A circular model for the e-Health at the household

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Abstract and Objective

In this paper we present a circular approach that takes into account all the processes starting from and arriving to the patient for household e-Health. The management of health-care documents, the prevention based on the knowledge of risk factors and the support during therapy administration are the key points of the path. The circular model is based on the co-operation between different software tools, each devoted to a single phase of the whole process.

Keywords:

Consumer health information, Health Care IT.

Introduction

The e-Health field is devoted to support the health-related processes by means of Information and Communication Technologies (ICT) enabling or empowering their effectiveness. There are at least two developmental scenarios: in the first, a single e-Health system is designed and implemented to offer a specific service, while, in the second, two or more systems are designed and implemented to cooperate thus offering reliable and innovative services. At the household, different issues and needs must be taken into account when developing e-Health services, particularly the management of digital healthcare documents (for the multigenerational family too) or of therapy administration to minor or elderly. Because an overall system to support all these needs is too complex, the application of the 'divide et impera' principle, where single problems are solved by single systems, is a reliable solution. Joining them, a global supportive system for the final user is achieved.

The Model Formulation

We propose a model of the e-Health at the household based on three main components:

Understanding: understanding which medical vocabulary is used at the household allows designing, schedule and implementing actions aimed at increasing the level of health literacy within the population.

Enabling: helping the management of the medical digital documents of the family allows tracking the family medical history. Living together, sharing the same environment, habits, and related risk factors affect the medical history of both single individuals and the entire family.

Supporting: offering some tools for checking the process of drug administration at home avoids situations of Adverse Drug Events (ADE) or drug-drug interactions.

The integration of these three components leads to a better support for the management of e-Health. While the traditional technology-driven approach is mainly interested in the power and innovativeness of software or tools, the proposed circular model leads to a patient-oriented approach considering the patient and his family as actively involved in healthcare processes. We developed three tools that implement the three phases of the circular model: the first one allows the assessment of the medical lexicon at the household; the second is a family medical record system named "Historia Medica Familiae Digitalis (HMFD)"; the last one manages the safe drug administration at home. The first tool is able to infer about the knowledge and use of the medical lexicon within Italian families. As a lexicon is a dictionary, the family medical lexicon is the set of medical terms used at the household in the management of healthcare issues. In addition, terms can belong to different levels of the medical language, from the basic common level to the highly specialized level. Ideally, there is a medical lexicon within each family; however, common medical terms are widely understood and used by common citizens or consumers. The second tool is HMFD, a prototype system of Personal Medical Record (PHR) devoted to a multigenerational family environment. The last one is a monitoring system for helping the personal management of drug administration in a safe way at the household. It can be considered as a component of an electronic medical record system devoted to the family.

Conclusions

The proposed model was tested through the support of these three software tools. We considered that such an infrastructure could be able to become a real effective support for the diffusion of the home Healthcare Informatics. This will help us to reach our objective in a more effective way, combining the already existing support for doctors and institutions with the direct support of the patients.