Sleep Readings

Please return this to Mr. Doyle when finished.

STORY 1

When it's more than just a bad dream

BY ALEX FRANDSEN | APRIL 22, 2017
The Boston Globe

As soon as I opened my eyes in the middle of one February night, I knew something was wrong. This hunch was confirmed when I tried to lift up my head, only to be met with disobedience from my neck muscles and nerves. I tried to shift my leg, raise an arm, lift a finger, but everything stayed pinned in place. I tried to say something to my roommate, sleeping peacefully just a door away, but no dice. I was stuck.

As one might imagine, this made me pretty anxious. That anxiety transitioned into full-blown panic just seconds later, though, when out of the corner of my eye, I saw a figure standing next to my desk, mere feet away. Seemingly faceless, it moved toward the bed until it was standing directly over me. Then, in an even more unfortunate turn of events, it seemed to get on my chest. My brain was doing its best to make me yell or flail, but my body remained out of commission. I'd seen enough mediocre horror movies to know that this was the end of the line for me.

But miraculously, I snapped out of it. I sat up in bed, panting, and it slowly became clear to me that I was safe again.

It wasn't a normal bad dream, though. I may not have been completely awake, but I was very aware, stuck in a living nightmare. The experience was, as I would soon discover, a bout of sleep paralysis.

Although freaky, sleep paralysis is far from a freak event. A 2011 article published in the Sleep Medicine Reviews aggregated the results of numerous reputable studies and found that 7.6 percent of the general population has experienced sleep paralysis in their lifetime. That number balloons to 28.3 percent for students, and 31.9 percent for psychiatric patients.

The causes behind it aren't clear, but it's likely that lack of sleep is a main factor, and having a preexisting mental condition also seems to heighten a person's chances. Sleep paralysis has also been discussed as a potential indicator for narcolepsy. But as for the biological processes that go on, experts generally agree that it occurs due to a disruption of the sleep cycle at its deepest point.

"What happens is, people wake up in the middle of REM sleep," said Dr. Khalid Ismail, director of the Center for Sleep Medicine at Tufts Medical Center. "Some parts of the brain are awake, others are still in REM. You're partially awake."

The brain shuts down all body movement during REM sleep. This is a good thing most of the time, because many of us would be dead, injured, or possibly imprisoned if we acted out our dreams while asleep. But when we're awakened in this state, the self-preservation mode comes back to bite us. All of a sudden, our brain is conscious but our body isn't.

Being paralyzed temporarily is bad enough, but our brain decides to up the ante by playing tricks on us. Because we're still partially asleep, a nightmare can seem transposed onto reality. The hellish vision I had, for instance, is a very common side effect of sleep paralysis. Ismail experienced something similar during his own episode, which happened during his chronically sleep- deprived medical school days.

"Somebody was in the room and I wasn't able to react," he recalled. "Some intruder was walking around my room, and I couldn't do anything about it."

In this day and age, given the research done on the topic, it's easy enough to realize afterward that what happens during sleep paralysis isn't real. All you have to do is hop on your iPhone for a second to verify that you aren't losing it.

But consider not having that knowledge readily available. Episodes would feel less like harmless nightmares and more like paranormal visits, since everything feels so realistic. This, in part, could explain the origin of many spooky tales.

"Sleep paralysis is at least a piece of the puzzle in understanding many scary nocturnal events. It's often been associated with ghosts, aliens, and demonic visitations," said Brian Sharpless, coauthor of 2015's "Sleep Paralysis: Historical, Psychological, and Medical Perspectives."

Sharpless breaks down sleep paralysis hallucinations into three subtypes: intruder in the room, like the experience Ismail had; incubus, the experience I had, which is generally described as something on top of you, pressing down; and vestibular-motor, where you feel illusory body sensations, like floating, for instance.

"If you think about these three experiences," said Sharpless, "they map onto a good number of paranormal events. In 'alien abductions,' for instance, you might feel illusory movements like levitating.'"

Sharpless, for his part, had his first sleep paralysis experience just a year and half ago. He was a little more prepared than the rest of us, given that he's been studying the phenomenon since 2010.

"I had it when returning from an international talk. I was really jetlagged . . . I just looked at the figure and realized I was finally having sleep paralysis," he said.

One of the facets of sleep paralysis that fascinates Sharpless the most is the global and historical reach of it. "I haven't identified a culture that hasn't reported sleep paralysis," he said. "[And] each culture puts their own spin on the experience."

