

## CONFERENCE ABSTRACT

### Simulation as a tool for evaluating intelligent self-care systems managing chronic disease patients.

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**Introduction:** The world is facing an aging population and along with that an increase in the quantity of those with chronic conditions. So a substantial amount of human and material resources in Health Care System(HCS) will be demanded or is caused long waiting times at different stages along the services and at the end the quality of HCS will decrease.

Chronic patients need to access HCS very often, so controlling and reducing the visiting time of these patients could help to improve HCS efficiency.

Using an intelligent monitoring system can be a well-thought out solution to improve HCS service quality. In this system medical staff and patients constantly interact with various electronic devices. Vital signs and health histories of patient are stored on and being transmitted between these devices, so patient will being monitored by distance and system will be updated by receiving patient's data periodically.

This semi-automatic system can work in three steps, first when the system predicts a problem, sends a recommendation to the patient.

Second if first step didn't work, an on-line expert attempts to assist the patient. Third if system cannot help you, it will advise you to visit the hospital by receiving an appointment through system. Then we can reduce the quantity of unnecessary visits in HCS.

The implementation of a system of this nature would imply a strong economic investment and significant resources, however, the use of simulation gives us the possibility to create this semi-automatic system virtually and evaluate its size and be compared its quality to the quality of current HCS.

**Method:** An agent-based model (ABM) is a class of computational models for simulating the actions and interactions of entities. We used ABM to simulate the system from bottom up.

In this model the interactions are among patients, healthcare staff and physical resources in HCS.

The supposed system can have capacity to save the information of patient, this include the personal data of patients and information and histories about their diseases.

**Progress report:** We have defined a general model of patients and a model of interaction of patients with the system in which the predictions, recommendations, online help or dating are made. We are now working on the simulator and the design of the experimental phase

**Discussion:** The proposed system not only can help us to improve the efficiency of HCS by decreasing number of personal visit by distance managing and online treating but also can prevent people from illness.in this system patient depends on their urgent situation can visit the HCS in best schedule of health care system.

**Conclusion:** A simulation of a HCS using the intelligent model make us able to consider the mentioned system behavior in a virtual setting and can help us to best use of resources in the real world. Although simulation can investigate possibility and capability of system before implementation by analyzing the system, suggested model and behavior of patient and medical staff.

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**Keywords:** simulation of health care system; intelligent self care managing; agent based model; prediction and recommendation for chronics

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