

## A Behavioural Intervention to Improve Sleep and Mental Health in Adolescent Depression

*C. Castiglione-Fontanellaz<sup>1,2</sup>, M. Gradisar<sup>3</sup>, M. Kaess<sup>1,4</sup>, L. Tarokh<sup>1,2</sup>*

<sup>1</sup>University Hospital of Child and Adolescent Psychiatry and Psychotherapy, Bern, Switzerland, <sup>2</sup>University Hospital of Psychiatry and Psychotherapy, Translational Research Centre, Bern, Switzerland, <sup>3</sup>Sleep Cycle AB, Gothenburg, Sweden, <sup>4</sup>University Hospital Heidelberg, Department of Child and Adolescent Psychiatry, Heidelberg, Germany

---

**Background:** Current evidence points to the importance of sleep for adolescent physical and mental health. Sleep problems are often a core symptom of depression. To address the effect of a behavioural sleep restriction in adolescents with and without depression, we measured subjective sleep and mental health before and after the sleep restriction intervention.

**Methods:** Our sample consisted of seventy adolescents with (N = 35, 29 females) and without (N = 35, 24 females) major depressive disorder (MDD) aged 14 to 17 years (mean 15.15 years, SD = 1.1). Using the sum score of the Pittsburgh Sleep Quality Index and of the Epworth Sleepiness Scale for Children and Adolescents subjective sleep was measured before and after the sleep intervention. Depressive symptomatology was measured with the Center for Epidemiological Studies Depression scale and anxiety symptoms with the State-Trait Anxiety Inventory. Questionnaires were filled out at pre and post intervention (approximately 2 weeks later). As part of the intervention, participants were instructed to go to bed 30 minutes later than usual and to keep their sleep schedules regular for two consecutive weeks (including weekends).

**Results:** A mixed models ANOVA revealed that adolescents with MDD reported significantly less whereas healthy controls reported significantly more daytime sleepiness after the intervention ( $F$ -value for group and time interaction = 6.38;  $p = 0.01$ ). Adolescents with MDD had less depressive symptoms after the intervention, while healthy controls had significantly more ( $F$ -value for group and time interaction = 5.53;  $p = 0.02$ ). Although, at both pre and post intervention adolescents with MDD reported worse sleep quality and more anxiety than healthy controls, the intervention had no impact on these measures for either group.

**Conclusions:** Reducing time in bed by 30 minutes for two weeks resulted in diminished sleepiness and depressive symptoms in adolescents with MDD, while the opposite effect was found in healthy controls. In the treatment of depressive symptoms, sleep interventions should be taken more into consideration. Since sleep problems are a core symptom of depression, it is crucial to also treat these specifically to improve wellbeing.