National Sleep Foundation

National Sleep Foundation's 2024 Sleep in America® Poll

Teens' Sleep Health and Mental Health are Strongly Connected

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NATIONAL SLEEP FOUNDATION

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The National Sleep Foundation (NSF; theNSF.org) is dedicated to improving health and well-being through sleep education and advocacy. NSF conducts population-level research in the United States, and globally, through multiple instruments, including its annual *Sleep in America*® Poll (SIA Poll), which is the premier annual review of public attitudes and behaviors around current sleep topics. NSF's 2024 SIA Poll sought to understand the important connection between sleep health and depressive symptoms among US teens (i.e., people aged 13 to 17), and provides a first-of-its kind evaluation of this population. The United States is in the midst of a mental health crisis. The US Surgeon General, Dr. Vivek Murthy, indicated in an October 2022 interview that the "mental health crisis" was the biggest health challenge facing the United States. Amid the warnings of a mental health crisis among teens, the 2024 SIA Poll finds a strong connection between sleep health and depressive symptoms, much like a survey from NSF among adults found last year.

I. Summary of Findings

The American teen is not their Best Slept Self®.

- 8 out of every 10 teens don't get enough sleep.
- More than half of teens score a 'D' or worse for their sleep satisfaction.
- The typical teen gets an 'F' for practicing healthy sleep behaviors.

Teens' mental health is at risk.

- Over 1 in 3 teens have mild or greater depressive symptoms.
- 50% of teens feel lonely or isolated at least once or twice a week.

Teens say their sleep and mental health are connected.

- Almost ¾ of teens say their emotional well-being is negatively impacted when they sleep less than usual.
- Nearly 70% of teens dissatisfied with their sleep report loneliness, the same rate who have mild or greater depressive symptoms.
- Teens who have trouble falling or staying asleep 2 or more nights a week have significantly more depressive symptoms.

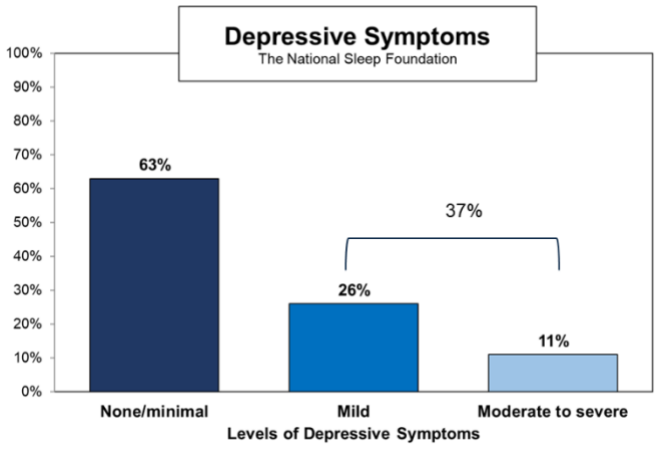
School demands are a concern for teens' sleep, mental health, and safety.

- 7 out of every 10 teens have to be present for the start of school activities before NSF-recommended 8:30am.
- Teens who get the NSF-recommended amount of sleep on school nights have significantly lower depressive symptoms.
- Teenagers who start school before 8:30am have higher levels of depressive symptoms than those who start school later.
- Most teens say school or work schedules and demands are the main factors that keep them from getting the sleep they need to drive alert.

Healthy sleep behaviors can promote mental health in teens.

- Nearly 80% of teens who earn a 'B' or higher practicing healthy sleep behaviors are also free of significant depressive symptoms.

II. Depressive Symptoms Among Teens

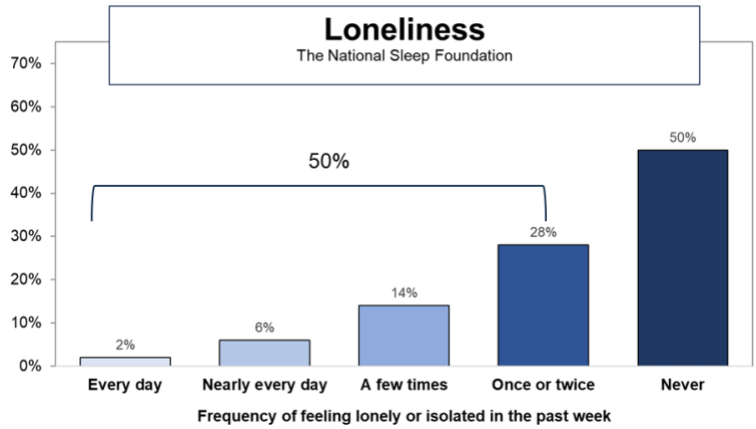


Thirty-seven percent of 13- to 17-year-olds in the 2024 SIA Poll reported symptoms consistent with at least mild levels of depression. That finding echoes a 2021 survey by the U.S. Centers for Disease Control and Prevention, in which 37 percent of high school students reported poor mental health during the pandemic.[1] Our results suggest the prevalence of poor mental health in teens continue beyond the circumstances experienced during the height of the pandemic. While the present survey is not a clinical assessment, 11 percent of teens in its representative national sample had moderate-to-severe depressive symptoms, which may be indicative of meeting diagnostic criteria for a depressive disorder.[2]

The presence of moderate-to-severe depressive symptoms peaked among teens age 15, those in households with incomes less than $50,000 annually, and those living in rural areas, at 15 percent in each case. Thirteen-year-olds were least apt have moderate-to-severe depressive symptoms; 5 percent reported moderate-to-severe symptoms. By gender, 29 percent of boys aged 13 to 17 reported mild or greater depressive symptoms, compared with 44 percent of girls.