In fact, according to Sharpless, the true original meaning of "nightmare" comes from sleep paralysis experiences. Before the 20th century shift toward the more modern usage of the word, a nightmare specifically meant a nighttime event in which "[t]he core features … included waking up paralyzed, feeling pressure on your body, and seeing or feeling a being on top of you," he said. This is perfectly and horrifically illustrated by the 1781 painting by John Henry Fuseli, "The Nightmare."

Different cultures and languages have used a variety of different descriptions throughout history — Sharpless and a colleague compiled more than 100 recorded references to sleep paralysis. In Turkey, for instance, it is called "the dark presser." In Germany, it's been referred to as "the witch presser" or "the elf presser." In Sri Lanka, it's simply "the ghost that forces you down."

I think scary as hell is an accurate enough description.

STORY 2

To the N.F.L., 40 Winks Is as Vital as the 40-Yard Dash

BY KEN BELSON | OCTOBER 1, 2016
The New York Times

RENTON, Wash. — The players filed past a table and picked up the electronic wristbands as casually as any of other piece of equipment designed to make the Seattle Seahawks perform at their peak.

But rather than protect or help them power through a game, this new one, distributed to the players at practice on Monday, is aimed at a more subtle effect. Very subtle.

"Get your nine hours of sleep!" receiver Doug Baldwin shouted to Trevone Boykin, the backup quarterback, as Boykin fiddled with his band, a motion-sensing monitor designed to ensure he does just that.

The Seahawks want to become sleeping giants.

N.F.L. teams obsessively track almost everything they can about a player: weight, muscle mass, hand-eye coordination and more.

Yet in recent years, in the never-ending search for an edge, teams have opened their eyes to sleep as a priority, backed up by science that increasingly points to its importance for physical and mental health. A solid night in the sack particularly helps players recover from the inevitable wear and tear of a taxing season.

Several other teams besides the Seahawks have also been focusing on sleep. And it has caught on in other sports — some N.B.A. players, for instance, take naps during the day to remain fresh for night games. Basketball and hockey teams adjust their flight schedules to allow their players more time to sleep. And New England quarterback Tom Brady made waves two years ago when he said he goes to sleep at 8:30 p.m.

Few teams, however, have cozied up to the idea as much as the Seahawks

It is partly out of necessity. The Seahawks are hours by plane from their nearest rivals and regularly log more miles than any other N.F.L. team. On Friday, for example, they flew five hours to New Jersey for their game against the Jets.

The focus on sleep also flows from the team's holistic approach to player health, which encompasses, among other things, blood tests, meditation, and yoga. The team, 2-1, has been among the best in the N.F.L. in recent years, including a Super Bowl win in 2014.

"I've always had a belief that sleep is one of the main ways your body recovers," said Sam Ramsden, the Seahawks' director of player health and performance. "Some of the best players on the team are the best sleepers."

The bands the players collected on Monday are the latest version of those the team first tried in 2011 but had to stop using last season after the players' union raised concerns about the intrusiveness of a device used outside games and practices. In July, the league and players settled their differences and allowed the bands if the teams received the union's approval.

About 40 Seattle players now wear the monitors, up from 20 a few years ago.

Ramsden and his staff have used the bands as a tool to find out why a player might be sleeping poorly. In many cases, the reason is obvious: a baby that kept a player up all night, for example.

But Ramsden has also referred chronic light sleepers to doctors who have discovered that the players have had conditions such as sleep apnea, a serious disorder that can cause a range of heart and brain problems. And if many players were running short on sleep, he suggested that the coaches trim a practice or adjust the team's travel schedule.

The devices used by the Seahawks, called Readibands, are made by a Canadian company called Fatigue Science and include motion sensors that calculate how long and how deeply the players have slept. Another algorithm, developed by the American military and others, converts the sleep data into a number correlated to the player's alertness.

The wristbands send the data to the players' smartphones, allowing them to monitor their sleep better and make adjustments on their own.

A player with a score of around 90 on the 100-point scale has about a 10 percent reduction in alertness — nothing serious. A player with a score of 70, by contrast, will have a 43 percent reduction in reaction time — a significant impairment to his performance.

"It's not enough to know how much or how well you are sleeping, but to understand the relationship between sleep and performance," said Jacob Fiedler, a sales director at Fatigue Science, which works with about 40 sports teams around the world as well as miners, train engineers and other workers who need to stay alert on the job for long periods. "If the timing of my sleep is inconsistent, we'll pay a health price, a safety price, a performance price."

