

DEVELOPMENT OF A SIMULATION MODEL FOR THE COST-UTILITY ANALYSIS OF UPRIGHT INTERVENTION PROMOTING RESILIENCE IN ADOLESCENTS

BACKGROUND

As mental health in adulthood is largely dependent on mental status during adolescence, various school-based interventions have been proposed to promote resilience. Economic evaluations to date have aimed to measure the health benefits and costs of interventions only for the duration of trials.

OBJECTIVE

To develop a conceptual model and build a simulation model representing the natural history of mental disorders in childhood, adolescence and youth to estimate the cost-utility of the UPRIGHT intervention promoting mental health in adolescence

METHODS



Target population

609,381 individuals who, as of December 31, 2018, were between 1 and 30 years old

Intervention

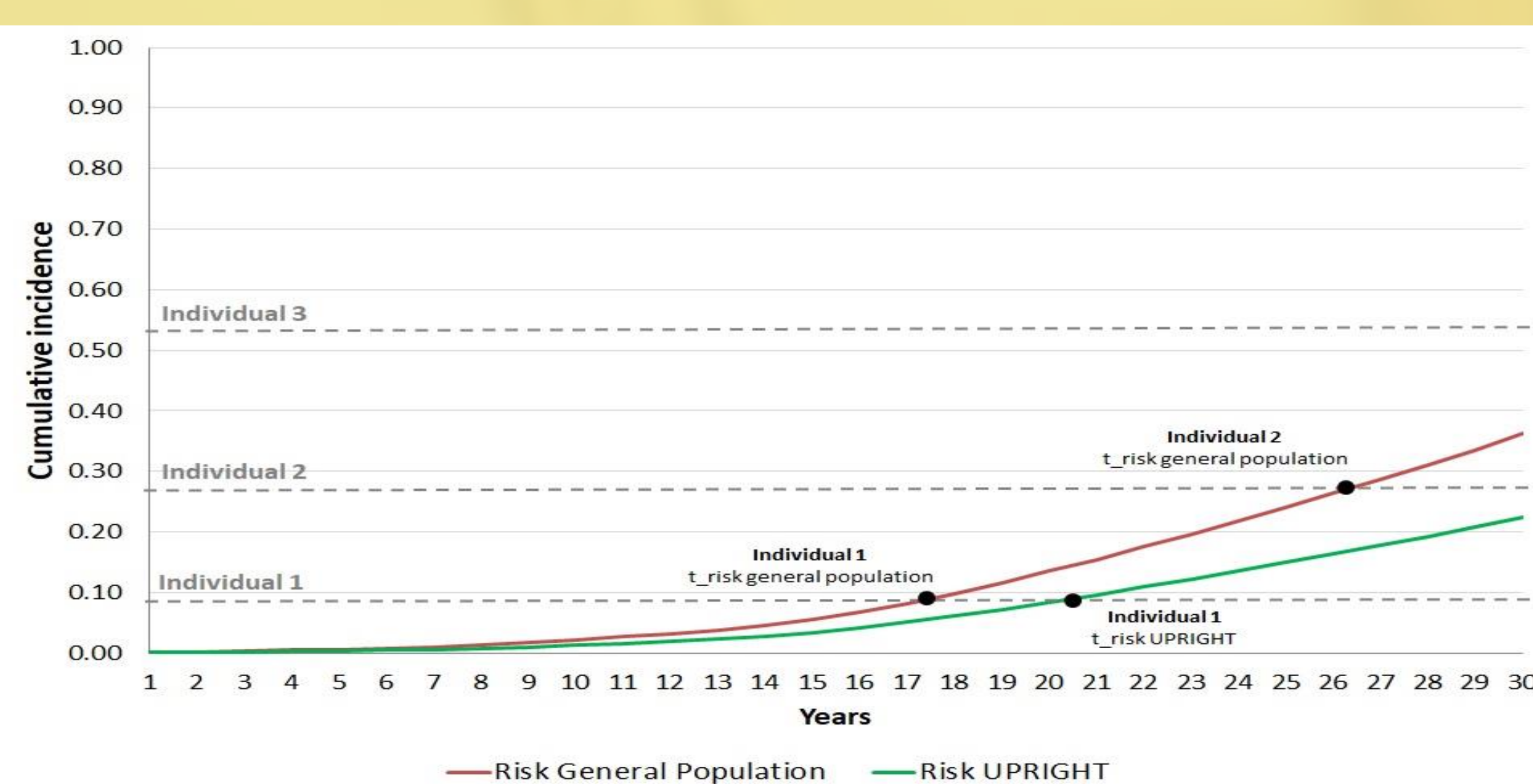
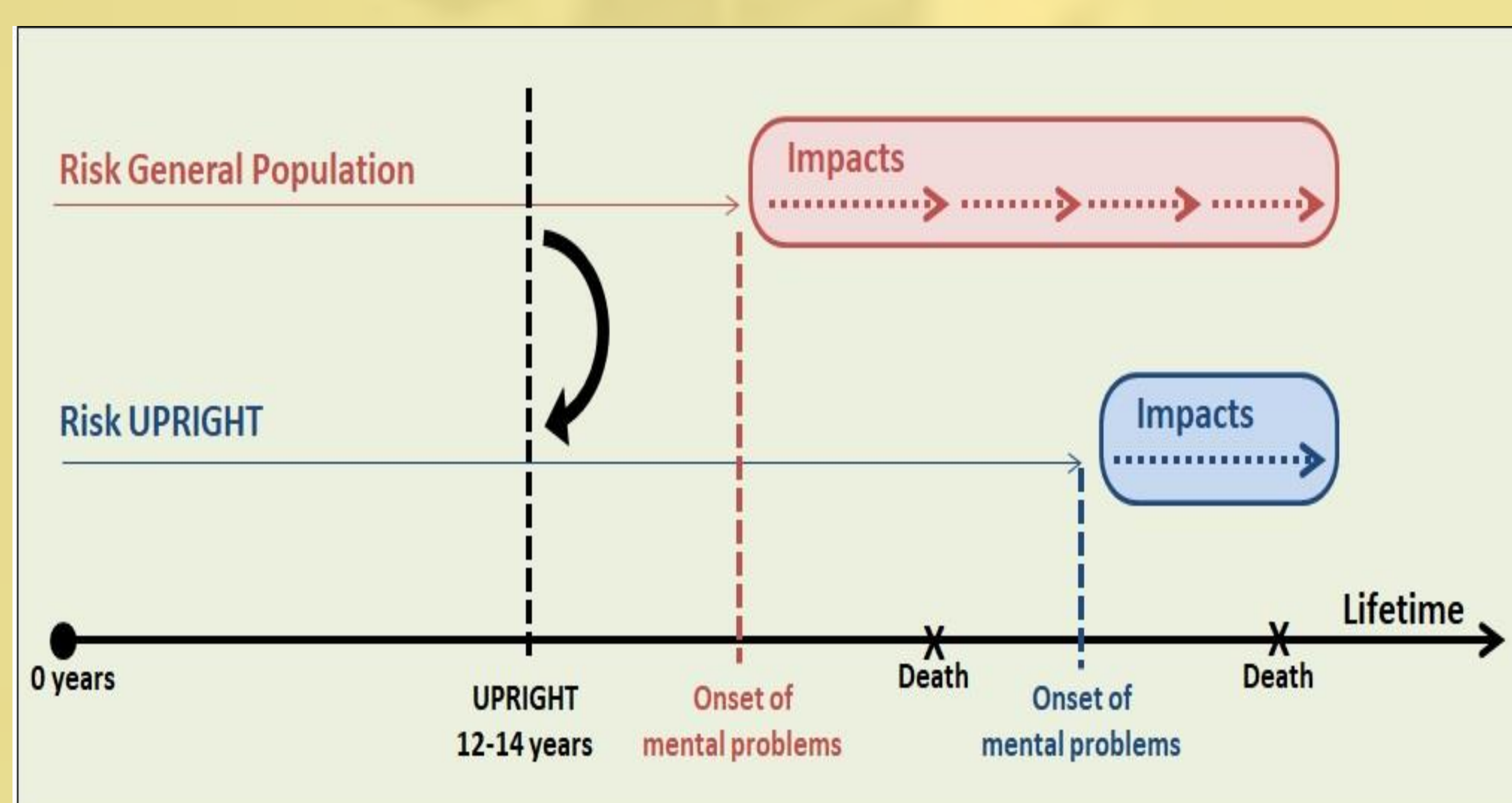
UPRIGHT universal preventive resilience intervention to strengthen resilience was grounded on an individual, family and school staff framework