Depressive Symptoms Among Groups			
	None or minimal	Mild	Moderate-to-severe
All teens	63%	26%	11%
Boys	70%	21%	8%
Girls	56%	31%	13%
Household income			
<$50K	57%	28%	15%
$50K-<$100K	62%	25%	14%
$100K+	67%	26%	8%
Age			
13 years	66%	29%	5%
14 years	65%	25%	10%
15 years	59%	25%	15%
16 years	67%	22%	12%
17 years	58%	29%	13%
Location			
Urban	65%	26%	9%
Suburban	63%	26%	12%
Rural	61%	24%	15%

Loneliness Among Teens

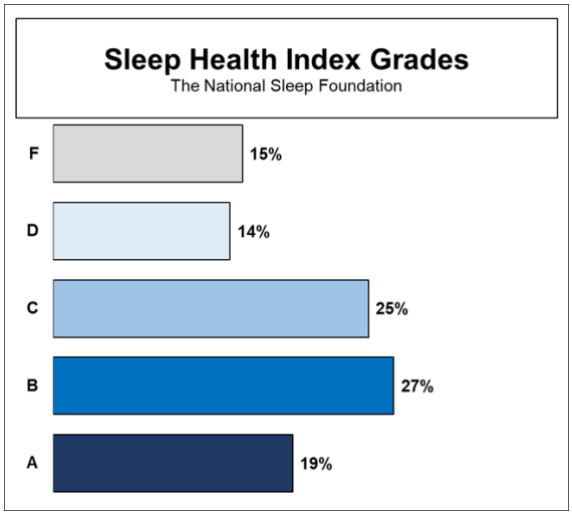


When asked how frequently they experience feelings of isolation or loneliness during the previous week, 50 percent of teens reported such feelings once or twice a week or greater.

III. Sleep Health Among Teens

The NSF recommends 8-10 hours of sleep for teens age 14 to 17 and 9-11 hours for teens age 13.[3] Less than 2 out of 10 teens reported achieving these recommended sleep durations on both school nights and weekends.

The Sleep Health Index



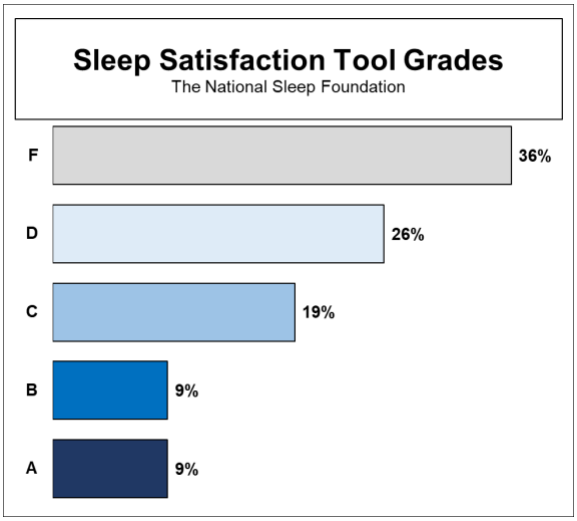
The Sleep Health Index® is a validated gauge of the public's sleep health across three domains – sleep quality, sleep duration, and disordered sleep.[4] 2024 marked the first time this survey was used in teens. At 76 on its 0-100 scale, it was equivalent to a 'C' grade overall. Nineteen percent of teens scored an 'A' for sleep health, 27 percent a 'B,' 25 percent a 'C,' 14 percent a 'D' and 15 percent an 'F.'

The SHI's sleep quality subindex was 65 on its 0-100 scale, a 'D' grade. The SHI's sleep duration subindex was 70 on its 0-100 scale, a 'C.' Teens scored far better, 92, equivalent to an 'A' grade, on the SHI's disordered sleep subindex. Notable datapoints include the following: (1) Only 30% of teens rated their sleep quality as either excellent or very good, (2) Nearly 2 in 10 teens reported taking a sleep medication at least once in the past week, and (3) More than 1 in 10 teens have spoken to a doctor about sleep problems—all warrant further investigation.

Sleep Quality Subindex	Days
Days felt well-rested upon waking	3.6
Nights with trouble falling asleep	2.8
Days when sleep problems impact daily activities	1.9
Days dozed unintentionally	1.5
Nights with trouble staying asleep	1.5
Disordered Sleep Subindex	**Percent**
Took sleep medication at least once in past week	17%
Talked with a doctor about sleep problems	12%
Diagnosed sleep disorder	4%

Notable group differences emerged on the SHI. Teens in households with annual incomes of $100,000 or more were most apt to have an 'A' grade for sleep health; 24 percent did so, compared with 14 percent of those in $50,000-$99,999 households and a virtually identical 15 percent of those in households with less than $50,000 in annual income. Teens in less-than-$50,000 households were most apt to have an 'F' on the SHI; 25 percent did so, vs. 10 percent among those in the top income bracket. In another gap, 23 percent of boys had an 'A' grade on the SHI, compared with 15 percent of girls. Eighteen percent of girls had an 'F' for their overall sleep health, vs. 11 percent of boys. These differences are deserving of additional attention.

