M. Rogante, M. Bernabeu, C. Giacomozzi, H. Hermens, B. Huijgen, S. Ilsbroukx, R. Magni, E. Opisso, S. Scattareggia, S.S. Marchese, M. Vollenbroek-Hutten, M. Zampolini, V. Macellari. ICT for home-based service to maintain the upper limb function in ageing. Gerontechnology 2008; 7(2):200. In the period 2005 – 2007, a European Project was conducted by the authors that dealt with a HEaLthcare Service Linking TelerehabilitatiOn to Disabled peOple and Clinicians (HELLODOC). The primary objective of the Project was to validate the EU market, more specifically in Italy, Spain, The Netherlands and Belgium, for a home-care telerehabilitation service for the upper limb rehabilitation treatment. The service was mainly addressed to neurological patients affected by Traumatic Brain Injury (TBI), Stroke or Multiple Sclerosis (MS). As the home apparatus focused on the reproduction of upper limb in daily-life tasks, it might be effectively used to maintain the upper limb main functionalities in ageing. **Methods** Basically, the service consisted of two main apparatuses: an in-hospital based server and a portable unit to be installed at the patients' home. The portable unit was an improved version of a prototype of a home-care activity desk which was developed in the framework of the previous European Project H-CAD[1]. The instrumented desk allows the execution and monitoring of a configurable set of home exercises the professionals may purposely design to improve the main arm functions. Efficacy of the new tele-rehabilitation service was demonstrated. The modular equipment allowed moving part of the treatment at patients home. The clinical study, which was indeed one of the biggest clinical studies on that specific issue, resulted in an exhaustive investigation. Distance education programmes were successfully implemented and delivered to train the professionals, patients and caregivers involved. **Main results** Technical Assessment activity within the HELLODOC Project was conducted for evaluating the proposed telerehabilitation service. The study mainly focussed on architectural aspects and a step-by-step monitoring of the service, and related to (i) Service Implementation, (ii) Service Performances, (iii) Service Integration, and (iv) Fault Management. As for the web-based learning activity conducted within the HELLODOC Project, this aimed at training professionals to effectively manage the telerehabilitation service. ISS (Information Systems Services) adapted the Moodle e-learning platform and implemented the PBL (Problem Based Learning) methodology. One clinical and one technical module, available online for ten months within the Project time-frame, were prepared by using traditional learning sources as well as interactive tools. 50% of the registered students attended the courses, equally using traditional and interactive learning resources. Overall feedback was positive, except for the amount of time requested for the study and the lack of an official certificate of attendance. Both modules are now in the process of being revised, improved and generalised, in order to be integrated into the ISS Rehabilitation website. The most important activity within the HELLODOC Project dealt with the clinical validation of the service. Within the time-frame of the Project, 81 patients with chronic Stroke, TBI and MS were recruited; 50 out of 81 received 1 month telerehabilitation service, with one training session a day lasting 30 minutes for 5 days a week. The overall satisfaction of both patients and therapists was high. **Conclusions** The technical assessment demonstrated that the service worked in a quite satisfactory way, considering the pioneering aspect of the project; the set of malfunctioning occurred are typical of a post- debug phase, and had a low impact on the service continuity. The service was proved to be effective in the home treatment of some upper limb motor pathologies. However, future applications might also include the implementation of physical therapy at distance addressed to the elderly, in order to maintain the residual upper limb function.

References

1. ISS HELLODOC; www.iss.it/hdoc

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