

Replication of a predictive model for youth ADHD in an independent sample from a developing country

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Abstract

Background: Very few predictive models in Psychiatry had their performance validated in independent external samples. A previously developed multivariable demographic model for attention-deficit/hyperactivity disorder (ADHD) accurately predicted young adulthood ADHD using clinical and demographical information collected in childhood in three samples from developed countries, but failed to replicate its performance in a sample from a developing country. Furthermore, consolidated risk factors for ADHD were not included among its predictors.

Methods: Participants were 1905 children and adolescents from a community-based sample and followed from ages 6 to 14 years at baseline to ages 14 to 23 years (mean age 18) at follow-up. We applied the intercept and weights of the

original model to the data, calculating the predicted probability of each participant according to the set of predictors collected in childhood, and compared the estimates with the actual outcome (ADHD) collected during adolescence and young adulthood. We explored the performance of the original model, and of models including novel predictors (prematurity, family history of ADHD, and polygenic risk score for ADHD).

Results: The observed area under the curve of the original model was .76 (95% Confidence Interval .70 to .82). The multivariable demographical model outperformed single variable models using only prematurity, family history, or the ADHD PRS. Adding either of these variables, or all at once, did not improve the performance of the original demographical model.

Conclusions: Our findings suggest that the originally developed ADHD predictive model is suitable for use in different settings for clinical and research purposes.