The Sleep Satisfaction Tool



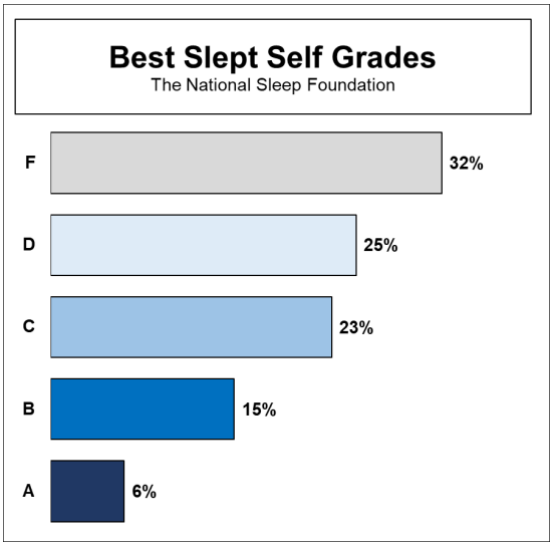
The NSF's Sleep Satisfaction Tool®, also in its first use with teens, was 64 on its 0-100 scale, a 'D' grade overall.[5] Nine percent of teens scored an 'A' on the SST, 9 percent a 'B,' 19 percent a 'C,' 26 percent a 'D' and 36 percent, the largest segment, an 'F.' The SST is derived from questions asking respondents how often they wake during the night, how easy it is for them to achieve a relaxed mental state before bed, how energized they feel as they go about their day, how refreshed they feel in the morning, how much trouble they have falling asleep, how much trouble they have falling back asleep if they awake during the night and their satisfaction with their overall sleep and the amount of sleep they receive on weekdays and weekends.

Again, notable group differences were observed in SST scores. Income, sex, and race/ethnicity differentiated SST scores. Teens in households with incomes less than $50,000 annually were more apt than those in households with incomes of $100,000 or more to have an 'F' on the SST, 44 vs. 32 percent. Sixteen percent of Black teens had an 'A' on the SST, as did 10 percent of Hispanic teens and 8 percent of White teens. Girls were more apt than boys to have an 'F' (40 vs. 32 percent) and boys were more apt than girls to have an 'A,' though this was rare for both sexes (12 vs. 7 percent).

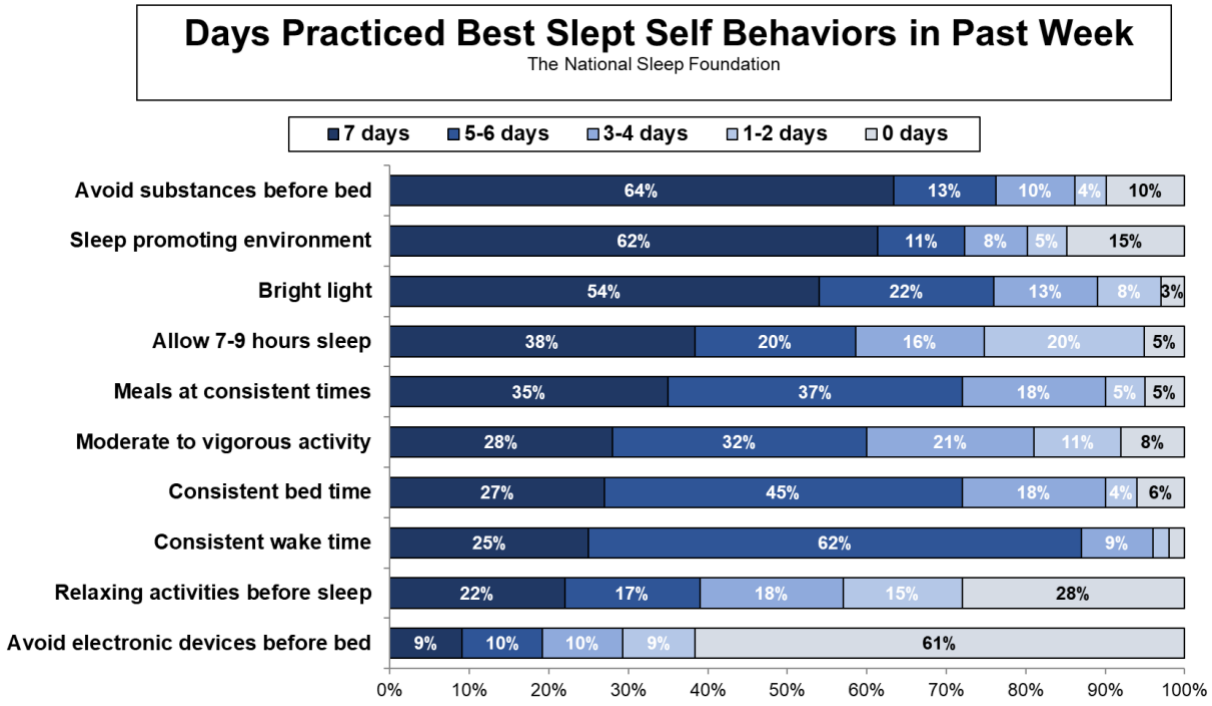
Best Slept Self Questionnaire

For general sleep health, the NSF recommends people engage in a small number of basic, healthy sleep behaviors to help be their *Best Slept Self*®. A newer instrument from the National Sleep Foundation, the Best Slept Self® questionnaire (BSSQ), measures the frequency with which individuals engage in both daytime and nighttime healthy sleep behaviors. The questionnaire is based on the *Best Slept Self*® framework, which includes six basic areas of focus for healthy sleep. For the first time, teens were polled to examine how frequently people engage in these small sleep-promoting behaviors.

