

Prediction of the Cognitive Ability Level in Children of Mothers with Gestational Diabetes: Data Mining Approach

Azadeh Kamel Ghalibaf¹, Zahra Mazloun Khorasani², Kobra Etminani^{3*}

1. PhD Candidate of Medical Informatics Department, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
2. Assistant Professor of Endocrine and Metabolism Department, Endocrinology & Metabolism Research Center of Ghaem Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
3. Assistant Professor of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

*Corresponding Address: Daneshgah St, Mashhad University of Medical Sciences, Mashhad, Iran.

Email address: EtminaniK@mums.ac.ir

Abstract

Background & Aim: Gestational diabetes could have harmful consequences on Children's health. Since the initiation of gestational diabetes is simultaneous with brain evolution, this study is designed to predict evolutionary growth in children of mothers with gestational diabetes.

Methods: In this study, the required data were obtained through investigating the profiles of pregnant women referring to Mashhad's health centers during 2011 to 2013. The data collection tool was child's periodical examination form. The data were predicted using memory based learning algorithms, decision tree, and demographic features of mother

Results: The accuracy of prediction of children's cognitive ability status for three groups of healthy mothers (92), mothers suffering from gestational diabetes (83), and both groups (175) were separately evaluated through decision tree learning algorithms based on memory with three precision, recall and F-measure criteria. Memory based learning algorithm showed better results than decision tree in all cases.

Conclusion: Since growth delay in the cognitive-intellectual ability of child imposes high costs to health care system in the future, preventive measures should be adopted by prediction of the level of child's cognitive skill in prenatal stage to avoid probable problems.

Keywords: gestational diabetes, cognitive skills, children evolutionary monitoring, decision tree, memory based learning