Diagnosis management of gestational Diabetes using a Decision support system based on clinical guidelines

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Introduction

Gestational diabetes (GD) is a disorder of glucose tolerance occurred or first recognized during pregnancy. GD occurs in pregnant women towards the end of the second quarter. It can take time to pregnancy or be indicative of diabetes earlier. The clinical practice guidelines (CPG) from NICE (National Institute for Health and Clinical Excellence) report a number of risk factors for gestational diabetes may justify screening.

1. Materials and Methods

Case Based Fuzzy Cognitive Map (CBFCM) is an extension of FCM; CBFCM is a hybrid decision-making computing technique. CBFCM is represented as nodes (concepts) that illustrate the different aspects of the system’s behavior. CBFCM uses three levels of reasoning: control rules, fuzzy rule-based and heuristic reasoning level. These three levels of reasoning improve the profiling of patients. We used a database of 72 patients to validate our diagnosis model.

2. Results and discussion

The result of our work is summarized in the development of a platform able to interact with heterogeneous data and formalize knowledge from CPG. The proposed methodology was validated with data for 72 patients from Parisians hospitals. We had 90,2 % (65/72 patients) diagnosis are in fully agreement with the physician final diagnosis.

The CBFCM approach allowed us to model medical knowledge and to identify causal relationships in close as possible to the human reasoning. In this study we propose a new approach to improve DG diagnosis. The characteristic of GD that have a large incidence and they have many clinical forms, for that we choose this medical problem to test CBFCM reasoning. CBFCM have good results of 90,2%.

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