A-F grades again were assigned based on common grading metrics. Those who said they practiced all recommended sleep behaviors at least 90 percent of the time received an 'A' grade, 80-89 percent of the time a 'B' grade, 70-79 percent a 'C,' 60-69 percent a 'D' and 59 percent or less an 'F.' Overall, 21 percent of teens had an 'A' (6 percent) or 'B' (15 percent) on these recommended sleep behaviors. About a quarter apiece had a 'C' (23 percent) or 'D' (25 percent) grade, with the rest, 32 percent, receiving an 'F' grade.



Teens reported practicing several recommended sleep behaviors on an average of five days or more in the previous week: avoiding substances before bedtime, getting at least 30 minutes in bright light, sleeping in a quiet, cool and dark environment, waking up at about the same time, and eating meals at around the same times. However, teens reported going to bed at about the same time an average of 4.9 days, allowing for 7-9 hours of sleep an average of 4.7 days, getting at least 30 minutes of activity an average of 4.6 days, and doing relaxing activities an hour before bedtime an average of 3.3 days. At the low end, they reported putting away their electronic devices an hour before bedtime on an average of just 1.7 days in the previous week; the majority, 61 percent, said they did not do this at all.



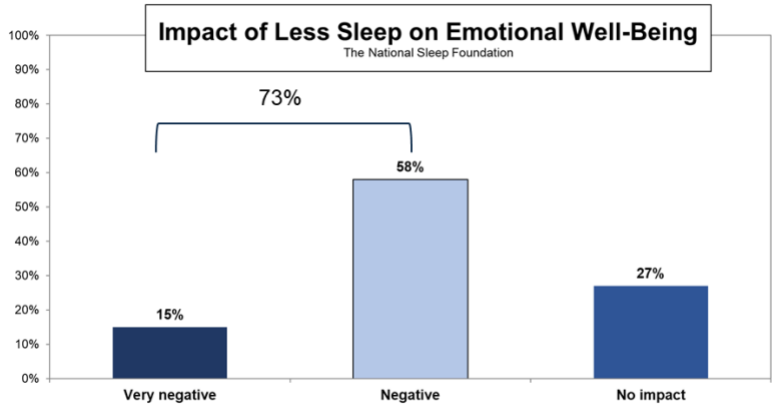
Sex, income and race and ethnicity also differentiated practice of healthy sleep behaviors. Girls were more apt than boys to engage in healthy sleep behaviors less than 60 percent of the time, 37 vs. 25 percent. Among those in households with incomes less than $50,000 annually, 43 percent had an 'F,' compared with 32 percent of those in households with incomes of $50,000-$99,999

and 26 percent among those in higher-income households. And Black and Hispanic teens were more apt than White teens to have an 'F' on the BSSQ, 43 and 41 percent vs. 26 percent.

Most teens said they were willing to practice more healthy sleep behaviors to try to improve their sleep, with one exception: putting away their electronic devices an hour before bedtime. The majority of teens, 54 percent, said they were unwilling to do this.

IV. Sleep and Depressive Symptoms

This random-sample survey found 73 percent of teens saying their emotional well-being was negatively impacted when they slept less than usual. This includes 15 percent who reported a very negative impact and 58 percent a negative one. Many fewer, 27 percent, said there was no negative impact on their emotional well-being when they slept less than usual.

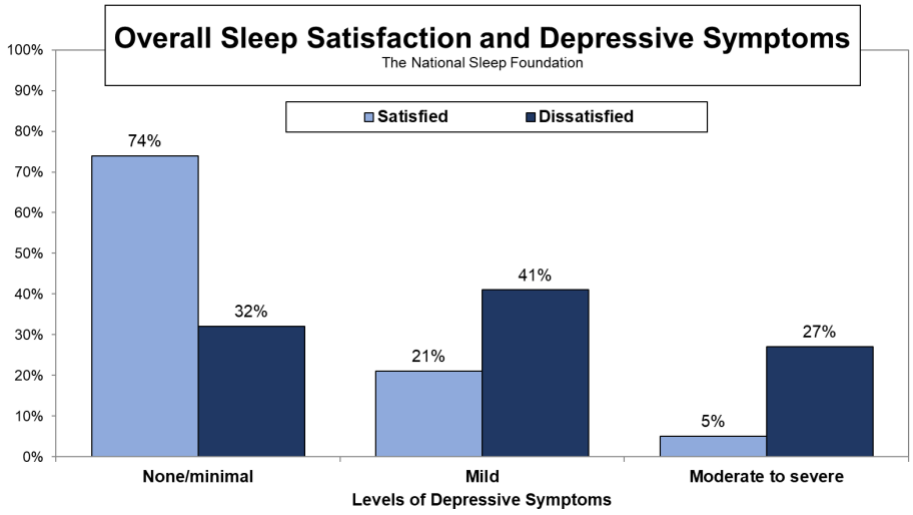


Sleep Duration and Depressive Symptoms

A clear association between sleep duration and depressive symptoms emerged. Teens who slept for the NSF-recommended duration had lower levels of depressive symptoms than teens who slept less than the NSF-recommended amount. This connection held true for both weekday and weekend sleep.