Many Seahawks say they are now getting to bed before 10 p.m. during the week, and credit the sleep bands with keeping them on track.

"I'm the type of guy, I try to get an advantage any way I can and stay ahead of the game and keep my body right and limit my risk of injury to make my performance better," said DeShawn Shead, a cornerback. "I know I'm a great sleeper, but now I can physically see it and monitor it so I can put that to the test as well."

To underscore the importance of sleep, Ramsden told the players about a passage in one of the Jason Bourne spy novels in which the protagonist Bourne called sleep "a weapon."

Ramsden said: "Everything that's happening to this guy, and he thinks sleep is important. I like that because it helps players understand how important it is."

Old habits die hard, however.

Russell Wilson, the quarterback, has used the hashtag "#NoTime2Sleep" on his Twitter account and said that he is fine with five or six hours of sleep even though doctors recommend several hours more.

Coach Pete Carroll, too, had to come around to the idea that his players need their rest.

"I always thought that sleep was overrated, and I had to kind of be knocked in the head to understand," Carroll said. "Like so many things, once it gets on the radar screen, it makes sense and you ask, why didn't we pay attention before?"

Some players have spoken publicly about the benefits of sleep. Cornerback Richard Sherman said before the team's Super Bowl victory in 2014 that "sleep science has paid off for several guys."

"We're all tough guys, that's proven," said K. J. Wright, a linebacker. But "you have to be smart, and on Sunday it shows which team has prepared the best, which team is moving the best."

STORY 3

Pills can't promise sweet dreams

By RONI CARYN RABIN | APRIL 24, 2016
The Boston Globe

Sleeplessness is complicated -- but that hasn't stopped millions from craving a simple chemical solution. Potions to ease the misery of insufficient sleep can be traced to the ancient Egyptians, who employed an extract of the opium poppy.

In a Consumer Reports survey, 37 percent of people who complained of sleep problems at least once per week said they had used an over-the-counter or prescription sleep drug in the previous year.

"But those benefits aren't as great as many people assume, and the drugs have important harms," says Dr. Lisa Schwartz, a drug-safety expert at Dartmouth's Geisel School of Medicine in Hanover, N.H., who has worked with Consumer Reports Best Buy Drugs on investigating sleeping pills.

What's more, the survey found that about half of people who take sleep aids use the drugs in potentially harmful ways -- by, for example, taking them more often or longer than recommended or combining them with other medications or supplements.

Even taken as directed, sleeping pills pose risks, including next-day drowsiness. A study published online in June 2015 by the American Journal of Public Health found that people prescribed sleeping pills were around twice as likely to be in car crashes as other people. The researchers estimated that people taking sleep drugs were as likely to have a car crash as those driving with a blood alcohol level above the legal limit.

Several sleeping-pill instructions caution users to take the medications only if they can stay in bed for at least seven or eight hours.

And to address the dangers of next-day drowsiness, the Food and Drug Administration has cut in half the recommended doses for Ambien and Lunesta.

The labels for Ambien CR and Belsomra 20 milligrams, in fact, caution against driving at all the day after taking the pill. Yet Consumer Reports' survey found that about a quarter of sleep-aid users drove with less than seven hours of sleep at least once in the previous year.

Sleeping pills can pose other dangers, too, including dizziness, falls, and fractures.

"These drugs are known to have a hangover effect that impairs coordination and balance into the next day, especially in older adults," says Dr. Ariel Green, a geriatrician at the Johns Hopkins University School of Medicine in Baltimore.

Even over-the-counter sleep aids -- such as Advil PM, Sominex, and ZzzQuil -- pose risks, including daytime drowsiness, confusion, constipation, dry mouth, and problems urinating.

Consumer Reports' medical experts recommend following these precautions, which apply to both prescription and over-the-counter sleep drugs:

Tell your doctor about all of the medications you take, including supplements. Many common drugs, such as certain antibiotics and antidepressants, can interact dangerously with sleep drugs.

Take the drugs only if you have time for at least seven or eight hours of sleep. Even if you've had that much sleep, don't drive if you feel drowsy.

Do not take an extra dose if you wake up in the middle of the night.

Never mix sleeping pills with alcohol, recreational drugs, or other sleep drugs or supplements, including over-the-counter nighttime pain relievers and antihistamines, such as Benadryl Allergy, that contain the sedative diphenhydramine.

Start with the lowest recommended dose, especially until you know how the drug affects you.

Be cautious about frequent use. Taking sleep drugs regularly can breed dependence and raise the risk of adverse effects.

