Public title

Evaluating a Mental Health Literacy Education Program for Teenagers Delivered by Teachers in Portuguese Secondary Schools.

Scientific Title

Effects of a Teacher-Delivered Curriculum on Mental Health Literacy, including Stigma and Help-Seeking Behavior, among Portuguese Secondary Students Compared to Usual School Activities: the WhySchool 2.0 Case-Control Quasi-Experimental Study

Statistical analysis

Following an intention-to-treat approach, we use descriptive statistics to characterize the sample at baseline and examine between-group comparability using t-tests for continuous variables and chi-square tests for categorical variables. Additionally, we analyze baseline heterogeneity in the primary outcome (MHL) across sociodemographic categories within each group using t-tests or One-Way ANOVA. To explore the structural relationships between outcomes before intervention, we use Pearson correlation coefficients for continuous outcomes (MHL and pers-DSS) and ANOVA with Tukey's HSD post-hoc tests for comparing MHL and stigma scores across help-seeking categories.

To estimate unadjusted intervention effects on continuous outcomes, we use paired t-tests to examine within-group pre–post differences and independent t-tests to compare change scores between intervention and control groups, using Cohen's *d* to quantify effect sizes. For categorical help-seeking outcomes, we assess pre-post changes within each group using McNemar tests and compare groups at each time point using chi-square tests.

Because students are nested within schools, we use Generalized Linear Mixed Models (GLMMs) to obtain adjusted estimates that account for clustering. We first calculate intraclass correlation coefficients (ICCs) to determine whether random intercepts at the school level were required. The ICCs supported including school as a random effect for MHL (0.109) and stigma (0.069). For help-seeking, this effect was negligible, as the inter-cluster variance was not statistically significant. We fit Linear Mixed Models for continuous outcomes (which follow an approximately normal distribution) and Multinomial Logistic Mixed Models for categorical help-seeking outcomes. All models include fixed effects for time (post-intervention vs. baseline), group (intervention vs. control), and the time*group interaction, which represents the adjusted intervention effect. We adjust all models for sex, school grade (middle vs. high school), and PHQ-4 symptom scores, and report odds ratios (ORs) for categorical outcomes. Finally, we evaluate model fit and variance explained using pseudo-R^2 statistics for continuous outcomes and the overall percentage correct classification metric for the categorical outcome.

We perform all analyses using IBM SPSS Statistics version 30.0.0, setting the confidence level at 95% for statistical significance. A priori power analysis (*d*=0.40, power=0.80) requires 320 students; the final sample (N=526) achieves a post-hoc power of 0.94.