



# Sleep and Psychological Well-Being in U.S. and South Korean Adolescents

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## Introduction

- With the increasing prevalence of insufficient sleep among adolescents, growing attention has been directed toward its potential impact on psychological health and overall well-being.
- While the association between inadequate sleep and adverse mental health outcomes has been increasingly recognized, comprehensive evidence examining its relationship with suicidal behaviors and depression remains limited.
- Objective:** This study aimed to investigate the associations between sleep duration and suicidal outcomes, including suicidal ideation and attempts, as well as depression among high school students.

## Methods

### Data Source and Study Design

- A cross-sectional analysis of the 2019, 2021, and 2023 Youth Risk Behavior Surveillance System (YRBSS) and the Korea Youth Risk Behavior Survey (KYRBS) data

### Study Population

- High school students in grades 9–12 who reported their average hours of sleep

### Study Outcomes

- Self-reported psychological health outcomes included suicidal behaviors (ideation, plan, attempts) and mental health indicators (including depression, stress).
  - Suicidal outcomes and depression were assessed as binary variables based on experiences during the past 12 months.
  - In YRBSS, mental health was categorized as binary variable (always/most of the time vs. sometimes/rarely/never).
  - In KYRBS, stress was categorized as binary variable (very much/a lot vs. a little/not much/not at all).

### Sleep Hours

- Average nightly sleep duration was categorized as <8 hours or ≥8 hours, measured for school nights in the YRBSS and for both weekdays and weekends in the KYRBS

### Statistical Analysis

- Socioeconomic, clinical, and behavioral characteristics between students with <8 hours or ≥8 hours of sleep were estimated.
- Multivariable survey logistic regression models were used to estimate suicidal outcomes and mental health, controlling for covariates:
  - In YRBSS: age, sex, race/Ethnicity, BMI, alcohol, smoking, marijuana, bullying, soda assumption, physical activity, social media/computer use
  - In KYRBS: age, sex, BMI, asthma, alcohol, smoking, school performance, physical activity, smart phone/internet use, income

## Results

- Of the 44,161 US and 97,055 Korean students, 77.3% and 87.5%, respectively, reported sleeping <8 hours on average. From 2019 to 2023, the proportion of students sleeping <8 hours slightly declined in the US, while remaining consistently higher in South Korea (**Figure 1**).
- Students with <8 hours of sleep were more likely to be older, have higher BMI, and use alcohol and smoke.
- In both the US and Korea, <8 hours of sleep was associated with higher prevalences of suicidal ideation (22.5% vs. 12.6%), suicide attempts (9.5% vs. 2.2%), and depressive symptoms (43.3% vs. 27.8%), with overall prevalences and differences compared with ≥8 hours of sleep higher in the US (**Figure 2**).
- In the US, short sleep was associated with higher odds of suicidal ideation (adjusted odds ratio [aOR]=1.82, 95% confidence interval [CI]=1.63–2.02), suicide attempts (1.11, 1.00–1.24), depression (1.83, 1.68–1.99), and poor mental health (1.14, 1.02–1.26) (**Table 1**).
- In Korea, short sleep was associated with increased odds of suicidal ideation (1.27, 1.18–1.36), depression (1.25, 1.19–1.32), and stress (1.38, 1.32–1.45), while associations with suicide attempts were not statistically significant.

