

Sleep Duration as a Predictor of Missed School due to Illness and/or Injury in School-Aged Children

Molly A. Hulbert¹, Namrata Palsule², Emily Hays², Juan G. Ruiz-Pelaez³, Juan Lozano²

1. Orthopaedic Surgery, Florida International University Herbert Wertheim College of Medicine, Miami, USA 2. Pediatrics, Florida International University Herbert Wertheim College of Medicine, Miami, USA 3. Medical and Population Health Sciences Research, Florida International University Herbert Wertheim College of Medicine, Miami, USA

Corresponding author: Molly A. Hulbert, mhulb001@med.fiu.edu

Categories: Pediatrics, Public Health

Keywords: sleep, illness, injury, absence, school, children, adolescent, attendance, school-aged, missed

How to cite this poster

Hulbert M A, Palsule N, Hays E, et al. (2020) Sleep Duration as a Predictor of Missed School due to Illness and/or Injury in School-Aged Children. Cureus 12(3): e.

Abstract

Objectives: Previous studies have shown an association between lack of sleep and increased risk of injury in children and adolescents, but they have not evaluated their effect on school attendance. This study aims to examine the association between hours of sleep and missed days of school due to illness/injury in a nationally representative sample of children ages 6-17 years.

Methods: The data for this cross-sectional secondary analysis were obtained from the National Survey of Children's Health (NSCH) 2016. Data collection was conducted via mail and web-based questionnaires in all 50 states and DC from June 2016 to January 2017. The households surveyed had at least one child age 0-17 years. The sampling design included stratification by state and a child presence indicator to target households more likely to have a child. The final sample size of the original survey was 50,212 child-level interviews (approximately 958 per state). The main independent variable was sleep hours [adequate sleep (≥ 9 hours) vs. inadequate sleep (< 9 hours)], while the main outcome was the number of school days missed due to illness and injury [normal (< 7) vs. increased (≥ 7)] in children ages 6-17 years. We further assessed confounders related to child, household, parent, and community characteristics using logistic regression.

Results: Among 34,728 students included in the final multivariate model, parents progressively reported inadequate sleep as children increased in age. We did not find a significant association between inadequate sleep hours and increased number of missed days of school due to illness or injury (adjusted OR= 1.0, 95% CI: 0.8-1.2). The study revealed that the following survey responses were risk factors for increased missed days of school due to injury/illness: Good or Fair/Poor health, being bullied, having a chronic illness, no sports participation, and living with someone with an alcohol/drug problem. Alternatively, protective factors included a race description of Black or African American and speaking a primary language other than English or Spanish.

Conclusions: The multivariate statistical model presented in this study provides empirical evidence for three important conclusions. First, inadequate sleep was not significantly associated with an increased risk of missed days of school due to illness or injury. Second, missed days of school are significantly associated with race, physical health of the child, and

Open Access

Published 03/16/2020

Copyright

© Copyright 2020

Hulbert et al. This is an open access poster distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Distributed under

Creative Commons CC-BY 4.0

primary language of the household. Third, as previously described in the literature, increasing age is associated with decreased sleep duration in this study. Further study is needed to explore the relationship between sleep quality and missed days of school due to illness/injury.

Sleep Duration as a Predictor of Missed School due to Illness and/or Injury in School-Aged Children

Molly Hulbert MS, Namrata Palsule BS, Emily Hays BS, Juan Ruiz MD, MSc, Juan Lozano MD, MSc
Florida International University, Herbert Wertheim College of Medicine, Miami, Florida

