Chapter 10
Evaluating Elders’ Bio-Psycho-Social Health Dimensions Using Their Smartphones

Enrique Moguel
Universidad de Extremadura, Spain

José García-Alonso
https://orcid.org/0000-0002-6819-0299
Universidad de Extremadura, Spain

Javier Berrocal
https://orcid.org/0000-0002-1007-2134
Universidad de Extremadura, Spain

Juan M. Murillo
Universidad de Extremadura, Spain

ABSTRACT
The percentage of elder people in developed countries is increasing rapidly. A high percentage of them usually present multiple and chronic diseases. A patient with several diseases requires specific and coordinated care that is difficult to configure. Different frameworks can evaluate their functional status and identify the required care, together with the associated cost to the health system. Nevertheless, these frameworks are usually questionnaires that have to be periodically performed by the patients with the assistance of already overloaded professionals. In this chapter, the authors make use of mobile technologies to build a system capable of monitoring the activities of the elderly and analysing these data to assess their bio-psycho-social status. The experiments carried out show us that it correctly evaluates these patients and reduces the effort required by health professionals.

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INTRODUCTION

Technology speeds up the communication between people. Technology provides convenience to use more than one method of communication. Now people can use email, social media, chat messengers, video conferencing, video calls, images, videos, symbols, diagrams, charts and emoticons etc. for the communication.

But technology has also impacted us positively and negatively in our daily life communication. And as it cannot be otherwise, in the lives of the elderly as well.

World’s elderly have historically been late adopters to the world of technology compared to their younger compatriots, but their movement into digital life continues to deepen.

The aging of the population is a confirmed fact in most developed countries. Over 20% of people in developed countries are elderly (65 or more years old), and the growth of this age group means that it is likely to reach some 26% of the population of these countries in 2030 (Facts and Figures on Healthy Ageing and Long-term Care - EUROPEAN INNOVATION PARTNERSHIP – European Commission, 2013).

At present, the world is experiencing population aging, a trend that is both pronounced and historically unprecedented. Over the past six decades, countries had experienced only a slight increase in the share of people aged 65 years and older, from 8% to 10%. However, in the next four decades, this group is expected to rise to 22% of the total population, a jump from 800 million to 2 billion people (Bloom et al., 2015).

This trend is even more worrying in rural regions, for example, Extremadura in Spain or Alentejo in Portugal. This kind of regions has lower population density than the average, and they keep losing its young population to more socioeconomically developed regions. Therefore, they have a higher-than-average aged population while being economically disadvantaged with a fragile cultural and socioeconomic context. Additionally, due to low population density and youth migration to richer regions, elders frequently live alone (Berry & Kirschner, 2013).

Aging in these regions is not a problem by itself, at least not directly. However, as people become older, they are more prone to diseases such as cognitive impairment, diabetes, hypertension, and cardiovascular problems. Different studies indicate that a significant number of these diseases related to aging have their origin in deficient nutrition (Morley & Silver, 1995).

As these people get older, the likelihood of illnesses and chronic diseases increases. Different studies of the National Council on Aging show that more than 80% of older adults have at least one chronic disease, and it is estimated that at least 77% of them have two or more chronic diseases (Facts About Healthy Aging, 2015).

Patients with Multiple Chronic Diseases (MCD) require specific care totally created ad-hoc for their specific problems. These care are usually expensive (McPhail,
Integrated Continuous Healthcare Team Computer System Architecture
José Jasnau Caeiro, Henrique Oliveira, Margarida Goes, Manuel José Lopes and César Fonseca (2020). *Exploring the Role of ICTs in Healthy Aging* (pp. 231-246).
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Emotion Identification With Smartphones to Improve the Elder Quality of Life Using Facial Recognition Techniques
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