

The Children's Hour - Sleep (58m version)

Kids Crew: Why did the little boy hide sugar under his pillow at night?

Kids Crew: I don't know why!

Kids Crew: So he would have sweet dreams!

Kids Crew: It's time for The Children's Hour! Kids Public Radio!

{Music: The Beatles, I'm only Sleeping}

Katie Stone: That's the Beatles from Revolver. You're listening to The Children's Hour. I'm Katie Stone. We're at the Outpost Performance Space in Albuquerque, New Mexico and on Zoom with a whole lot of great kids. Hello, everyone.

Kids Crew: Hello.

Katie Stone: And who do we have with us today?

Kids Crew: Hello, it's Amadeus.

Kids Crew: Hi, it's Nina.

Kids Crew: Hello, it's Asa.

Kids Crew: Hi, it's Amaya.

Kids Crew:Hi, it's Thorfin.

Kids Crew: Hello, it's Lucasti.

Kids Crew: Hi, it's Raymond.

Kids Crew: Hi, it's Marcel.

Katie Stone: Well, everyone, I am so glad you're with us on the air, listening and listener land, and here with us at the outpost and on Zoom. Today, we're going to learn about something we spend so much of our lives doing, and I've always wondered why. Can you guess what we're going to talk about? What do we spend so much of our lives doing for... no?

Kids Crew: Reading.

Katie Stone: Reading! Ha ha ha.

Kids Crew:Sleeping.

Kids Crew: Playing video games.

Kids Crew: Eating food.

Katie Stone: Raymond is hitting the nail on the head. We sleep a lot. We sleep about a third of our life away. And yet are we sleeping our life away or is something happening when we're sleeping?

Kids Crew: Something is happening when we're sleeping.

Katie Stone: So sleep is something that people do, but also all animal forms sleep. And so we're going to learn about why that is. We have multiple guests on the show today. including an author of a new children's book about where ocean creatures sleep at night. And also we're going to speak with a neuroscientist named Dr. Vishal Sumra. And there is a lot to learn about sleep today on The Children's Hour. Stick with us. This is the Verve Pipe.

{Music: The Verve Pipe, I'm Not Sleeping In (Cuz It's Saturday)}

Katie Stone: You're listening to The Children's Hour. And with us on the show today is Vishal Sumra. He is a PhD student at the Tanz Centre for Research in Neurodegenerative Diseases at the University of Toronto. And his focus is looking into brain imaging scans, which you may have heard of before, MRI scans they are sometimes, or PET scans are other ones. He

has also a background in neuroscience. Welcome to The Children's Hour, Vishal.

Vishal Sumra: Hi.

Kids Crew: What actually goes on in our brains when we sleep?

Vishal Sumra: There are tons and tons of things going on in your brain when you sleep, and it actually changes depending on what stage of sleep that you're in. We do things called dreaming. We've all probably done that before. And we also use that as an opportunity to let our brains get a little bit of rest, let ourselves and our brains kind of clean up, take care of business and make sure we're feeling good and getting ready back to start the next day.

Katie Stone: What do you mean clean up?

Vishal Sumra: So as the day goes on, as our cells are active, they're letting us do the amazing things like walk and talk and run and eat food. As that happens, our brain kind of takes the energy stores that it has, it breaks up that energy, it takes some of the molecules that it has, it breaks that up. When you break up those energy stores, those will start to build up and the brain at some point needs to kind of take care of that. Like your mom will tell you, you gotta clean your room, don't come out until you clean your room. That's what your brain is really telling you when you're trying to sleep. It's making sure you're clearing up. all of the waste materials that

you have in your cells and your brain, and also using it as an opportunity to repair your body as well.

Katie Stone: We go to bed at night, we lay down, we close our eyes, then what? What is the path that sleep is taking?

Vishal Sumra: We start in that fully awake kind of point. Our brain will build up with those signals that tell us, okay, it's time to go to bed. In that awake state, we transition to this kind of first stage of sleep. That's more of a transition stage. where your brain kind of looks a little bit more like it's awake, where you're starting to kind of slow the rhythms of how your brain is firing. Your breathing will start to slow, your body temperature will start to drop just a little bit. And then we'll move further down into more of a deep sleep after that. And that's the deepest stage that we have. That's where you're gonna get the most kind of restful sleep. You'll start to come back up into that more lighter sleep, back into more of that transition area. And then in those lighter stages of sleep, we'll have also those rapid eye movement stages. And those rapid eye movement stages is where you have that dreaming occur too. And these periods are about 90 minutes each. So going from the top down and back up is around 90 minutes and we'll have a whole bunch of those stages throughout the night.

