A Multidisciplinary reference framework to support implementation and assessment of Diabetes Care in Community Settings: Study Design*

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Abstract— **Diabetes is a disease presenting multifaceted challenges. A holistic approach is needed to properly address it. The Chronic Care Model, worldwide reference for managing chronic disease in community settings, support implementation at micro-meso--macro level. We present a multi-disciplinary framework that support the uptake of the Chronic Care Model. This framework was tested to support the implementation of a research project focused on Diabetes Management through personal health systems.**

I. INTRODUCTION

Diabetic patients represent the 3rd greatest "country" in the world, with more than 380 million of "inhabitants": every 7 seconds 1 person dies from diabetes and the expenditure reached US\$612 billion in 2014. In 2035 the number of diabetics is expected to increase of 207 million [1] . This disease presents a multifaceted challenge. [2]. While many approaches emphasize changing individual behavior and improving self-efficacy, self-management is a collective process, undertaken within personal communities that requires the mobilization of social resources. In this context, technologies are facilitators to enable better diagnosis, treatment and management for patients across the continuum of care, by supporting health professionals and empowering patients to take responsibility. Research is needed for creating innovative technologically-oriented frameworks that will enable population adoption of effective and efficient health strategies that already have proven their potential. In this work a multidisciplinary framework to boost the uptake of the Chronic Care Model (CCM) for the management of diabetes in community settings is presented. The CCM is "a synthesis of evidence-based system changes intended as a guide to quality improvement and disease management activities" [3].

II. METHODS

In order to develop the Framework, two groups of methods and instruments have been used: the first one to transform a narrative description of a model of care into atomic elements; the second group of methods has been used to transform the atomic elements into structured and multidisciplinary requirements. As regard the first group, three instruments have been adopted: the ARCHO instrument (a tool for assessing the CCM) [4], concept maps (a graphical tool that designers, engineers, technical writers, and others use to organize and structure knowledge) and meta-model elements decomposition of ontologies (in order to have an explicit specification of a conceptualization of a knowledge domain). As regards the second group of methods, a multidisciplinary requirement development approach was used, to process each user expression and transform it into user needs, values, attributes and requirements, following the guidelines and methods provided by the Center for eHealth Research and Disease Management Roadmap [5]. One limitation of this roadmap consists in its focus on eHealth interventions, thus not providing guidance on not-technology driven actions. For this reason we have complemented the CeHRes Roadmap through the adoption of the Fogg Behavioural Model [7], also based on persuasive design but less technology driven.

III. RESULTS

The result is a pragmatic framework that supports implementations of Diabetes Disease Management enabled by technologies and engineering methods.

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