STORY 4

Students see benefits from later school start times

After pushing back start times, school officials laud transformation

BY JAMES VAZNIS | MARCH 109 2016
The Boston Globe

EASTHAM -- For decades, hundreds of bleary-eyed students across the Outer Cape scrambled to beat the 7:25 a.m. opening bell at Nauset Regional High School. Many set out before sunrise, coffee in hand, and traveled up to 45 minutes. Then they struggled to stay awake in class.

"At one point, we asked teachers not to turn off lights or show movies, because we didn't want students to fall back to sleep," said Tom Conrad, the former principal, now superintendent.

So in a state where most high schools start before 8 a.m., Nauset school officials in 2012 did the unthinkable: They pushed their start time back to 8:35 a.m., giving students an extra hour to sleep in.

The results were instantaneous, administrators say. More students showed up to school refreshed. Tardiness fell by 35 percent, and the number of Ds and Fs dropped by half.

Now, several high schools across Massachusetts are exploring whether to follow suit. The push for later start times is emerging in such districts as Belmont, Boston, Masconomet, Mashpee, Newton, and Wayland. The state Legislature is considering a bill to study the issue statewide.

For skeptics, the movement might seem like pandering to the whims of undisciplined teenagers who want extra Zs. But an increasing body of research has documented a shift in the biology of teenagers that delays their sleep and wake-up cycles by about two hours, pushing off their natural bedtime to 11 p.m. or later. That, in turn, means that if they need to get to school at the crack of dawn, they will routinely get only five or six hours of sleep.

The lack of adequate shut-eye can have detrimental effects on the health and academic performance of teenagers, increasing their risks for early morning car crashes, suicidal tendencies, depression, binge drinking, drug overdoses, and bad grades, research has shown. Several studies in recent years have recommended starting high school at 8:30 a.m. or later, saying students should get between 8.5 and 9.5 hours of sleep per night -- not the 6 hours that is often the case.

"Some kids are exposed to the same degree of sleep loss for four or five years," said Judith Owens, director of the Center for Pediatric Sleep Disorders at Boston Children's Hospital. "It's not a good thing. . . . If you are asking teenagers to get up at 5:30 or 6, that is their lowest point of alertness in their 24-hour cycle. It's at that point where their brain is most loudly saying 'stay asleep.'"

Yet efforts in other districts to delay start times have often been stymied. Critics say the change creates conflicts with sports schedules and afterschool programs, leaves students without enough time for afterschool jobs, and could interfere with bus schedules for elementary-school students who typically get out later in the afternoon.

Many of the nearly 1,000 students who attend Nauset Regional High School, tucked within the Cape Cod National Seashore, agree that starting school later is better, even though it pushes dismissal to 3 p.m.

"I'm not a morning person," Mason Swift, 17, a senior who plays on the school's baseball team, said recently. "If I had to be here for 7:30, I would be asleep for the whole first block" of classes.

Massachusetts has one of the earliest start times for secondary school students in the nation, according to a report last year by the Centers for Disease Control and Prevention. On average, the morning bell for middle and high schools in Massachusetts rings at 7:53 a.m. -- 10 minutes earlier than the national average -- while less than 12 percent of all middle and high schools statewide start at 8:30 a.m. or later, according to the report.

The CDC has joined a growing number of national organizations calling for later start times for both high school and middle school students. Those organizations include the American Academy of Pediatrics, the National Sleep Foundation, and the nation's largest teachers union, the National Education Association.

Owens, of Boston Children's Hospital, said many school systems have their schedules upside down, arguing that elementary school students, who typically have the later start times, should be the ones going to school early because they are the "morning larks."

A pre-dawn start

Shortly after 6, as the first rays of dawn illuminated the convenience stores, takeout restaurants, and doughnut shops in Maverick Square in East Boston, 17-year-old Koraliz Cruz stepped inside the glass entryway to the Blue Line. Cruz, with a tote bag slung over her shoulder, had been up for more than an hour. This was the beginning of her hourlong daily commute to Boston Latin Academy in Dorchester that has her racing to meet a 7:20 a.m. opening bell.

She must rely on public transit because the school system does not bus high school students, leaving her with a commute rife with potential delays. From the Blue Line, she changes to the Orange Line, then catches an MBTA bus in Roxbury for the final leg of the trip on traffic-clogged streets.

Many of Boston's approximately three dozen high schools have among the earliest start times in the state.

"I usually get five or six hours of sleep," said Cruz, explaining that four hours of homework kept her up until 11 the previous night. She said she almost always walks to the T with a friend because the neighborhood is not safe, especially before sunrise.