Sleep Satisfaction and Depressive Symptoms

Teens were asked about their overall sleep satisfaction as part of the Sleep Satisfaction Tool®—one in four teens reported being somewhat or very dissatisfied with their overall sleep. Those who reported being satisfied with their sleep overall were far more apt than teens dissatisfied with their sleep to report minimal or no depressive symptoms. By contrast, those who were dissatisfied with their sleep were over five times more likely to report moderate-to-severe depressive symptoms (27 percent) than teens who were satisfied with their sleep (5 percent).

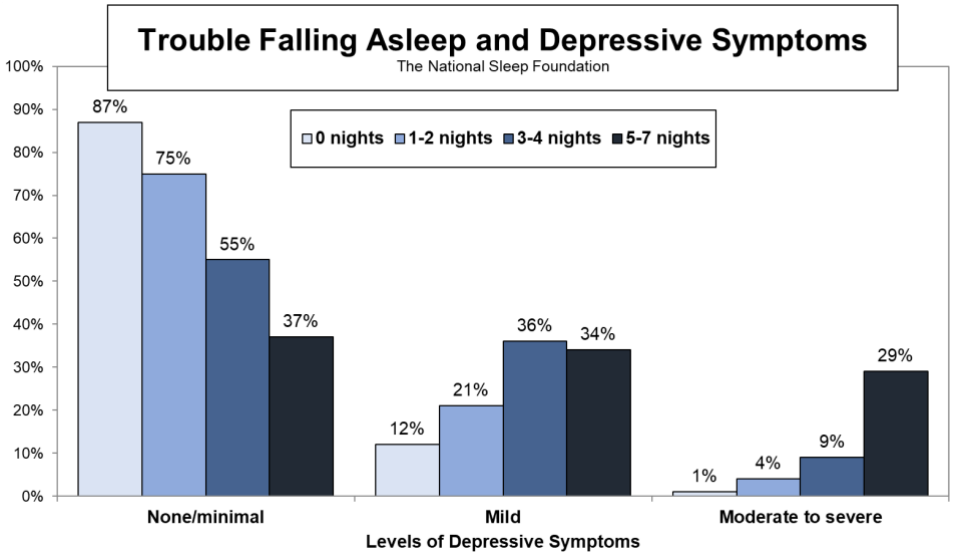


- Sixty-eight percent of teens who were dissatisfied with their

sleep reported at least mild levels of depressive symptoms, compared with 26 percent of teens who were satisfied with their sleep.
- Teens who were dissatisfied with their overall sleep were substantially more apt than those who were satisfied to experience mild depressive symptoms, 41 vs. 21 percent.

Difficulty Falling Asleep and Depressive Symptoms

Results also show a link between difficulty falling asleep and depressive symptoms. In one of the components of the Sleep Health Index®, teens were asked the number of nights in the previous week on which they had trouble falling asleep. On average, teens reported 2.8 nights with difficulty falling asleep. Those reporting no trouble falling asleep in the previous week were much more apt to report minimal or no depressive symptoms than those saying they had such trouble at least once, 87 vs. 56 percent.



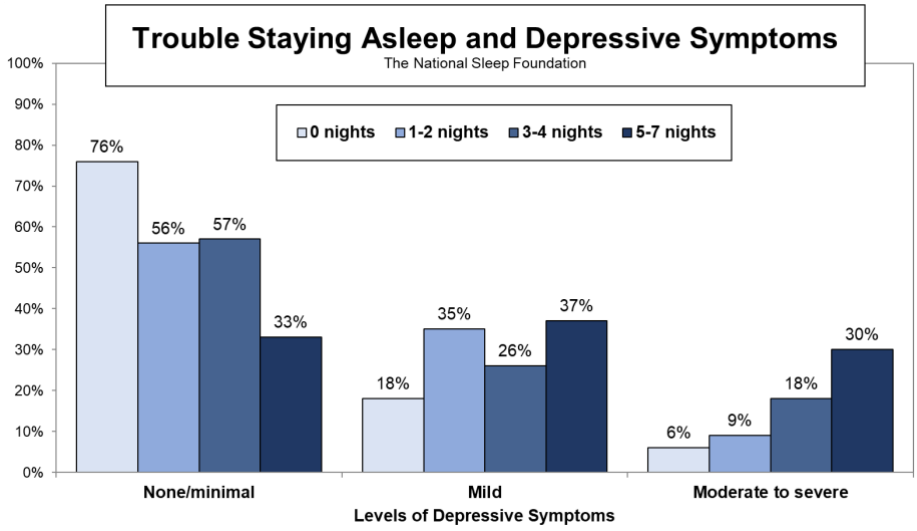
- Teens who reported difficulty falling asleep 0 or 1 night per week experienced significantly lower levels of depressive symptoms than teens who reported 2 or more nights per week with trouble falling asleep.
- Forty-nine percent of teens who had trouble falling asleep two or more nights reported mild or greater depressive symptoms, vs. 15 percent of those with no such difficulty.

