

## *KidsHealth® KidsPoll — Sleep Poll: Summary of Findings*

KidsHealth KidsPoll is collaboration among the Nemours Foundation/KidsHealth, the Department of Health Education and Recreation at Southern Illinois University Carbondale, the National Association of Health Education Centers, and participating health education centers. The purpose is to gather information (opinions, attitudes, and feelings, etc.) about current health issues from children. The information is gathered using handheld data collection devices from children ages 9 to 13 as they attend classes in the health education centers. The information is shared with educators, caregivers, healthcare organizations, the media, and other interested parties at the national and local levels. The goal is to provide insightful information that will enable them to develop programs to help children to make healthy life decisions, prevent disease and injury, and understand their bodies. This poll focused on issues related to sleep.

### **Individual Demographics**

Individual-level information was collected anonymously from each child who participated.

- 1187 children
- 51% boys, 49% girls
- 9-13 (average age 10.1)
- 10 centers participated in this poll:
  - Children’s Health Education Center – Milwaukee, WI
  - HealthWorks! Kids Museum – South Bend, IN
  - Health World Children’s Museum – Barrington, IL
  - McMillen Center for Health Education – Ft. Wayne, IN
  - Poe Center for Health Education – Raleigh, NC
  - Robert Crown Center for Health Education – Hinsdale, IL
  - Ruth Lilly Health Education Center – Indianapolis, IN
  - Saint Joseph Mercy Health Exploration Station – Canton, MI
  - Susan P. Byrnes Health Education Center – York, PA
  - Weller Health Education Center – Easton, PA

### **School Demographics**

School-level information was not collected from each child, but is based on statistics for the schools.

- 27 schools
- The schools participating averaged: 53% White, 18% Black, 23% Hispanic, 4% Asian/Pacific, 1% Native American
  - 46% of the schools had student bodies that were 0-33% Black/Hispanic/Asian/Native American combined
  - 15% of the schools had student bodies that were 33-67% of these groups
  - 39% of the schools had student bodies that were 67-100% of these groups

- 54% students in participating schools qualified for free or reduced lunch
  - 26% of the schools had 0-33% of their student body qualifying for free or reduced lunch
  - 37% of the schools had 33-67% of their student body qualifying for free or reduced lunch
  - 37% of the schools had 67-100% of their student body qualifying for free or reduced lunch

The U.S. Census Bureau and the U.S. Department of Education use a measure of city size and location called a Metropolitan Statistical Area (MSA). The categories for MSA are:

- Large city center = center of a MSA city with population >250,000
  - Midsize city center = center of a MSA city with a population <250,000
  - Large city fringe = urban fringe of a large MSA city
  - Midsize city fringe = urban fringe of a midsize MSA city
  - Large town = not within a MSA with a population >25,000
  - Small town = not within an MSA with a population 2,500-25,000
  - Rural outside = not within an MSA with a population <2,500
- Of the participating schools: 27% large city center, 30% mid-size city center, 20% large city fringe, 15% mid-size city fringe, and 9% rural.
  - Average school size: 420
    - 27% enrollment of 0-300
    - 48% enrollment of 301-600
    - 25% enrollment of 601-900
    - 0% enrollment of 900+

### **Significant Demographic Associations**

- There was a high correlation between proportion of schools with more non-white students and proportion receiving lunch assistance ( $r = 0.72$ ).

### **Statistically Significant Findings — Overall**

- 1) Who decides what time you go to bed?
  - a. I do
  - b. a parent or guardian
  - c. someone else

Almost two thirds of the kids said a parent or guardian decides what time they go to bed, one third said they decide, and a small proportion (3%) said someone else. As may be expected, the 12- and 13-year-old students, who accounted for only 13% of the sample, had the exact opposite proportions for self and parents. In consequence, the children who chose their own bedtime were more likely to go to bed after 10:30 (43%) than those whose parent/guardian chose (13%).

Independent of age, children who choose their own bedtime were also more likely to wake up before 6 a.m. (30% vs. 17%). There was no difference by gender on who decides bedtime.

- 2) On school nights, what time do you usually go to bed?
  - a. earlier than 8:30
  - b. between 8:30 and 9:29
  - c. between 9:30 and 10:29
  - d. between 10:30 and 11:29
  - e. 11:30 or later
  
- 3) On school days, what time do you usually wake up?
  - a. earlier than 6:00
  - b. between 6:00 and 6:29
  - c. between 6:30 and 6:59
  - d. between 7:00 and 7:29
  - e. 7:30 or later

About a third of the respondents said they usually go to bed between 8:30 and 9:29 and another third go to bed between 9:30 and 10:29. About one quarter go to bed after 10:30 and 8% earlier than 8:30. As noted above, children older than 12 were more likely to say they have a later bedtime. Bedtimes did not differ by gender.

Nearly equal numbers of kids report waking between 6 and 7:29. A lesser number (12%) reported waking at 7:30 or later. No patterns of differences were apparent by gender or age.

Questions 2 and 3, taken together, can be used to estimate the usual number of hours of sleep children receive. To reach this estimate, we allowed the median time for each category to represent that category. The assigned times were:

<b>Bedtime</b>	<b>Wake Time</b>
Earlier than 8:30 = 8:00	Earlier than 6:00 = 5:45
8:30-9:29 = 9:00	6:00-9:29 = 6:15
9:30-10:29 = 10:00	6:30-6:59 = 6:45
10:30-11:29 = 11:00	7:00-7:29 = 7:15
11:30 or later = 12:00	7:30 or later = 7:45

We could then add the number of hours before and after midnight. If we make the assumption that bedtimes and wake time usually correspond to quarter-hour marks (e.g., 8:00, 8:15, 8:30, or 8:45), then this calculation would yield an estimate for total hours that would be within 30 minutes of the actual total hours of usual time in bed. Based on this, only 7% of the students were averaging more than 10.5 hours a night, 25% were getting 9.5 to 10.5, 37% averaged 8.5 to 9.5, 17% averaged 7.5 to 8.5, and 14% received less than 7.5 hours of sleep a night. Twelve- and 13-year-olds averaged less sleep than the other students. There was no difference by gender.