Conceptual model

(1) calculation of the SES- and gender-specific cumulative incidence rates for the diagnostic groups in the general population between 1 and 30 years of age to construct empirical distributions for time until the onset of mental disorders, (2) retrieval of data on utilities and costs from available databases and literature, (3) estimation of the UPRIGHT intervention effectiveness comparing pre- and post-intervention data to modify times until events in a cloned population, and (4) construction and validation

Discrete Event Simulation through ARENA

When individuals were first entered into the model at age zero, they were assigned characteristics or personal attributes (gender and SES), and random numbers that made each individual's life course different. Second, the model calculated times until the onset of anxiety, ADHD, conduct disorders, depression, substance use, psychosis and personality disorders, eating disorders, and self-harm. Stochastic (or first-order) uncertainty was incorporated



RESULTS

The number of cases of anxiety was estimated to fall by 5,125 or 9,592 and those of depression by 1,269 and 2,165 if the effect of the intervention lasted 2 or 5 years respectively. From a healthcare system perspective, the intervention was cost-effective for all cases considered with incremental cost-utility ratios always lower than €10,000/QALY and dominant for some subgroups. The intervention was always dominant when including indirect and non-medical costs (societal perspective)..

CONCLUSIONS

UPRIGHT Intervention to promote resilience in adolescents was cost-effective. Moreover, as the cumulative incidence rates were disaggregated by gender and socioeconomic status, the model also evidenced more efficiency in high-risk groups. Our approach relies on the use of an epidemiological model to build the intertwined natural history of mental health and mental disorders based on the whole registry for the Basque population (real-world data).