Background / Hypothesis	Results	Results																																																																																																																																																																																																																																																																																																																																			
<p>Background. Previous studies have shown an association between lack of sleep and increased risk of injury in children and adolescents, but they have not evaluated their effect on school attendance. Our study examines the association between hours of sleep and missed days of school due to illness/injury in a nationally representative sample of children ages 6 to 17 years.</p> <p>Hypothesis. Children reporting inadequate sleep time are more likely to experience an injury or illness which causes them to miss more school than children with adequate sleep time.</p> <p>Methods</p> <ul style="list-style-type: none"> • Cross-sectional secondary analysis • Data from the National Survey of Children's Health (NSCH) 2016. • Data collection via mail and web-based questionnaires in all 50 states and DC. • The sampling design included stratification by state and an indicator to target households more likely to have a child. • Households surveyed had ≤ 1 child aged 0 to 17 years. • The final sample size of the original survey was 50,212 children under 18 years of age (approximately 958 per state). • Children of school age (6 – 17 years) were eligible for our study. • The main independent variable in our study was sleep hours (adequate sleep (≥ 9 hours) vs. inadequate sleep (< 9 hours)). • The main outcome was the number of school days missed due to illness and injury during the previous year (normal (≤ 7 days) vs. increased (> 7 days)). • We further assessed confounders such as gender, age, race, primary language, health description, academic performance, and living situation (including but not limited to parent education, poverty level, living with those who have mental illness or addiction) using logistic regression. 	<p>Table 1: Baseline characteristics of school-aged children by sleep adequacy (NSCH 2016)</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th rowspan="2">Characteristics</th> <th colspan="2">Sleep Adequacy</th> <th rowspan="2">p-value</th> </tr> <tr> <th>Inadequate (< 9 hours) N = 17,561 (50.9%)</th> <th>Adequate (≥ 9 hours) N = 17,177 (49.1%)</th> </tr> </thead> <tbody> <tr> <td>Age (years)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6-9</td> <td>2282</td> <td>207</td> <td>70.96</td> </tr> <tr> <td>10-13</td> <td>4794</td> <td>3010</td> <td>62.80</td> </tr> <tr> <td>14-17</td> <td>10,500</td> <td>4893</td> <td>46.60</td> </tr> <tr> <td>Race</td> <td></td> <td></td> <td></td> </tr> <tr> <td>White</td> <td>13,233</td> <td>633</td> <td>4.74</td> </tr> <tr> <td>Black or African American</td> <td>1423</td> <td>18</td> <td>1.26</td> </tr> <tr> <td>Other</td> <td>2865</td> <td>181</td> <td>6.32</td> </tr> <tr> <td>Health Description</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excellent/Very Good</td> <td>15,625</td> <td>856</td> <td>5.23</td> </tr> <tr> <td>Good</td> <td>1590</td> <td>119</td> <td>7.49</td> </tr> <tr> <td>Fair/Poor</td> <td>280</td> <td>26</td> <td>9.29</td> </tr> <tr> <td>Repeated Grades (yes)</td> <td>1022</td> <td>83</td> <td>8.08</td> </tr> <tr> <td>Sports Participation (yes)</td> <td>10,990</td> <td>5456</td> <td>49.55</td> </tr> <tr> <td>Victim of Violence (yes)</td> <td>828</td> <td>65</td> <td>7.85</td> </tr> <tr> <td>Education among Parents</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Less than high school</td> <td>502</td> <td>11</td> <td>2.14</td> </tr> <tr> <td>High school/GED</td> <td>2716</td> <td>239</td> <td>8.80</td> </tr> <tr> <td>Some college/technical school</td> <td>4325</td> <td>245</td> <td>5.65</td> </tr> <tr> <td>College degree or higher</td> <td>9559</td> <td>397</td> <td>4.15</td> </tr> <tr> <td>Adult Employment</td> <td></td> <td></td> <td></td> </tr> <tr> <td>None</td> <td>1287</td> <td>119</td> <td>9.11</td> </tr> <tr> <td>At least one</td> <td>15,851</td> <td>881</td> <td>5.56</td> </tr> <tr> <td>Child experienced divorce (yes)</td> <td>5235</td> <td>356</td> <td>6.79</td> </tr> <tr> <td>Child lived with mentally ill (yes)</td> <td>1574</td> <td>104</td> <td>6.61</td> </tr> <tr> <td>Anyone Smokes inside of home</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Smokes in the home</td> <td>548</td> <td>41</td> <td>7.48</td> </tr> <tr> <td>Smokes but not in the home</td> <td>2684</td> <td>169</td> <td>6.30</td> </tr> <tr> <td>Does not smoke</td> <td>14,400</td> <td>810</td> <td>5.62</td> </tr> <tr> <td>Child lived with Person with Alcohol/Drug Problem (yes)</td> <td>2128</td> <td>231</td> <td>10.90</td> </tr> <tr> <td>Health Insurance Coverage of Child, Past 12 months</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Yes</td> <td>16,400</td> <td>806</td> <td>4.91</td> </tr> <tr> <td>No</td> <td>434</td> <td>36</td> <td>8.29</td> </tr> <tr> <td>Safe School (ages)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Yes</td> <td>16,818</td> <td>812</td> <td>4.83</td> </tr> <tr> <td>No</td> <td>543</td> <td>45</td> <td>8.29</td> </tr> <tr> <td>Income*</td> <td></td> <td></td> <td></td> </tr> <tr> <td><100%</td> <td>1933</td> <td>252</td> <td>13.00</td> </tr> <tr> <td>100-199%</td> <td>2981</td> <td>235</td> <td>7.88</td> </tr> <tr> <td>200-299%</td> <td>2770</td> <td>150</td> <td>5.41</td> </tr> <tr> <td>300-399%</td> <td>3612</td> <td>105</td> <td>2.91</td> </tr> <tr> <td>400%</td> <td>755</td> <td>25</td> <td>3.32</td> </tr> <tr> <td>Chronic Illness (yes)**</td> <td>9371</td> <td>506</td> <td>5.40</td> </tr> </tbody> </table>	Characteristics	Sleep Adequacy		p-value	Inadequate (< 9 hours) N = 17,561 (50.9%)	Adequate (≥ 9 hours) N = 17,177 (49.1%)	Age (years)				6-9	2282	207	70.96	10-13	4794	3010	62.80	14-17	10,500	4893	46.60	Race				White	13,233	633	4.74	Black or African American	1423	18	1.26	Other	2865	181	6.32	Health Description				Excellent/Very Good	15,625	856	5.23	Good	1590	119	7.49	Fair/Poor	280	26	9.29	Repeated Grades (yes)	1022	83	8.08	Sports Participation (yes)	10,990	5456	49.55	Victim of Violence (yes)	828	65	7.85	Education among Parents				Less than high school	502	11	2.14	High school/GED	2716	239	8.80	Some college/technical school	4325	245	5.65	College degree or higher	9559	397	4.15	Adult Employment				None	1287	119	9.11	At least one	15,851	881	5.56	Child experienced divorce (yes)	5235	356	6.79	Child lived with mentally ill (yes)	1574	104	6.61	Anyone Smokes inside of home				Smokes in the home	548	41	7.48	Smokes but not in the home	2684	169	6.30	Does not smoke	14,400	810	5.62	Child lived with Person with Alcohol/Drug Problem (yes)	2128	231	10.90	Health Insurance Coverage of Child, Past 12 months				Yes	16,400	806	4.91	No	434	36	8.29	Safe School (ages)				Yes	16,818	812	4.83	No	543	45	8.29	Income*				<100%	1933	252	13.00	100-199%	2981	235	7.88	200-299%	2770	150	5.41	300-399%	3612	105	2.91	400%	755	25	3.32	Chronic Illness (yes)**	9371	506	5.40	<p>Table 2: Unadjusted and adjusted associations between baseline characteristics of school-aged children and missed days of school due to illness or injury (NSCH 2016)</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Characteristics</th> <th>Unadjusted OR (95% CI)</th> <th>p-value</th> <th>Adjusted OR (95% CI)</th> <th>p-value</th> </tr> </thead> <tbody> <tr> <td>Sleep Adequacy (hours)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>≥ 9</td> <td>1.31 (1.1, 1.6)</td> <td>0.001</td> <td>1.0 (0.8, 1.2)</td> <td>0.876</td> </tr> <tr> <td>< 9</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Race</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>White</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Black or African American</td> <td>0.7 (0.5, 0.9)</td> <td>0.004</td> <td>0.5 (0.3, 0.8)</td> <td>0.001</td> </tr> <tr> <td>Other</td> <td>1.0 (0.7, 1.3)</td> <td>0.773</td> <td>0.9 (0.6, 1.2)</td> <td>0.435</td> </tr> <tr> <td>Primary Language</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>English</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Spanish</td> <td>0.8 (0.5, 