Katie Stone: So we go bursty sleep where we're kind of like between sleep and awake almost. And then we go into deep sleep where it's like you're out like a rock, maybe you're snoring at this point and then you kind of come back. Almost out a little bit and you're having that rapid eye movement and all the dreams are happening and then it's almost like the

birth sleep again and then we plunge back down into deep sleep again so that cycle is a 90 minute cycle.

Vishal Sumra: Yeah exactly it's kind of like you're on a swing where you're a little bit higher in that you come down to that deep sleep you're right back up just a whole bunch of times throughout the night.

Kids Crew: We have dreams nearly every night but one notable thing is that. For most nights, we don't remember any of them when we wake up. Oftentimes, it feels like we just blink. Then you talk to someone who might live in your house and be like, you screamed in the middle of the night. Why is that? Why do our brains, after our dreams are done, just erase it from our memory, basically make it not happen?

Vishal Sumra: That's something that people are still actively trying to do research on, why some people, or sometimes you remember our dreams, sometimes we don't. Every night we spend about kind of two hours-ish dreaming on average.

Katie Stone: Every night we're all dreaming two hours a night?

Vishal Sumra: Around, yeah, we're in that kind of R.E.M (Rapid eye movement) stage of sleep that rapid eye movement sleep for around two hours-ish each night. It varies obviously depending on people and that kind of stuff. But that over around an 80 year lifespan is about 10 years that you're gonna spend dreaming. So a lot of time.

Katie Stone: But some people remember their dreams and some people. wake up first thing in the morning and write down their dreams and if they don't do that right away they don't remember their dreams. Yeah, absolutely. Are they just remembering like the last dream they had at the end of the two hours?

Vishal Sumra: Sometimes it's just that you're remembering kind of the most recent thing. Sometimes if you wake up at a different part of your sleep cycle you might be a little bit more likely to remember that dream if you woke up just after that part where you were in that lighter more dream state but if you wake up right after a deep sleep you know your mom shakes you awake it's 7 a.m get on the bus. you might be a little bit startled, you might not remember it because you weren't as close to that sleep stage as you were before.

Katie Stone: Vishal Sumra is a PhD student at the Tant Center for Research in Neurodegenerative Diseases at the University of Toronto, speaking with us about the science of sleep. We have posted links and lots more information, including graphics describing the sleep cycle that we go through. every 90 minutes all night long. This is Casper Baby Pants, right here on The Children's Hour, where we're learning about sleep.

{Music: Caspar Babypants, Weird Weird Dream}

{Music: Jessica Harper, DreamDreamDream}

Katie Stone: That's Jessica Harper from Hey Picasso with DreamDreamDream and Weird Dream with Casper Baby Pants from Easy Breezy. In the background, Kimya Dawson from the Juno soundtrack. We're learning about sleep today on The Children's Hour and we have a lot more to learn. You can follow along on our playlist, see photos and links and more at ChildrensHour.org. Look for this episode, Sleep.

[20:00]

Kids Crew: You're listening to The Children's Hour. Kids Public Radio. We'll be right back.

Katie Stone: The Children's Hour is produced by the Children's Hour, Inc, a New Mexico-based educational nonprofit that is supported by listeners just like you. You can learn how you can help make Kids Public Radio at childrenshour.org. The New Mexico Department of Cultural Affairs supports The Children's Hour. Celebrate diverse cultural communities of New Mexico at NMCulture.org.

{Music: Secret Agent 23 Skidoo, Dreaming Again}

Katie Stone: From Wake Up the Dream, that's Secret Agent 23 Skidoo. You're listening to The Children's Hour. Today we're learning about sleep. It's something we do for a third of our lives. And our guest is Vishal Sumra.

He is a PhD student at the Tann Center for Research in Neurodegenerative Diseases at the University of Toronto. And he is a neuroscientist explaining to us the science of sleep.

Vishal Sumra: Scientists actually right now don't really know for a certain fact why we dream. A couple of ideas are sometimes our brains use that as an opportunity to take our stores of information and put that into kind of a long-term information. Small memories you make throughout the day. I went to my grandma's house today, we had a really nice meal. I'm gonna go to sleep later tonight. My brain's gonna take that from its kind of short-term stores for memories and put that kind of in the back of my brain, put it on a shelf somewhere. So next time I'm eating that kind of meal, maybe I'll get a smell that might trigger that and I can pull that off the shelf. But we use that sleep to kind of consolidate our memories. So consolidate is just a word to mean that we're kind of filing it away for long-term storage. We replay those things that happen. You might see, as you go to sleep, you might see things that happen to you during the day happen again to you in your dreams. And that's part of that kind of long-term memory storage. Some theories say we use that to kind of make sense of what happens during our day. Some theories say that we're trying to make sense of the random activity that happens in our brain. And then there's also some theories that help us kind of get an idea of our emotional processing. So our brains can kind of use that dream as an opportunity to maybe replace certain events that were tough emotionally, or maybe to go through certain scenarios that you might think would be tough emotionally. I don't know about you guys, but I definitely have lots of dreams where I'm running late

to a test. I'm in university. I'm in a big gym somewhere. I'm trying to find where the room is. I can't find it anywhere.

