

Assistive Technology: mind the user!

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M. Colombo. Assistive Technology: mind the user! Gerontechnology 2004; 3(1):1-4. Technology impacts of assistive technology for older persons include compensation & assistance as well as care support & organisation. Care contexts are changing due to societal aging. Technological innovation developed at the same pace, but it is the interaction between this technology and the cared person that brings the actual success.

Key words: assistive technology, scenarios of aging, technical aids

In a previous editorial Bronswijk et al¹ developed an enriched taxonomy for gerontechnology consisting of a matrix with two dimensions: Technology Impact and Application Domain. In this sense Assistive Technology shows a major overlap with Gerontechnology. New developments are world-wide aging, as shown by the U.S. Census Bureau². How will our longer lives be partitioned in healthy years and survival with disabling (chronic) disease? How will we sustain a good quality of life?

SCENARIOS OF AGING

Correct forecasts in these expectancies have a profound impact on health, retirement, and family systems of aging societies, with special regard to long-term care demands. Sex and wealth differences are emerging: female advantage in life expectancy seems partially offset by disability (at least in developed countries); while disability rates are declining in industrialized countries, in developing countries the disability burden is likely to increase³.

The 'compression of morbidity' paradigm holds that cumulative lifetime morbidity can be decreased through a delay of average age of onset of infirmity, disability and morbidity, if such a postponement is

greater than increases in life expectancy. More than 20 years after its introduction, data are now substantiating this paradigm⁴.

Better physical functioning up to a high age and decreased need for assistance for persons aged up to 85 years is occurring in Finland⁵. Swedish cohorts show improvement in health indicators⁶. Similarly, in the USA there is new evidence of an overall improvement in the health status of older persons^{7,8,9}. However, a sharp rise in the absolute and relative number of frail oldest-old persons also occurs. For example, among Danish nonagenarians 22 % of women and 19 % of men are severely disabled¹⁰. In the USA there are some 526,000 people aged over 60 with mental impairments and other developmental disabilities (half of whom live at home); their number will likely double by 2030. Further, there are more than 400,000 adults with cerebral palsy in the USA, and again their number is growing¹¹. Anyway, three major events occurred in the USA during the last two decades of the past century: an acceleration in the decline of chronic disability rates from 1994 to 1999, compared with 1989 to 1994; a large relative as well as absolute drop in institutionalisation, and a decline in

disability prevalence for black Americans also, after 1989¹².

SITE OF CARE

Where should we implement assistive technology? Are home and nursing home mutual exclusive alternatives? More people with three or more limitations in activities of daily living live at home than in institutions¹³. Family members are the mainstay for people who require supportive assistance at home, even in case of severely disabled individuals¹⁴. In the western world, while the percentage of institutionalised elderly people is decreasing, the figure is emerging of a frail old carer who provides demanding physical help¹⁵. Assisting these older carers with appropriate technology could save both presently and prospectively their health, and part of the money that is currently wasted because of health related problems amongst carers.

INNOVATION

Both ICT and classical technology are constantly innovating Assistive Technology¹⁶. Modern, electronically controlled beds are a good example. Features of these beds include user-controls for height and tilt of the different bed sections. This results in better night rest and social relationships as well as less anxiety in cared persons who demonstrated actual use of the controls of the bed. In addition emergencies are better taken care of, or can be prevented as those beds ameliorate lung ventilation, heart work, venous blood flow, and reduce aspiration accidents. On the side of formal carers, main benefits are decreased workloads leading to a better quality of care. With a well trained staff costs of care decrease since costly complications are prevented such as pressure sores, or falls out of the bed.

A 'Smart Walker' has been treated earlier in this journal¹⁷. This piece of advanced

assistive technology is a good example of de-stigmatization and interaction with a user who –all of a sudden- is free to go wherever he or she wants to. Unfortunately not all innovations in assistive technology contain a well-functioning human-machine interface.

TECHNICAL AIDS AND HUMAN CARE

Contrary to popular believe elderly people do use the technical aids they are equipped with, provided the user consents, the user interface fits, and proper training is supplied¹⁸. Utmost, perceived benefits must outweigh costs, beyond pure ergonomic matters¹⁹. Further, personal involvement and environmental control may be upgraded by an active interaction of the user with technological device(s). Properly designed and perceived new tools could counteract hallmarks of frailty: the loss of muscle mass and strength (sarcopenia²⁰) and the functional decline that accompanies disuse (the so called hypokynetic syndrome²¹). Sarcopenia has been suggested as a major modifiable cause of frailty in older people^{22,23}. Since the early 80s, many biologic changes commonly attributed to ageing in itself have been shifted to enforced physical inactivity^{24,25}. Hence, this way the use of assistive technology may be de-stigmatizing, promoting greater autonomy, increasing quality of life, and at the same time decreasing in the overall costs of care.

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