

CONFERENCE ABSTRACT

Computational model for comprehensive medical care and monitoring of patients with COPD, applying telemedicine

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Fernando Solis¹

1: Instituto Superior Tecnológico RUMIÑAHUI, Sangolquí, Pichincha Ecuador

Introduction

Patients with chronic obstructive pulmonary disease (COPD) require routine and systematic follow-up including measurement of parameters such as body mass index, percentage of oxygen-saturation, blood-pressure value and volume of peak expiratory flow.

We present a mobile application, Computational Based Method Integral Monitoring (CBMIM), based on synchronous and asynchronous monitoring model for COPD patients at home, which allows us to collect data, share them with the sanitary services, process and diagnose the evolution of patients with mild or moderate COPD, providing alerts of changes in the patient state (e.g. mild state to moderated) by the presence of certain symptoms, which will help to predict and take prevention measures.

These actions will have an impact on the quality of life of the patient and it is expected that decrease in the number of crises throughout the year, diminishing the number of times the patient has to go to a sanitary centre or even to be hospitalized.

The final objective of the work is to analyse the impact of the use of this technology on the patient's quality of life and the potential benefits for the health system in general, by reducing the number of face-to-face medical services.

Method

Computational Based Method Integral Monitoring (CBMIM) is based on synchronous and/or asynchronous monitoring of patients with COPD at the mild or moderate level. The values sent by the patient are automatically 24/7 processed and diagnosed, generating semi-automatic alerts between the patient-doctor or health service.

Design: The system collects, in the initial phase, the level of expectoration, dyspnoea, and heart rate and this allows processing, evaluating and diagnosing the condition of the COPD patient. We hope this will provides the following advantages:

- Greater adherence to treatment
- Patient training and empowerment
- Improving the quality of life of the COPD patient

- Reducing medical visits to health centres.

How does the system work? It receives information entered by the patient three times, in the morning before day activities, during the day doing activities and at bedtime, allowing the mobile system to perform medical evaluation process and automatically send alerts (through the traffic light method: green, yellow and red) to the patient and health services about any change in health.

Results

Computational Based Method Integral Monitoring (CBMIM) facilitates the monitoring of patients COPD, processing data taken at home and diagnosing the patient automatically. A patient with COPD could acquire a sufficient degree of training to take the values of these parameters by himself and send the information to the relevant health service without having to physically move outside home, thus becoming a monitored patient.

Conclusion

COPD is a progressive and non-reversible disease, which by carrying out the recommended treatment improves its symptoms and the quality of life of the people who suffer from it. The proposed system shows objective results and processes monitoring data, evaluates and diagnoses automatically, allows for the reduction of patients in health services, in addition to the results that the application produces are compared with health specialists, in order to evidence their objectivity