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Can IT technology help older adults to win with the fear of falling?

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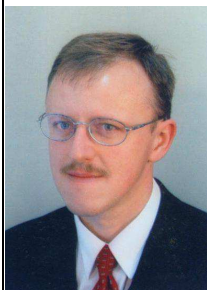
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Streszczenie

Artykuł dotyczy przeglądu i dyskusji zagadnienia wspomagania zwalczania obaw przed upadkiem w środowisku osób starszych. Przeprowadzona jest systematyzacja problemu upadku. Przedyskutowano stan świadomości społeczeństwa o możliwości wystąpienia upadku i jego konsekwencjach. Omówiono i sklasyfikowano zagrożenia, wynikające z upadków oraz przedstawiono dane statystyczne w poszczególnych kategoriach zagrożeń. Zaprezentowano wpływ zagrożenia upadkiem i samych upadków na pogorszenie jakości życia i ograniczenie sprawności u osób starszych. Dokonano przeglądu urządzeń technicznych i systemów IT przeznaczonych do redukcji poczucia zagrożenia upadkiem i przedyskutowano poszczególne systemy. W oparciu o ocenę zakresu zastosowania i efektywności poszczególnych rozwiązań sformułowano wnioski odnośnie skuteczności technologii IT, w szczególności w obecnie stosowanym zakresie, do wspomagania zwalczania strachu przed upadkiem u osób starszych.

Słowa kluczowe: incydent upadku, osoby starsze, obawa przed upadkiem, technologia IT.

1. Introduction

According to Tinetti [1] the fall is defined as 'a sudden unintentional change in position causing an individual to land at a lower, on an object, the floor, or the ground, other than as a consequence of sudden onset of paralysis, epileptic seizure, or overwhelming external force'. WHO [2] defined fall as 'an event which results in a person coming to rest inadvertently on the ground or floor or other lower level'. Other definition we can find at [3,4]. Older adults frequently fall. Falls and fear of falling is a problem among the elderly living in communities. Also fear of falling is a problem among the elderly living in communities, in older people who have fallen and in older people who have never experienced a fall [5,6].

In general, falls technology can be divided into two categories: (1) falls detection and alarms and (2) falls prevention. It is observed a rise in awareness of general population of a number of measures that could improve one's balance and help to prevent falls [15]. On the other hand technologies can support fall intervention. The example commercial use of 'fall technologies' is Philips Lifeline Medical Alert System. That system can help, connecting older people to the right help for the fall situation at the push of a button [20]. There are also automatic fall detectors that do not require human intervention, for example: Tunstall Fall Detector [21]. Another way of the fall alarming is a video monitoring system. These systems using image-processing algorithms are capable to detect a fall event (SIMBAD [22]). Another technique are passive alarms using floor vibration detectors [23,24]. The fall detector can provide reassurance for older adults and their families at risk of falling. Fall detectors do not prevent a fall but send some information (alert) to other person (caregiver). Therefore, education is an important element in preventing falls. Fear of falling is one of factor that needs to be taken into account in falls management. Program of older adult falls prevention usually include education component for the purpose of preventing future falls and reducing fear of falling. The internet is useful resource of information concerning falls risk factors, falls consequences, method of fall prevention, education and training for older adults' faller, their families and caregivers. Elderly patients' caregivers can get information from special Web sites (e.g. LearnNOTtofall [28], Falls Prevention Network [31], Fall Prevention Center of Excellence [32], British Columbia University [33]) or form online community of health care professionals dedicated to falls prevention (e.g. Prevention of Falls Network Earth [29], IStop-Falls [30]). There are many projects on fall prevention (other than those listed [29,30])

Abstract

In the paper there are presented results of research on use the IT technology in helping the older adults to fight the fear of falling. The falls and fear of falling classification is presented. Awareness of society about the fall risks and consequences is discussed. Statistics on fall consequences over the population of older adults and spiral of health and activity level of older adults resulting from falls are presented. IT solutions for falls prevention and monitoring are classified and discussed. Effectiveness of use of such solutions to reduce the fear of falling in population of older adults is discussed.

Keywords: fall events, older adults, fear of falling, IT technology.

Czy technologia IT może wspomagać osoby starsze w zwalczaniu obawy przed upadkiem?

using ICT technology – for example: Fall Detector for the Elder (FATE); A wearable miniaturized fall detection system for the elderly (FallWatch) or Automatic monitoring of Activities of Daily Living using Contactless Sensors (AMACS).

2. Summary

The aim of this review was: (1) to explore recent literature regarding the using of IT technology in fall management and prevention, especially in the field of older adults education and (2) answer the question that IT technology can help older adults to win fear of falling.

The role of falls risk assessment, awareness and education for the prevention of falls of older adults and hospitalized patients is critical. In our opinion is important to increase awareness of caregivers (member of older adult family) in: (1) falls risk assessment and (2) falls prevention.

High levels of fear of falling are likely to result in future falls. For many older adults, the real fear is falling while alone and not having a way to get help. Wearable emergency units (call-buttons) and special IT website (e.g. how to safely get up from a fall) allow elderly patients to increase safety feeling and to try to live independently. The internet (specialist website dedicated to the prevention of falls) can be useful resource for older fallers, their caregivers.

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