



Executive Summary

Title:

The Impact of Sleep and Circadian Factors on Middle School Attendance in the Madison Metropolitan School District: A Mixed-Methods Investigation

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Abstract of study:

Delaying school start times to foster improved sleep health has demonstrated significant positive effects on student attendance, achievement, and well-being when implemented in other school districts. The Madison Metropolitan School District (MMSD) began a multi-year plan to phase in delayed school start time for middle school students in AY2019-20. Our study was designed to evaluate the associations between sleep and circadian factors on attendance and other behavioral outcomes among MMSD students prior to implementation of this policy change, to help inform the potential impact on MMSD students. The study utilized data from a sleep-related survey deployed to all MMSD middle school students (n=3,860) in the spring of 2019. Linear mixed effects regression models were used to evaluate the primary research questions of whether 1) shorter sleep duration and 2) tendency towards a delayed sleep phase (e.g., reporting being a “night owl”) in MMSD middle students are associated with reduced school attendance. Associations with secondary outcomes of tardiness and out-of-school suspension were also examined. Qualitative thematic analysis also explored an open-ended survey question that asked students to share the story of a recent absence from school, to explore the potential impact of sleep and other factors on school absence. In fully-adjusted models, results demonstrated shorter school night sleep duration was significantly associated with lower attendance and increased out-of-school suspension. In fully-adjusted models, greater eveningness (“night owl”) preference was significantly associated with lower attendance and increased tardiness. Qualitative analysis demonstrated illness was the most common reported reason for school absence, followed by medical/dental appointments, with sleep related issues, including difficulty waking, feeling tired, and being up late, the third most mentioned group of reasons for missing school. Our results support interventions and policies that increase sleep duration and account for eveningness (“night owl”) preference among middle school students to improve sleep health and other outcomes. Future research aimed at clarifying the short-and-long term effects of delaying middle school start time in MMSD is warranted.

Major findings:

- Shorter school night sleep duration was significantly associated with lower attendance and increased out-of-school suspension among MMSD middle school students.
- Greater eveningness preference was significantly associated with lower attendance and increased tardiness among MMSD middle school students.
- Qualitative analysis found that sleep related-issues (e.g., difficulty waking, feeling tired, and being up late), was the third most mentioned group of reasons for missing school by students, behind only illness and medical/dental appointments.

Implications of findings for MMSD policy or practice and future research:

Results that students' sleeping longer at night is associated with higher attendance, support exploring interventions that increase sleep duration and account for eveningness preference among MMSD middle school students to improve sleep health and other outcomes. These data support the hypothesis that the delay of school start times for MMSD students may improve school attendance, reduce tardiness, and reduce out-of-school suspensions. Future research that more directly examines the short-and-long term effects that result from delaying middle school start time in MMSD is warranted.