Figure 1. Percentage of Students with <8 hours of Sleep by Year

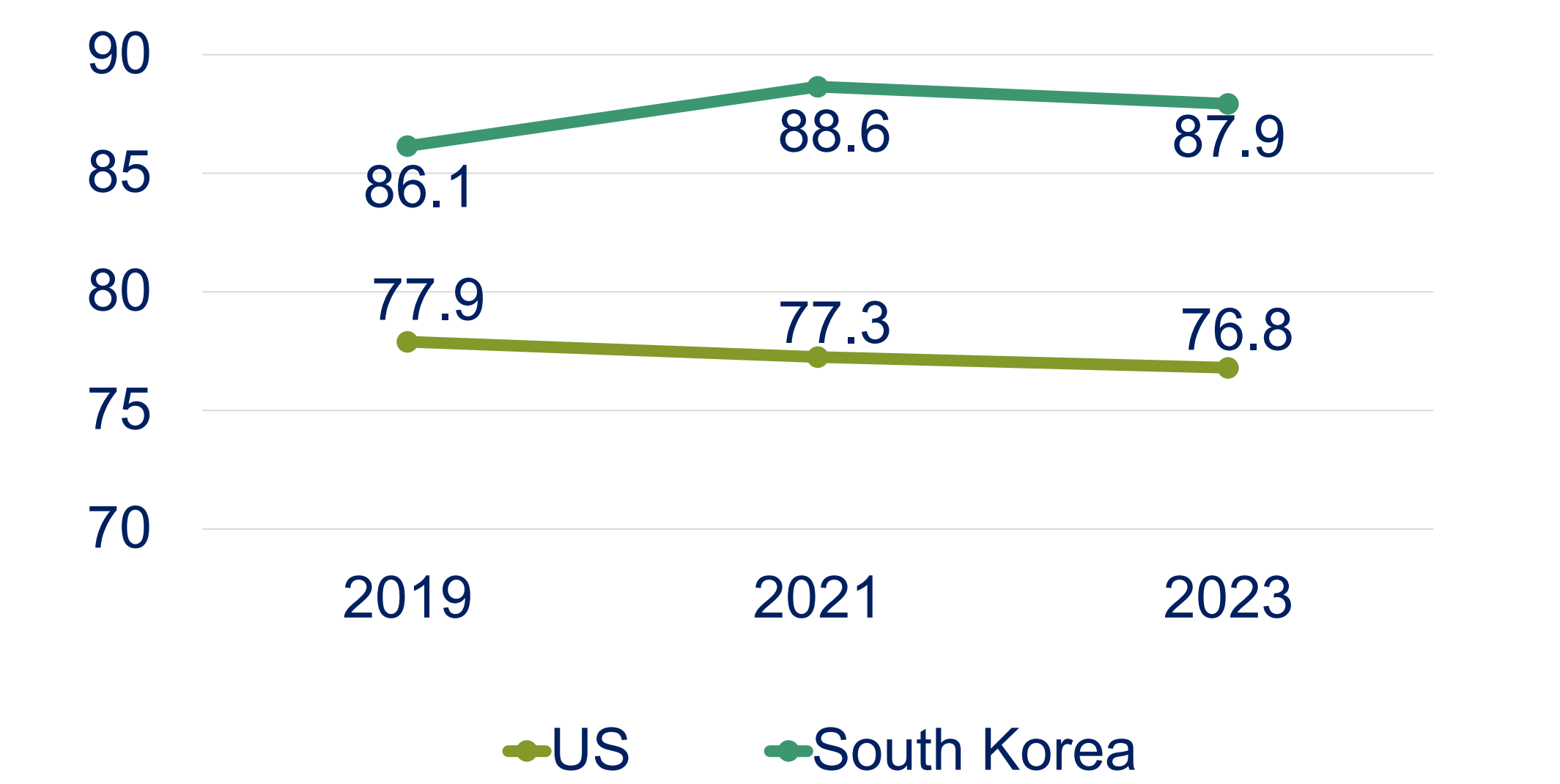


Figure 2. Percentage of Suicidal Outcomes and Depression: ≥8 hours vs <8 hours of Sleep