Difficulty Staying Asleep and Depressive Symptoms

In another component of the SHI, teens were asked the number of nights in the previous week they had trouble staying asleep. On average, teens reported 1.5 nights with trouble staying asleep. Again, results reveal a strong connection with depressive symptoms.

- Among teens who had no difficulty staying asleep, 76 percent reported minimal or no depressive symptoms, compared with 51 percent of those with at least some trouble staying asleep.
- Teens who reported difficulty staying asleep 0 or 1 night per week experienced significantly lower levels of depressive symptoms than teens who reported 2 or more nights per week with trouble falling asleep.

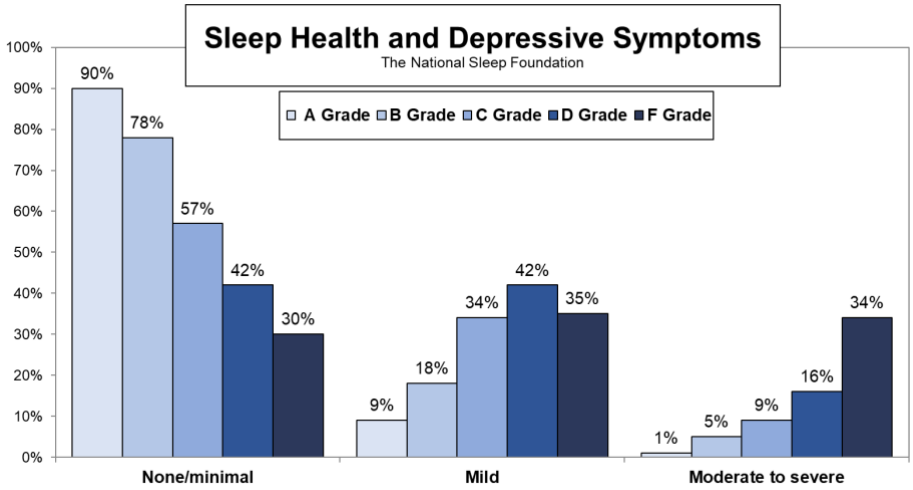
- Fifty-five percent of teens with trouble staying asleep two or more nights per week reported mild or greater depressive symptoms vs 27 percent of teens with difficulty staying asleep on zero or one night.



Sleep Health Index® and Depressive Symptoms

The SHI is closely associated with depressive symptoms in that as sleep health increased, levels of depressive symptoms decreased. (r = -0.55, $p < .001$).

- Ninety percent of teen who received an 'A' on the SHI reported no or minimal depressive symptoms, vs. 30 percent among those receiving an 'F.'
- Thirty-four percent of teens receiving an 'F' for sleep health reported moderate-to-severe depressive symptoms, compared with 1 percent of teens receiving an 'A' on the SHI.

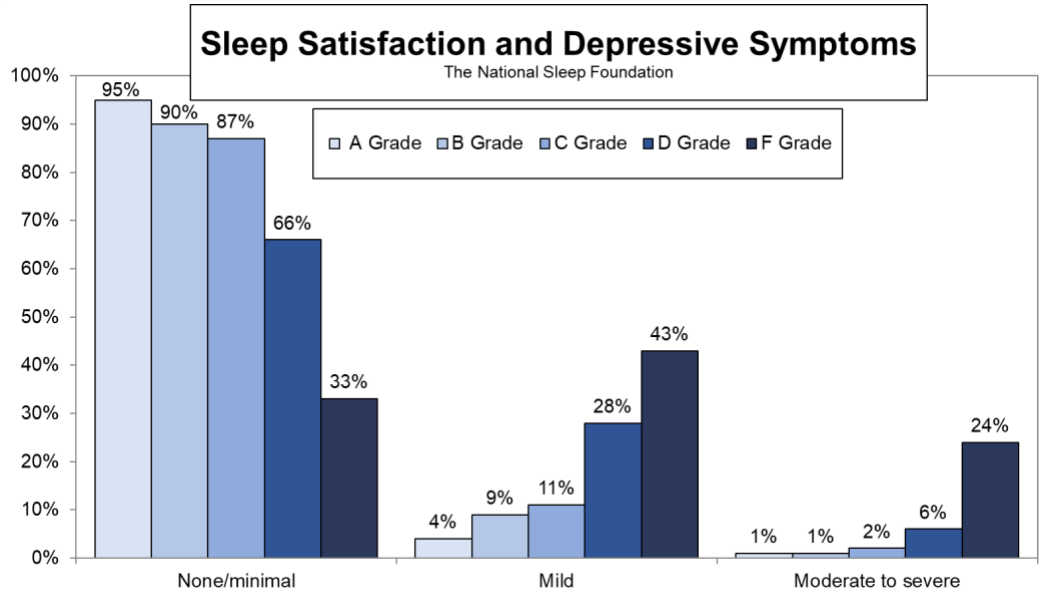


Sleep Satisfaction Tool® and Depressive Symptoms

Associations between sleep satisfaction and depressive symptoms, again, were clear—as sleep satisfaction scores increased, levels of depressive symptoms decreased (r = -0.61, $p < .001$). Teens with an 'F' grade on the SST were 23 points more apt than those with an 'A' to report moderate-to-severe depressive symptoms. Those with an 'A' were 62 points more likely than those with an 'F' to report minimal or no symptoms.