1.3)</td> <td>0.291</td> <td>0.6 (0.4, 1.0)</td> <td>0.054</td> </tr> <tr> <td>Other</td> <td>0.4 (0.2, 0.5)</td> <td><0.001</td> <td>0.4 (0.2, 0.8)</td> <td>0.004</td> </tr> <tr> <td>Health Description of Kid</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Excellent/Very Good</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Good</td> <td>4.4 (3.5, 5.6)</td> <td><0.001</td> <td>3.5 (2.5, 4.7)</td> <td><0.001</td> </tr> <tr> <td>Fair/Poor</td> <td>7.1 (4.5, 11.3)</td> <td><0.001</td> <td>4.9 (2.9, 8.3)</td> <td><0.001</td> </tr> <tr> <td>Sports Participation</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Yes</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>No</td> <td>1.7 (1.5, 2.1)</td> <td><0.001</td> <td>1.3 (1.0, 1.6)</td> <td>0.038</td> </tr> <tr> <td>Bullied</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Constantly true</td> <td>4.2 (3.0, 5.8)</td> <td><0.001</td> <td>2.3 (1.4, 3.8)</td> <td>0.001</td> </tr> <tr> <td>Sometimes true</td> <td>2.1 (1.8, 2.6)</td> <td><0.001</td> <td>1.4 (1.1, 1.8)</td> <td>0.003</td> </tr> <tr> <td>Not true</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Child lived with Person with Alcohol/Drug Problem</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Yes</td> <td>2.4 (1.9, 3.1)</td> <td><0.001</td> <td>1.6 (1.1, 2.4)</td> <td>0.016</td> </tr> <tr> <td>No</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> <tr> <td>Chronic Illness**</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Yes</td> <td>3.7 (3.0, 4.5)</td> <td><0.001</td> <td>2.6 (2.0, 3.3)</td> <td><0.001</td> </tr> <tr> <td>No</td> <td>ref</td> <td></td> <td>ref</td> <td></td> </tr> </tbody> </table> <p>*Income presented as percentage of the poverty line. **Chronic Illness includes: Analgesics (including food, drug, insect, or other), Asthma, Anemia, Blood Disorders (e.g. Sickle Cell Disease, Thalassemia, or Hemophilia), Brain Injury, Concussion or Head Injury, Crohn's Disease, Cystic Fibrosis, Diabetes, Down Syndrome, Epilepsy or Seizure Disorder, Heart Condition, Fracture or Severe Hematoma, including Wound, Toxicity Syndrome, Anxiety Disorder, Depression, or Other Genetic or inherited condition.</p> <p>Table 3: Children who reported inadequate sleep, as compared to those with adequate sleep, more often: were high school students and Black or AA, had good or fair/ poor health (rather than excellent/ very good), repeated grades, had parents with lower education and no employment, had experienced divorce, lived with someone mentally ill, who smoked, or who had an alcohol or drug problem, lacked health insurance in last 12 months, had lower income, and reported chronic illnesses. The frequency of sport participation was higher among children with adequate sleep than in those with inadequate sleep. All differences mentioned above were statistically significant.</p>	Characteristics	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value	Sleep Adequacy (hours)					≥ 9	1.31 (1.1, 1.6)	0.001	1.0 (0.8, 1.2)	0.876	< 9	ref		ref		Race					White	ref		ref		Black or African American	0.7 (0.5, 0.9)	0.004	0.5 (0.3, 0.8)	0.001	Other	1.0 (0.7, 1.3)	0.773	0.9 (0.6, 1.2)	0.435	Primary Language					English	ref		ref		Spanish	0.8 (0.5, 1.3)	0.291	0.6 (0.4, 1.0)	0.054	Other	0.4 (0.2, 0.5)	<0.001	0.4 (0.2, 0.8)	0.004	Health Description of Kid					Excellent/Very Good	ref		ref		Good	4.4 (3.5, 5.6)	<0.001	3.5 (2.5, 4.7)	<0.001	Fair/Poor	7.1 (4.5, 11.3)	<0.001	4.9 (2.9, 8.3)	<0.001	Sports Participation					Yes	ref		ref		No	1.7 (1.5, 2.1)	<0.001	1.3 (1.0, 1.6)	0.038	Bullied					Constantly true	4.2 (3.0, 5.8)	<0.001	2.3 (1.4, 3.8)	0.001	Sometimes true	2.1 (1.8, 2.6)	<0.001	1.4 (1.1, 1.8)	0.003	Not true	ref		ref		Child lived with Person with Alcohol/Drug Problem					Yes	2.4 (1.9, 3.1)	<0.001	1.6 (1.1, 2.4)	0.016	No	ref		ref		Chronic Illness**					Yes	3.7 (3.0, 4.5)	<0.001	2.6 (2.0, 3.3)	<0.001	No	ref		ref	
Characteristics	Sleep Adequacy		p-value																																																																																																																																																																																																																																																																																																																																		
	Inadequate (< 9 hours) N = 17,561 (50.9%)	Adequate (≥ 9 hours) N = 17,177 (49.1%)																																																																																																																																																																																																																																																																																																																																			
Age (years)																																																																																																																																																																																																																																																																																																																																					
6-9	2282	207	70.96																																																																																																																																																																																																																																																																																																																																		
10-13	4794	3010	62.80																																																																																																																																																																																																																																																																																																																																		
14-17	10,500	4893	46.60																																																																																																																																																																																																																																																																																																																																		
Race																																																																																																																																																																																																																																																																																																																																					
White	13,233	633	4.74																																																																																																																																																																																																																																																																																																																																		
Black or African American	1423	18	1.26																																																																																																																																																																																																																																																																																																																																		
Other	2865	181	6.32																																																																																																																																																																																																																																																																																																																																		
Health Description																																																																																																																																																																																																																																																																																																																																					
Excellent/Very Good	15,625	856	5.23																																																																																																																																																																																																																																																																																																																																		