Cruz, a member of the cheerleading team, wishes school started at least an hour later, adding, "I usually don't wake up until third or fourth period."

Part of Cruz's slowness to wake up comes down to biology.

Mary Carskadon at the Sleep Research Laboratory at Bradley Hospital and at Brown University has been leading research into the sleeping habits of teenagers for decades. Carskadon and her team have found that teenage brains secrete melatonin -- a hormone that causes drowsiness -- around 11 p.m., about two hours later than younger kids.

The delay in sleep then ripples into the morning hours, often causing students to miss REM episodes, the deepest level of sleep needed to recharge their batteries, because their alarm clocks go off first or a parent bangs on their bedroom door.

Shifting school start times to 8:30 or later can bring about powerful change to students' academic performance and overall health, according to a study by the Center for Applied Research and Educational Improvement at the University of Minnesota, which examined eight schools with later start times in Minnesota, Colorado, and Wyoming.

The later times allowed about 60 percent of students to get at least eight hours of sleep, and the schools saw increases in standardized test scores and attendance rates and a decrease in tardiness, the study said. It also found that the number of car crashes involving teen drivers dropped 70 percent after a school shifted its start time from 7:35 a.m. to 8:55 a.m.

This kind of research has spurred many local school systems or grass-roots parent organizations to reexamine start times.

The Newton School Committee is expected to select from a number of proposals this spring for later starts at the city's two high schools by September to help reduce student stress, which can be elevated by exhaustion. Under the change, the schools could begin at 9 a.m. instead of 7:50 a.m. at Newton North and 7:40 a.m. at Newton South.

In Mashpee, a panel of educators, parents, and school leaders last month recommended starting the Cape town's high school an hour later, 8:30 a.m., beginning fall 2017.

And the Masconomet Regional School System, made up of Boxford, Middleton, and Topsfield, is studying later start times for its middle and high schools.

But a group of Boston Latin Academy parents, who have been pushing for a later start time, are facing an uphill battle, even though a survey of students that parents conducted last year found that 40 percent of respondents got less than six hours of sleep a night. Only a handful of Boston public schools start after 8:30 a.m.

"We believe this is a public health issue," said Deborah Putnam, one of the Latin Academy parents heading the effort.

Superintendent Tommy Chang declined to comment through a spokesman. In a statement, the School Department said Chang is "listening to parents and students on all sides of the debate" but added "there is no plan in Boston to begin high school classes later in the morning."

Researchers caution that delaying school start times is not a silver bullet. Some teenagers are exhausted because of other reasons, such as compulsively using their smartphones late into the night, staying up to watch television shows or movies, drinking too much caffeine, or cramming too many extracurricular activities into their days.

Logistics and logic

The Nauset Regional School District -- which consists of Eastham, Brewster, Orleans, and Wellfleet -- spent years debating whether to shift its longstanding 7:25 a.m. start time. Ultimately the research into the benefits of a later start time proved to be too persuasive to ignore.

The biggest challenge was transportation because Nauset buses students at all grade levels and schools shared a limited number of buses.

To accommodate an 8:35 a.m. start at the high school, officials had to move the start time of the elementary school, which had opened around that same time, to 7:45 a.m. They also moved back the middle school start time by a half hour to 8:30 a.m. so those students could share buses with the high school students.

The broad changes, while benefiting the high school, caused tardiness to rise temporarily in the elementary and middle schools as families adjusted to the earlier start times. The school system also never achieved transportation savings by consolidating the middle and high school bus routes.

But the impact on sports was not as significant as school officials initially anticipated. Neighboring school systems have been accommodating in scheduling games later in the day or on Saturdays, and several student athletes say sleeping later in the morning far outweighs the late afternoon practices and games.

"It's easier to get a good night of sleep," said Paul Prue, 18, a senior who plays baseball and says he gets about eight hours of sleep.

Not all Nauset students embrace a later start. Branden Patterson, 17, and a group of his friends show up to school early most mornings, drink coffee in their pickup trucks, and listen to country music while they wait until classes begin.

"Starting at 7:30 would be awesome," said Patterson, a senior, noting that an earlier dismissal would give him more time to work at a local fish market.

But Mark Mathison, a math and science teacher who specializes in teaching students with disabilities, said the later start time appears to have helped many of his students.

"Trying to motivate those students at 7:30 in the morning was tough," said Mathison, who also is president of the teachers union. "But now they seem more alert and awake."