- Ninety-five percent of teens with an 'A' for sleep satisfaction reported minimal or no depressive symptoms, compared with 33 percent of teens with an 'F' on the SST.

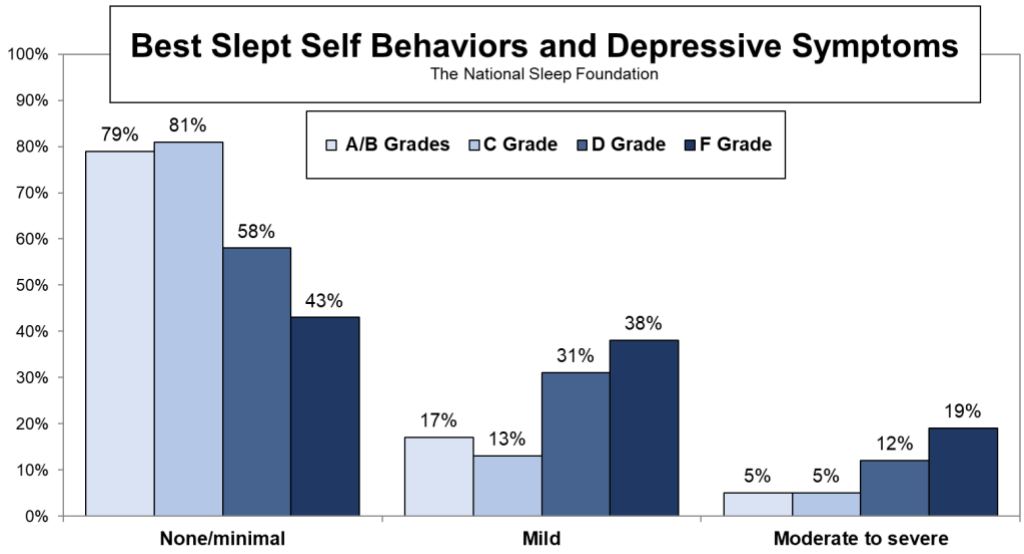
- Seventy-one percent of teens with a "D" or worse on the SST reported mild depressive symptoms compared to only 13 percent of teens with a 'B' or better.
- Among those with an 'F' on the SST, 24 percent reported moderate-to-severe depressive symptoms, vs. 1 percent of teens receiving an 'A.'



Best Slept Self® and Depressive Symptoms

The practice of healthy sleep behaviors is closely associated with depressive symptoms, in that as the healthy sleep behaviors increased, levels of depressive symptoms decreased ($r = -0.35$ $p < .001$). Teens with an 'F' on the BSSQ were 36 points more apt than those with an 'A' or 'B' to report mild or greater depressive symptoms, 57 vs. 21 percent.

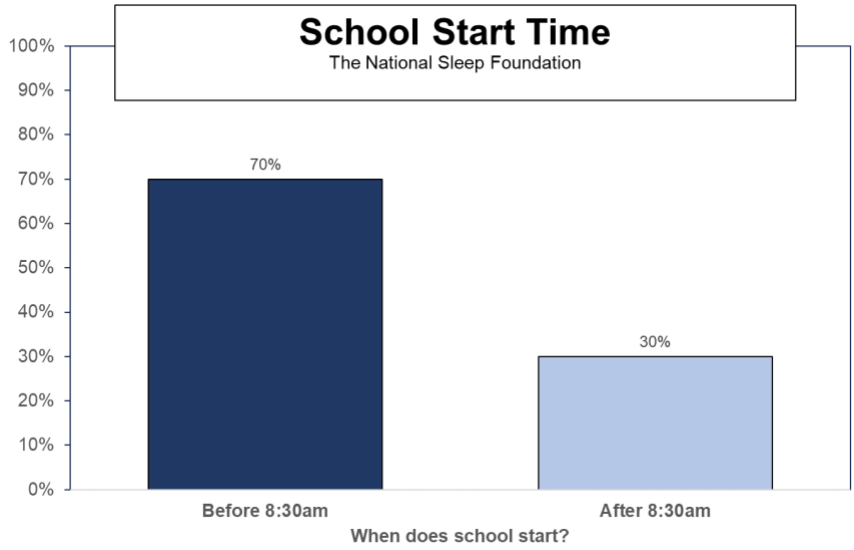
- Among teens with low practice of healthy sleep behaviors (i.e., 'F' grades), 19 percent reported moderate-to-severe depressive symptoms, vs. 5 percent of those in BSSQ 'A' or 'B' groups.
- Seventy-nine percent of teens



with an 'A' or 'B' on the BSSQ reported minimal or no depressive symptoms, compared with 43 percent of those with an 'F' grade on the BSSQ.

V. School Demands: Sleep Health and Mental Health

School Start Times



Early school start times contribute to poor physical and mental health among adolescents and younger students. A robust body of scientific evidence and recommendations from major medical organizations support the implementation of later school start times, which can significantly improve sleep health and mental and physical wellbeing in the student population. NSF supports healthy school start times and other measures to optimize sleep. School administrators, policy makers, and other stakeholders around the country should embrace the scientific evidence supporting the benefits of appropriate school start times. It is the official position of the NSF that middle and high school students should start school no earlier than 8:30am. Unfortunately, 7 out of 10 teens report having to be present before 8:30am for the start of class or other school activities.

