack of awareness about how assistive technologies can improve functioning and quality of life; and, reluctance to use assistive technologies because of the stigma that is associates with their use.

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