S-DiaSelMan aims to provide a mobile application assistant that embeds medical knowledge and pattern analysis to provide feedback and suggestions to improve patients’ diabetes management. We enabled diabetes data registration, analysed medical protocols and embedded them on a logical engine to provide feedback, collected initial data and did preliminary data analysis to discover simple patterns.

**General Motivation and Objectives**

Diabetes is a rising disease in terms of number of people affected and the costs associated with its treatment. 439 million adults and USD 490 billion are estimated by 2030. Portugal had in 2011 11.7% of the population between 20 and 79 with the disease. Diabetics may have uncontrolled glycaemic values which, in turn can seriously decrease their quality of life, lead to amputations, blindness or heart problems in the worst scenarios. However, if glycaemia is correctly controlled the patient can lead a normal life without complications.

To achieve this, type 1 diabetics (insulin-dependent) require a very strict control of their disease. This implies registering glucose levels, carbohydrate intake, insulin, exercise, stress, illness and other factors that influence glycaemic values. The ultimate goal of this work is to provide a mobile application assistant that embeds medical knowledge and pattern analysis to provide feedback and suggestions to improve the disease management. This results in advice given when specific records are added, discovering correlations between events/records and improving patient engagement for data acquisition.

**Challenge**

Patient and physician usually discuss the cause-effect of some of the events to review patient’s decisions, evaluate their results and discuss the treatment. Embedding these medical protocols, which are sometimes well defined but mostly arise from experience in a logical framework for the application is one of the challenges of the project. These rules should take into account the context provided by the records entered (e.g. going to do an exercise made an exercise 2h ago).

The data registered by the patient can provide patterns that show incorrect control of glycaemia by pointing to problems or ultimately providing reasons. However, the diversity of factors that influence glycaemic control makes it especially difficult to uncover.

**Achievements**

- The smartphone application and Online visualization
- Fig. 1
- Initial analyses for mining user data
- Fig. 2

**Project Team**

- Pedro Brandão: IMM-Po
- Miguel Conibo: IMM-Po
- Inês Dutra: CRACS-INESC
- Celestino Nunes: Hosp. S. João/FMUP
- João Piresca: CINTESIS/FMUP
- Eduardo Soares: NS-Ps
- Diogo Machado: NS-Ps
- José Ornelas: NS-Ps
- Diálo Lina: NS-Ps
- João Max: NS-Ps
- João Ternivel: NS-Ps
- Ana Azevedo: NS-Ps
- Ricardo Faria: NS-Ps
- Carla Leite: IMM-Po

**Publications**


**Main Project Team**

- Pedro Brandão: IMM-Po
- Miguel Conibo: IMM-Po
- Inês Dutra: CRACS-INESC
- Celestino Nunes: Hosp. S. João/FMUP
- João Piresca: CINTESIS/FMUP
- Eduardo Soares: NS-Ps
- Diogo Machado: NS-Ps
- José Ornelas: NS-Ps
- Diálo Lina: NS-Ps
- João Max: NS-Ps
- João Ternivel: NS-Ps
- Ana Azevedo: NS-Ps
- Ricardo Faria: NS-Ps

**Funding**

- 38k €

**Conference Papers**

- 2

**Concluded MSc**

- 6

**Main Publications**


**PROJECT WEBPAGE URL**

https://mydiabetes.dcc.fc.up.pt/