- Teens who start school at 8:30am or later are more satisfied with the amount of sleep they get on school nights, as compared to teens who start school before 8:30am.
- Teens who start school before 8:30am have higher levels of depressive symptoms than teens who start school later.

School Night Sleep and Depressive Symptoms

As noted previously, the majority of teens are generally not getting the NSF-recommended amount of sleep—this holds true on school nights.

- Not surprisingly, teens who do not get appropriate amounts of sleep on school nights report higher levels of depressive symptoms than teens who are sleeping the recommended amount on school nights, 8-10 hours for most teens.

****For anyone experiencing suicidal thoughts, please seek care.****

Contact the Suicide and Crisis Lifeline by calling or texting 988.

-Extension 1 for Veterans Crisis Line
-Extension 2 for Spanish-speaking Crisis Line
-Extension 3 for LGBTQI+ Crisis Line

You will be connected with a trained crisis counselor.
988 is confidential, free, and available 24/7/365.

Call or text the NAMI (National Alliance on Mental Illness) Helpline at 800-950-6264 (M-F 10am to 10pm ET).

Appendix A: Survey Methodology and Approach

General Survey Design

The survey presented in this report was produced for the National Sleep Foundation by Langer Research Associates. Field work was conducted via the probability-based SSRS Opinion Panel, in which participants are randomly recruited via address-based sampling to take surveys online.

The survey was designed to consist of approximately 1,100 teens. Field work was conducted Sept. 11-Oct. 24, 2023, in English and Spanish. Among parents of 13- to 17-year-olds on the panel, 6,192 were invited to consent to their teens' participation. After initial invitations, multiple email or SMS reminders were sent during the field period. Completed, qualified surveys were provided by 1,188 teens. Participants completed the survey in a median time of 11 minutes.

In quality control, respondents who completed the survey in less than a quarter of the median completion time were flagged for possible inattention, as were those who skipped more than half of the questions or any of the wakeup/bedtime questions; these 50 cases were deleted. The final sample included 1,138 13- to 17-year-olds.

Data were weighted via iterative proportional fitting to the following benchmark distributions of the 2022 Current Population Survey for parents of teens age 13 to 17:

- Race/ethnicity (White, Black, Hispanic, Asian, other)
- Education (high school graduate or less, some college/associate degree, bachelor's degree or higher)
- Census region (Northeast, Midwest, South, West)
- Household income ($0-$24,999, $25K-$49,999, $50K-$74,999, $75K-$99,999, $100K-$149,999, $150K+)
- Household tenure (own, rent)

Data additionally were weighted via iterative proportional fitting to the following benchmark distributions of the 2022 Current Population Survey for teens age 13 to 17:

- Age (13, 14, 15, 16, 17)
- Sex (male, female)

Weights were trimmed at the 5th and 95th percentiles. The survey has a design effect due to weighting of 1.99, resulting in a margin of sampling error of plus or minus 4.1 percentage points for the full sample. Error margins are larger for subgroups. Sampling error is not the only source of differences in polls.

Measurement Approach

Depression is a clinical disorder diagnosed in specialized settings using validated approaches, often including both an interview with a licensed clinician and self-report measures. The use of self-report measures alone are not sufficient to render a clinical diagnosis of a depression disorder. This survey used a modified version of the Patient Health Questionnaire-9 for Adolescents (PHQ-A[6]), a self-administered questionnaire developed to identify depressive

symptoms in adolescents. The questionnaire includes items such as feeling down, loss of interest in doing things, appetite changes, and feeling bad about oneself. The PHQ-A is a survey tool developed to initially evaluate and subsequently monitor an individual's depressive symptoms over time. This tool typically is self-administered and is used to screen depressive symptoms, measure their severity and, when applicable, assess an individual's response to treatment.

Based on PHQ-A total score, depressive symptom severity can be categorized in several informative ways, including the traditional scoring framework of: (1) none or minimal (a score of 0-4), mild (5-9), moderate (10-14), moderately severe (15-19) and severe (20-27).[6] Any number of the above-listed five categories can be combined to generate meaningful subgroups. Acknowledging that even mild levels of depressive symptoms place an individual at increased risk for numerous negative outcomes, groups can also be based on the absence of depressive symptoms or the presence of only very minimal depressive symptoms (scores 0-4) versus the presence of mild, moderate, moderate severe, or severe depressive symptoms (scores 5+). Scores on the PHQ-A can also be indicative of whether a teen would likely meet diagnostic criteria for a depression disorder. Published research has shown that people who score in the moderate-to-severe range (10-24) are likely to meet diagnostic criteria for a depression disorder.[2] In concert with the PHQ-A, the Sleep Health Index (SHI)[4], a validated measure incorporating sleep duration, sleep quality and disordered sleep, the Sleep Satisfaction Tool (SST)[5], a validated index of satisfaction with sleep experiences, and the Best Slept Self® questionnaire (BSSQ), a NSF measure of the frequency with which people engage in healthy sleep behaviors, were also administered.

This survey represents a snapshot of sleep health and depressive symptoms in US teens. Causal conclusions about sleep health and depressive symptoms are not implied and should not be inferred.

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