Next, we calculated the average sleep deprivation for students by subtracting the recommended number of hours by age from the total number of hours usually in bed:

<b>Age</b>	<b>Recommended Number of Hours</b>
12-14	9.5
10-11	10
8-9	10.5

Note: Recommendations from The Sleep Medicine and Research Center

Based on this, 10% of the students averaged more hours than recommended, 28% averaged between zero and 1 hour deficit, 37% were 1 to 2 hours deficit, 14% were 2 to 3 hours deficit, and 11% were more than 3 hours deficit. The average deficit was 1.4 hours. If we separate the two most common categories into half hour increments, we find that 13% averaged zero to ½ hour deficit, 15% averaged ½ to 1 hour deficit, 21% were 1 to 1.5 hours deficit, and 16% were 1.5 to 2 hours deficit.

More boys had deficits of 3 or more hours (13% vs. 8%), while girls were more likely to have deficits between 1 and 3 hours (49% vs. 55%). Patterns by age were indeterminate.

- 4) What is the right amount of sleep for kids your age?
- a. 7 hours a night
  - b. 8 hours a night
  - c. 9 hours a night
  - d. 10 hours a night
  - e. I don't know

For the 9- to 11-year-olds, any answer except 10 hours is incorrect. For the 12- and 13-year olds, who accounted for 13% of the sample, 9 or 10 hours were considered correct answers. Eight percent of the total sample said 7 hours, 21% said 8 hours, 22% said 9 hours, 30% said 10 hours, and 19% said they did not know. Twelve- and 13-year-olds were more likely to say 8 hours and less likely to say 10 hours. There were no differences by gender.

Fifty-eight percent of the sample gave the wrong answer. There were no differences by age or gender.

- 5) Do you do the same things every school night before going to bed?  
(For example: brush your teeth, wash, read, get tucked in, etc.)
- a. every night
  - b. most nights
  - c. some nights
  - d. never

A third said they do the same things every night, another third reported most nights, 21% said some nights, and 13% said never. Patterns by age and gender were indeterminate.

- 6) How much sleep would you like to get?
- a. **much more** than I usually get
  - b. **a little more** than I usually get
  - c. **about as much** as I usually get
  - d. **a little less** than I usually get
  - e. **much less** than I usually get

To increase cell sizes for calculations, we combined the last two categories. Forty-six percent said much more and 24% said a little more. Fifty percent said about the same and 15% said a little or much less. Girls were more likely to desire more sleep (78% vs. 65%). Patterns by age were indeterminate.

- 7) On school days, when its time to wake up, how do you usually feel?
- a. very good--full of energy
  - b. pretty good--I can get up quickly
  - c. sort of sleepy--but I can get up
  - d. very sleepy--I have a hard time getting up

Only 14% said very good followed by 15% who said pretty good. Thirty-two percent said sort of sleepy and 39% said very sleepy. These proportions closely correspond to levels of sleep deprivation. Boys were more likely to say very good (18% vs. 10%). There were no differences by age.

- 8) How often do you feel tired or sleepy when you are at school?
- a. every day
  - b. often
  - c. once in a while
  - d. never

The response to this question was bi-modal (every day=25%, often=15%, once-in-a-while=44%, and never=16%). Boys were more likely to choose the extreme categories (see Excel table). There were no differences by age.

## **Other Findings Worth Highlighting**

Another way of looking at the data is to predict sleep deprivation based on certain predictor variables: gender, age, who chooses bedtime, whether they do the same things every night, and whether they knew the correct amount of sleep for their age. We did this comparison through Univariate Analysis of Variance (univariate-ANOVA), which controls for the interaction among the predictor variables.

<b>Differences in Hours of Sleep Deprivation by Predictor Variable (n=604)</b>							
<b>Variable</b>		<b>Mean</b>	<b>(S.D)</b>	<b>N</b>	<b>F</b>	<b>(df)</b>	<b><i>p</i></b>
Gender	Boy	-1.33	(1.23)	303	0.00	(1,603)	0.985
	Girl	-1.41	(1.14)	301			
Age	9-11	-1.37	(1.18)	542	1.78	(1,603)	0.183
	12-13	-1.39	(1.25)	62			
Who Chooses	Child	-1.85	(1.31)	201	15.82*	(1,603)	0.000
	Parent	-1.13	(1.04)	403			
Do Same Things	Every or Most nights	-1.26	(1.17)	399	3.97*	(1,603)	0.047
	Some nights or Never	-1.58	(1.19)	205			
Knew Bedtime	Correct	-1.39	(1.20)	255	0.03	(1,603)	0.849
	Incorrect	-1.36	(1.18)	349			

Results of univariate analysis of variance. \* = significant difference ( $P < 0.05$ ).

The most important finding from this analysis is that, when analyzed together, only two of these five variables predict sleep deprivation: who chooses bedtime and whether they do the same things every night. This implies that children who chose their own bedtime averaged nearly  $\frac{3}{4}$  hour less sleep than those who said their parent/guardian chose. Similarly, children who never or only sometimes do the same things before going to bed averaged about  $\frac{1}{3}$  hour less sleep than children who do the same things most or every night. The effect of age drops out when age is grouped in two categories for this analysis.

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