

Technologies for Participatory Medicine and Health Promotion in the Elderly Population [†]

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[†] Presented at the XoveTIC Congress, A Coruña, Spain, 27–28 September 2018.

Published: 28 September 2018

Keywords: participatory medicine; technological development; elderly

1. Introduction

The progressive aging of the population is a socio-demographic phenomenon experienced by most countries in the world in recent decades, especially in Japan and in many European Union countries. During this process, so-called “geriatric syndromes” frequently occur. The focus of this study is the quality of life of the elderly in relation to these three factors: risk of falls, urinary incontinence, and sleep disorders.

This project is based on the use of wearables devices, which used for the measurement of different biomedical parameters that serve to monitor and analyze aspects such as sleep, physical activity, among others, which favors the monitoring of people during an investigation. In addition, this project is developing a web application where people register daily aspects of their daily occupations. Both the use of wearables and the web registry favor participatory medicine, so that people are active agents in the management of their own health.

In the field of health, more and more technology companies are betting on the development of sensor devices and applications for patient monitoring, which allows a detailed monitoring of the health of users, with its consequent benefits. By using these devices, we can quantify movements and body parameters.

2. Objectives

The main purpose is to determine the impact of a multifactorial intervention program implemented with institutionalized elderly people. The program is focused on the treatment of the aforementioned factors.

3. Material and Methods

The study will be carried out with elderly people living in three residences for the elderly in A Coruña Province (Galicia, Spain).

It is a prospective and longitudinal study, with a temporary series design of a “quasi-experimental” type that evaluates the effect of an intervention in one given population by doing assessments pre- and post-intervention, but there is no comparison with a control group.

The intervention will be based on a multifactorial program, including the following phases: the use of wearable devices (wearable fitness trackers to register physical activity and sleep), the use of an App on a Tablet to record the participants’ occupations and activities, counseling about

performance in activities of daily living, the implementation of a physical activity program, and the treatment of the pelvic floor (according to each research line). The Quality of Life (QoL) will be assessed before and after the intervention, with the use of the questionnaire EuroQol-5D-5L. Data analysis will be applied with all registered variables through a quantitative perspective.

4. Results and Conclusions

Due to previous experiences with similar projects to the one presented here, this project can contribute to the reduction of the signs and symptoms of the syndromes: urinary incontinence, risk of falling and sleep disturbances. In addition, with the advice offered to the participants, they are training themselves in case of having a problem, reduce the consequences. We will have to wait for the complete analysis of the results in order to draw a conclusion in accordance with the data obtained, but as observed, there is a great acceptance of the program by the participants.

The program will continue to be implemented with new participants to ensure its relevance and validity in different contexts and people profiles.

Authors Contributions: This Project has been developed by a multidisciplinary team. Each of the professionals included has been responsible for the execution of each of the parts of this investigation. So, E.N., who is a computer scientist, has been the person in charge of the development of the technological platform of said project. While, P.C. and M.d.C.M., both occupational therapists, have focused on the design and implementation of the technological platform and the intervention carried out in the study together with other professionals. For the presentation, both have contributed to the design, preparation and writing of the same.

Acknowledgments: GERIA-TIC Project, Project co-funded by the Galician Innovation Agency (GAIN) through the Connect PEME Program (3rd edition) (IN852A 2016/10) and EU FEDER funds, Collaborative Genomic Data Integration Project (CICLOGEN). Data mining and molecular docking techniques for integrative data analysis in colon cancer. "Funded by the Ministry of Economy, Industry and Competitiveness. Galician Network of Research in Colorectal Cancer (REGICC) ED431D 2017/23, Galician Network of Medicines (REGID) ED431D 2017/16 funded by the Department of Culture Education and University Planning aids for the consolidation and structuring of competitive research units of the University System of Galicia of the Xunta de Galicia and Singular Centers (ED431G/01) endowed with FEDER funds of the EU.

Conflict of Interests: The authors declare no conflict of interest.



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