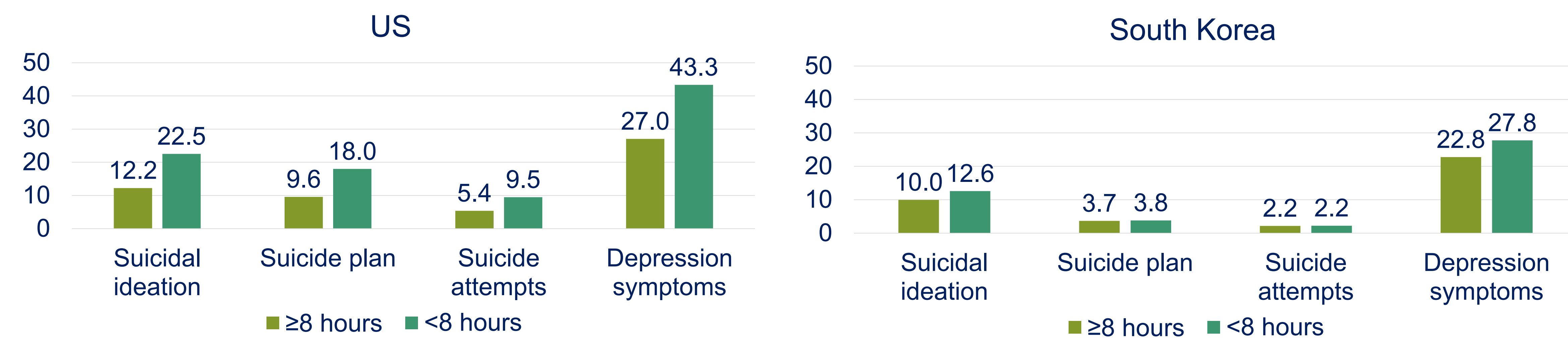


Table 1. Multivariate Logistic Regression of Suicidal Outcomes and Mental Health

US	Suicidal ideation	Suicide plan	Suicide attempts	Depression symptoms	Poor mental health
Sleep hours (<8 vs. ≥8 hours)	1.82 (1.63-2.02)	1.67 (1.49-1.87)	1.11 (1.00-1.24)	1.83 (1.68-1.99)	1.14 (1.02-1.26)
Age (ref: 18 years or older)					
14 years or less	1.32 (1.09-1.60)	1.21 (0.97-1.52)	1.24 (1.00-1.54)	1.18 (1.01-1.38)	0.72 (0.57-0.92)
15 years	1.26 (1.08-1.48)	1.21 (1.01-1.44)	1.14 (0.96-1.37)	1.12 (0.99-1.27)	0.90 (0.75-1.09)
16 years	1.15 (0.97-1.36)	1.07 (0.92-1.24)	1.05 (0.89-1.24)	1.14 (1.02-1.28)	0.86 (0.73-1.02)
17 years	1.06 (0.91-1.25)	1.09 (0.93-1.29)	1.00 (0.87-1.16)	1.14 (1.01-1.29)	0.85 (0.72-0.99)
Gender (female vs. male)	1.91 (1.77-2.06)	1.56 (1.40-1.74)	1.15 (1.05-1.27)	2.50 (2.30-2.71)	1.46 (1.33-1.60)
Race/Ethnicity (ref: non-Hispanic White)					
Non-Hispanic Black	1.01 (0.86-1.18)	1.06 (0.82-1.37)	2.21 (1.59-3.08)	1.07 (0.95-1.20)	0.74 (0.51-1.07)
Hispanic	0.93 (0.84-1.04)	1.19 (0.95-1.48)	1.59 (1.32-1.91)	1.35 (1.25-1.47)	0.94 (0.65-1.37)
Alcohol use (yes vs. no)	1.28 (1.16-1.42)	1.18 (1.03-1.35)	1.08 (0.98-1.19)	1.37 (1.26-1.48)	1.03 (0.91-1.18)
Current cigarette use (yes vs. no)	1.59 (1.36-1.85)	1.54 (1.31-1.80)	1.82 (1.54-2.16)	1.31 (1.10-1.56)	1.09 (0.89-1.34)
Current marijuana use (yes vs. no)	1.74 (1.54-1.98)	1.56 (1.36-1.79)	1.40 (1.21-1.62)	1.65 (1.49-1.84)	0.96 (0.83-1.10)
Bullied at school (yes vs. no)	2.22 (2.02-2.44)	1.94 (1.73-2.19)	1.55 (1.37-1.76)	2.25 (2.07-2.45)	1.36 (1.21-1.54)
Electronic bullying (yes vs. no)	1.97 (1.74-2.22)	1.98 (1.71-2.29)	1.68 (1.40-2.01)	2.30 (2.06-2.56)	0.93 (0.81-1.06)
Physical activity (<5 vs. ≥5 days)	1.36 (1.25-1.48)	1.24 (1.12-1.38)	1.24 (1.10-1.39)	1.36 (1.26-1.46)	1.08 (0.98-1.19)
South Korea	Suicidal ideation	Suicide plan	Suicide attempts	Depression symptoms	Stress
Sleep hours (<8 vs. ≥8 hours)	1.27 (1.18-1.36)	1.05 (0.94-1.18)	1.04 (0.90-1.21)	1.25 (1.19-1.32)	1.38 (1.32-1.45)
Mean age	0.86 (0.84-0.87)	0.82 (0.80-0.85)	0.78 (0.74-0.82)	0.94 (0.93-0.95)	1.00 (0.99-1.01)
Gender (female vs. male)	2.04 (1.93-2.15)	1.79 (1.64-1.96)	2.31 (2.06-2.59)	1.80 (1.73-1.87)	2.02 (1.95-2.09)
Asthma (yes vs. no)	1.59 (1.34-1.88)	2.45 (1.93-3.11)	2.65 (1.98-3.55)	1.70 (1.50-1.94)	1.52 (1.34-1.73)
Alcohol use (yes vs. no)	1.23 (1.15-1.32)	1.38 (1.23-1.54)	1.54 (1.33-1.77)	1.30 (1.23-1.36)	1.11 (1.05-1.16)
Current cigarette use (yes vs. no)	1.45 (1.31-1.61)	1.49 (1.27-1.75)	1.87 (1.54-2.28)	1.41 (1.30-1.53)	1.24 (1.15-1.34)
School performance (≤middle vs. ≥upper middle)	1.08 (1.03-1.14)	1.13 (1.03-1.23)	1.24 (1.11-1.39)	1.17 (1.13-1.21)	1.01 (0.97-1.04)
Smart phone/internet use (≥20/≥13 vs. <20/<13 hours/week)	1.40 (1.31-1.50)	1.55 (1.39-1.73)	1.50 (1.31-1.72)	1.26 (1.19-1.34)	1.30 (1.24-1.37)

## Discussion

### Strengths

- This study leveraged large, nationally representative datasets from two countries, enabling robust cross-national comparisons.

### Limitations

- Sleep duration and mental health outcomes were self-reported, which may introduce reporting bias.
- The cross-sectional design precludes causal inference between sleep duration and mental health outcomes.

## Conclusion

- A high proportion of students reported insufficient sleep in both countries, with higher rates in South Korea.
- Short sleep was associated with worse psychological well-being and increased suicidal risk among adolescents in both countries, with more pronounced associations in the US.

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