Good	1590	119	7.49																																																																																																																																																																																																																																																																																																																																		
Fair/Poor	280	26	9.29																																																																																																																																																																																																																																																																																																																																		
Repeated Grades (yes)	1022	83	8.08																																																																																																																																																																																																																																																																																																																																		
Sports Participation (yes)	10,990	5456	49.55																																																																																																																																																																																																																																																																																																																																		
Victim of Violence (yes)	828	65	7.85																																																																																																																																																																																																																																																																																																																																		
Education among Parents																																																																																																																																																																																																																																																																																																																																					
Less than high school	502	11	2.14																																																																																																																																																																																																																																																																																																																																		
High school/GED	2716	239	8.80																																																																																																																																																																																																																																																																																																																																		
Some college/technical school	4325	245	5.65																																																																																																																																																																																																																																																																																																																																		
College degree or higher	9559	397	4.15																																																																																																																																																																																																																																																																																																																																		
Adult Employment																																																																																																																																																																																																																																																																																																																																					
None	1287	119	9.11																																																																																																																																																																																																																																																																																																																																		
At least one	15,851	881	5.56																																																																																																																																																																																																																																																																																																																																		
Child experienced divorce (yes)	5235	356	6.79																																																																																																																																																																																																																																																																																																																																		
Child lived with mentally ill (yes)	1574	104	6.61																																																																																																																																																																																																																																																																																																																																		
Anyone Smokes inside of home																																																																																																																																																																																																																																																																																																																																					
Smokes in the home	548	41	7.48																																																																																																																																																																																																																																																																																																																																		
Smokes but not in the home	2684	169	6.30																																																																																																																																																																																																																																																																																																																																		
Does not smoke	14,400	810	5.62																																																																																																																																																																																																																																																																																																																																		
Child lived with Person with Alcohol/Drug Problem (yes)	2128	231	10.90																																																																																																																																																																																																																																																																																																																																		
Health Insurance Coverage of Child, Past 12 months																																																																																																																																																																																																																																																																																																																																					
Yes	16,400	806	4.91																																																																																																																																																																																																																																																																																																																																		
No	434	36	8.29																																																																																																																																																																																																																																																																																																																																		
Safe School (ages)																																																																																																																																																																																																																																																																																																																																					
