

Comorbidity Study of Attention-deficit Hyperactivity Disorder (ADHD) in Children: Applying Association Rule Mining (ARM) to Korean National Health Insurance Data

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Iranian Journal of Public Health 2018. 47(4):481-488.

Abstract

Background:

The aim of this study was to explore the comorbidity of Attention-Deficit Hyperactivity Disorder (ADHD) for the Korean national health insurance data (NHID) by using association rule mining (ARM).

Methods:

We used data categorized mental disorder according to the international classification of disease, 10th revision (ICD-10) diagnosis system from NHID from 2011 to 2013 in youths aged 18 yr or younger. Overall, 211420 subjects, comorbid cases with ADHD were present in 105784. ARM was applied to the Apriori algorithm to examine the strengths of associations among those diagnosed, and logistic regression was used to evaluate the relations among rules.

Results:

The most prevalent comorbid psychiatric disorder of ADHD youths was mood/affective disorders. From results of ARM, nine association rules (support \geq 1%, confidence \geq 50%) were produced. The highest association was found between specific developmental disorders of scholastic skills and ADHD. Among association of three comorbid diseases, tic disorder was an important role in the association between ADHD and other comorbid diseases through results of ARM and logistic regression.

Conclusion:

The practical application of ARM for discovering the comorbidity of ADHD in large amount real-data such as the Korean NHID was mostly confirmed by past studies. The results of this study will be helpful to researchers evaluating the stability of their diagnosis in ADHD.
