Management of heart failure disease through lifestyle

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ABSTRACT
A patient’s lifestyle can affect the clinical variables as well as create changes throughout the stages of heart failure. We present a model that predicts the correlation between a patient’s lifestyle to the stage of their heart condition in order to improve the patient’s quality of life.

Keywords
Simulation; Fuzzy logic; Heart failure disease

1. INTRODUCTION
Doctors usually classify a patients’ heart failure according to the severity of their symptoms in four classes. The patient’s lifestyle influences clinical variables. These variables can change the class. The significant life conditions include following: adherence to the treatment, having infection, the amount of salt in their body, if the amount of water in the body increases more than two Kg per week, smoking and alcohol. The clinical variables include the following: edema, obesity, heart rate, heartbeat, blood pressure, saturation of oxygen and body temperature. We propose a model that predicts the changes in clinical variables depends upon the lifestyle of the patient, and ultimately, determines the class of disease. Our model can estimate the critical path the patient is following. Since our clinical variables are expressed in an abstract language, we use the fuzzy logic to design the proposed model.

2. FORMAL MODEL AND APPROACH
As figure 1 shows predicting patient behavior model is composed of two sub-model:

2.1 Decision Tree Model
Each six living conditions consist of a binary variable, so in total we will have $2^6 = 64$ compositions (leaf of tree) of different living conditions. We make the rule IF=

3. CONCLUSIONS AND FUTURE WORK
This paper describes the behavior of chronic disease patients in the different conditions. Thus it can be beneficial for self-care management, patient quality of life and healthcare system management. This proposed model has the potential of being extended to each type of chronic disease.

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4. REFERENCES