Yes	16,818	812	4.83																																																																																																																																																																																																																																																																																																																																		
No	543	45	8.29																																																																																																																																																																																																																																																																																																																																		
Income*																																																																																																																																																																																																																																																																																																																																					
<100%	1933	252	13.00																																																																																																																																																																																																																																																																																																																																		
100-199%	2981	235	7.88																																																																																																																																																																																																																																																																																																																																		
200-299%	2770	150	5.41																																																																																																																																																																																																																																																																																																																																		
300-399%	3612	105	2.91																																																																																																																																																																																																																																																																																																																																		
400%	755	25	3.32																																																																																																																																																																																																																																																																																																																																		
Chronic Illness (yes)**	9371	506	5.40																																																																																																																																																																																																																																																																																																																																		
Characteristics	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value																																																																																																																																																																																																																																																																																																																																	
Sleep Adequacy (hours)																																																																																																																																																																																																																																																																																																																																					
≥ 9	1.31 (1.1, 1.6)	0.001	1.0 (0.8, 1.2)	0.876																																																																																																																																																																																																																																																																																																																																	
< 9	ref		ref																																																																																																																																																																																																																																																																																																																																		
Race																																																																																																																																																																																																																																																																																																																																					
White	ref		ref																																																																																																																																																																																																																																																																																																																																		
Black or African American	0.7 (0.5, 0.9)	0.004	0.5 (0.3, 0.8)	0.001																																																																																																																																																																																																																																																																																																																																	
Other	1.0 (0.7, 1.3)	0.773	0.9 (0.6, 1.2)	0.435																																																																																																																																																																																																																																																																																																																																	
Primary Language																																																																																																																																																																																																																																																																																																																																					
English	ref		ref																																																																																																																																																																																																																																																																																																																																		
Spanish	0.8 (0.5, 1.3)	0.291	0.6 (0.4, 1.0)	0.054																																																																																																																																																																																																																																																																																																																																	
Other	0.4 (0.2, 0.5)	<0.001	0.4 (0.2, 0.8)	0.004																																																																																																																																																																																																																																																																																																																																	
Health Description of Kid																																																																																																																																																																																																																																																																																																																																					
Excellent/Very Good	ref		ref																																																																																																																																																																																																																																																																																																																																		
