Nederlands Tweelingen Register

Tweeling- en familieonderzoek

BIONIC

BIObanks Netherlands Internet Collective

A Novel Way of Homogeneous Phenotyping

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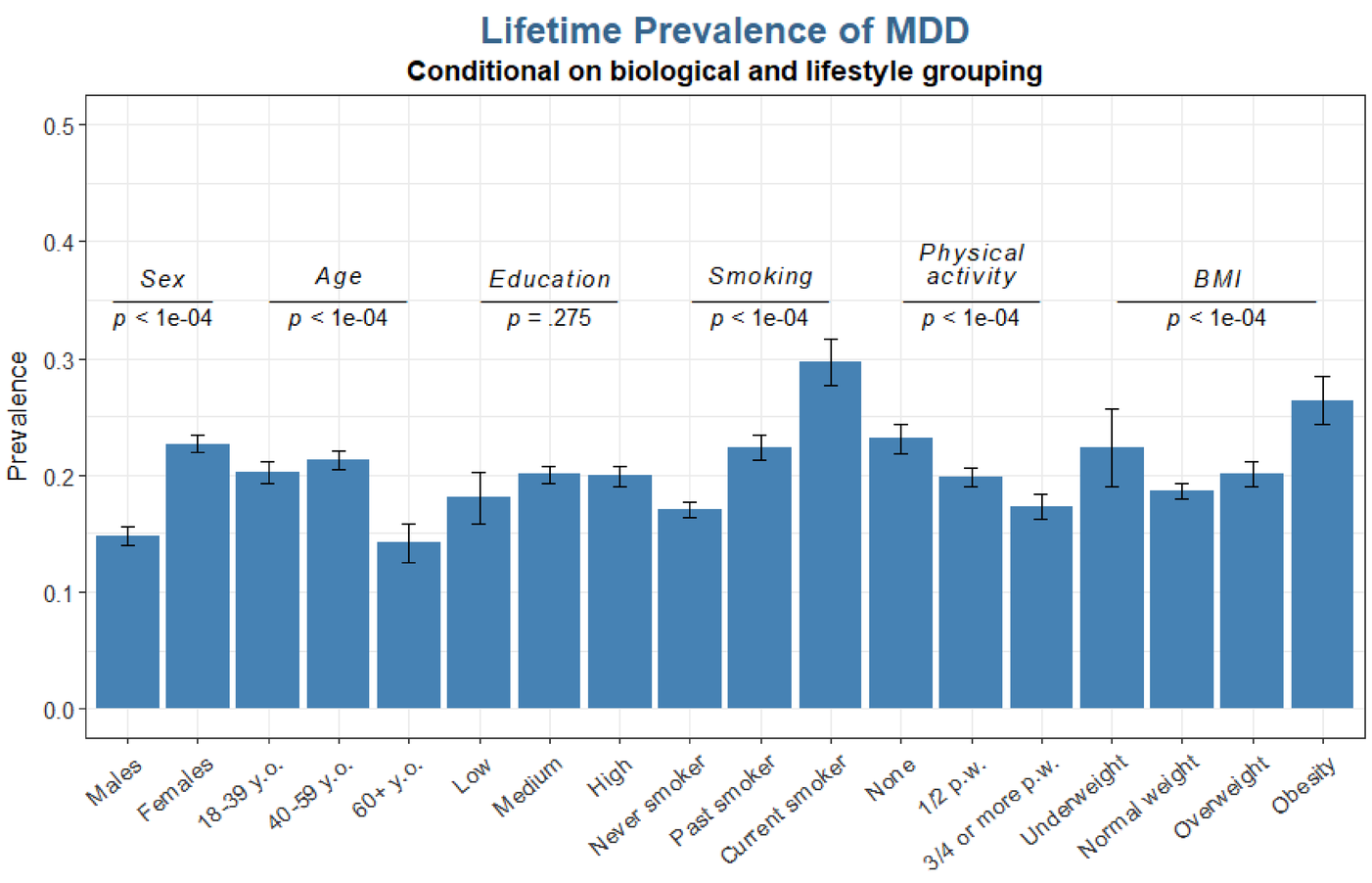
Introduction

The goal of the BIONIC project is to gain insight into the biological processes associated with mood and health, with a focus on Major Depressive Disorder (MDD) -> Insight into biological mechanisms and genetic architecture of MDD:

- Genetically complex heterogeneous phenotype
- $H^2 \sim .40$, but difficulty finding sign. SNPs
- Minimal phenotyping not ideal (Cai et al. 2018)
- Wray et al. 2018: 44 risk variants
- Howard et al. 2019: 102 risk variants
- BUT… SNP-h^2 remains the same ~ 8.7%



LIDAS

LIfetime **D**epression **A**ssessment **S**elf-report
Newly developed online MDD-questionnaire based on the widely used Composite International Diagnostic Interview (CIDI) that assesses lifetime MDD diagnosis according to DSM-V criteria. Validity assessment (Bot et al. 2016):

- Sensitivity and specificity analyses
  - Cases = 177, controls = 87
  - Sensitivity: 85%
  - Specificity: 80%
- Feasibility analysis n = 245
  - Prevalence of 20.8%

A promising tool for rapid determination of lifetime MDD status in large samples, as is needed in genomics studies.

Methods and Prelim. Results

MDD prevalence in the Dutch population was determined based on the official DSM-V criteria in n = 19.919. Biological and lifestyle variables were measured to determine and compare prevalence between several demographic groups using chi-squared analyses. Heritability was estimated using the Netherlands Twin Register pedigree, n = 267.683 (Boomsma et al. 2018).

Prevalence and heritability meta-analysis

- Lifetime prevalence = 19.89%
- $H^2 \sim .29$
- PRS = 1.46% (Fedko, 2019)

Future Steps

The next steps in the BIONIC project involve:

- Investigating whether this form of phenotyping leads to increased power
- Performing a GWA-meta analysis in the BIONIC cohorts
- Estimating the SNP-h^2

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