Good	4.4 (3.5, 5.6)	<0.001	3.5 (2.5, 4.7)	<0.001																																																																																																																																																																																																																																																																																																																																	
Fair/Poor	7.1 (4.5, 11.3)	<0.001	4.9 (2.9, 8.3)	<0.001																																																																																																																																																																																																																																																																																																																																	
Sports Participation																																																																																																																																																																																																																																																																																																																																					
Yes	ref		ref																																																																																																																																																																																																																																																																																																																																		
No	1.7 (1.5, 2.1)	<0.001	1.3 (1.0, 1.6)	0.038																																																																																																																																																																																																																																																																																																																																	
Bullied																																																																																																																																																																																																																																																																																																																																					
Constantly true	4.2 (3.0, 5.8)	<0.001	2.3 (1.4, 3.8)	0.001																																																																																																																																																																																																																																																																																																																																	
Sometimes true	2.1 (1.8, 2.6)	<0.001	1.4 (1.1, 1.8)	0.003																																																																																																																																																																																																																																																																																																																																	
Not true	ref		ref																																																																																																																																																																																																																																																																																																																																		
Child lived with Person with Alcohol/Drug Problem																																																																																																																																																																																																																																																																																																																																					
Yes	2.4 (1.9, 3.1)	<0.001	1.6 (1.1, 2.4)	0.016																																																																																																																																																																																																																																																																																																																																	
No	ref		ref																																																																																																																																																																																																																																																																																																																																		
Chronic Illness**																																																																																																																																																																																																																																																																																																																																					
Yes	3.7 (3.0, 4.5)	<0.001	2.6 (2.0, 3.3)	<0.001																																																																																																																																																																																																																																																																																																																																	
No	ref		ref																																																																																																																																																																																																																																																																																																																																		
<p>Results</p> <p>Figure. Study Sample.</p> <ul style="list-style-type: none"> • Final sample included 34,728 students aged 6 to 17 years (51.1% males, 77.5% Whites, 90.8% with health reported as very good or excellent). • Overall prevalence of inadequate sleep time was 50.9%. 	<p>Table 1 (continued):</p> <ul style="list-style-type: none"> • The groups with inadequate and adequate sleep time showed no difference regarding gender, primary language, being bullied or bullying others, and living in metropolitan areas. <p>Table 2:</p> <ul style="list-style-type: none"> • Prior to the adjustment a statistically and clinically significant association was found between missed days of school and inadequate sleep time, older age, Black race, other primary language, health other than excellent, repeated grade, no sports participation, victim of violence, bullied, bullies others, adult unemployment, experienced divorce, living with mentally ill, smoking inside home, living with alcohol/drug problem, unsafe school, poverty, and chronic illness. • After adjustment: <ul style="list-style-type: none"> • The association between inadequate sleeping time and missing school days was no longer significant. • The magnitude of association decreased slightly but remained statistically significant only for Black race, other primary language, health description other than excellent, being bullied, and suffering chronic illness. <p>Conclusions</p> <ul style="list-style-type: none"> • Multivariate regression analysis using logistic regression allowed for the evaluation of many possible confounders and identified new potential risk factors for study. • By using the NSCH 2016 database, no benefit or risk to the subjects is involved in this study as the information is identified and no additional contact was required. • Three main important conclusions: <ul style="list-style-type: none"> • After adjusting for potential confounders, inadequate sleep time was not significantly associated with an increased risk of missed days of school due to illness or injury (adjusted OR 1.0, 95% CI 0.8-1.2). • Missed days of school is significantly associated with Black race, other primary language in the household, and physical health of the child. • As previously described in the literature, increasing age is associated with decreased sleep duration. • Further research is needed to explore the relationship between sleep quality (rather than quantity) and missed days of school due to illness/injury. <p>Acknowledgements</p> <p>Special thanks to the data available from the NSCH 2016 and Pura Rodriguez who let us in analyzing our data.</p>																																																																																																																																																																																																																																																																																																																																				