Katie Stone: Do you guys have those dreams?

Kids Crew: Yeah. Sometimes. Sometimes?

Katie Stone: Now I'm really pretty old. I've been done with school for a long time. I am still dreaming I'm supposed to be in a class at school and I'm not there. I can't get there because of some crazy circumstance in the dream. That stress goes somewhere. My brain must have said, oh, stress file. That means you're late to school. That means you're in thick traffic. That means you're trying to catch a plane.

Vishal Sumra: The things that we take on during our day sometimes carry over into our dreams as well. One theory is called the social simulations theory, where your body or your brain is trying to prepare you for things that might happen socially, whether they're embarrassing or stressful. So, you know, a lot of people will dream that they get to school, they're not wearing pants. That's your brain maybe trying to prepare you for something crazy and weird that might happen. Another thing is emotional processing, especially if you're going through a big, tough emotional time. You might see those things start to bleed into your dreams. And it also is another thing where your brain just trying to make sense of what's going on around you. There's things that we're taking in from what happened in our day and putting them into our memory stores. So those things might pop up just randomly. They might have no connection to anything at all. There also

might be those things where we're trying to reason things out for big things that are happening in our lives and deal with some stressful situations.

Kids Crew: You said sleeping is also good for your body. How and why?

Vishal Sumra: You know, it is good for our brains. It will help repair things that happen in our brain. It also does that same thing in our bodies.

Especially for younger people, you really, really need that sleep for your body to actually grow. One thing that happens when you sleep and when you're in those deeper stages of sleep is your body releases growth hormone. So it allows you to repair your muscles, to build more muscle, to build more bone. It signals your body to keep on growing, to keep on repairing itself. And it's just as important for kids as it is for adults.

Kids Crew: For kids listening, there are things on your body that grow for the rest of your life. Your hair, for some people, unless you lose all your hair, your nose, your ears, your fingernails.

Vishal Sumra: And that growth hormone that I talked about isn't only just responsible for growth and getting bigger. It's also responsible for cellular repair, cellular regeneration and stuff like that. So even when you go out for a run, you find like, oh, like my muscles are a little bit sore. That's your body telling it that it needs to be repaired. So that growth hormone is actually responsible for repairing those muscles, repairing any things that happens. If you have any cuts, that growth hormone is responsible in all that repair.

Kids Crew: How specifically can getting less sleep than needed negatively affect you?

Vishal Sumra: If you're on average getting much less sleep than you need, your body, because it's not repairing sufficiently, you're gonna be having a higher stress level. I see that myself a lot. If I have a really bad sleep and I go and do a workout the next day, my heart rate is higher, I'm a little bit more groggy. You might be a little bit cranky. I know I definitely get cranky all the time. That's because your body's in that more kind of flight or fright response. You're having that stress response kicked in that will prolong throughout those days until you get a lot of restful sleep. In terms of the long scale, you know, if you're an adult and you go, you're aging, you're aging, you get to the point where you're in kind of your older years. A poor sleep cycle, not having the optimal amount of sleep is actually related to developing some types of diseases like Alzheimer's, for example. While we sleep, our brain actually uses that as an opportunity to clear out some of the things that when we look at Alzheimer's patients, we have buildups of certain proteins and stuff. During sleep, that's actually when those proteins are taken away. So if you don't have enough sleep, in certain cases, you might actually be leaning into having more of a pathology or something wrong with your brain is what we call it.

Katie Stone: That's fascinating. Our guest is Vishal Sumra. He is a PhD student at the Tann Center for Research in Neurodegenerative Diseases at the University of Toronto, but today we're talking about the science of sleep. You're listening to The Children's Hour. There's a lot more to come. Stick with us.

{Music: The Pop Ups, Science of Sleep}

Katie Stone: That's the Pop Ups from the Giants of Science. You're listening to The Children's Hour, and today we're thinking and learning about sleep. Sleep is something we all do. Every living creature has to sleep, and we've been wondering about sleep and why we do it. Earlier, we were talking about dreams and why we dream. Our guest is Vishal Sumra. There's a lot more going on in sleep, and there are a lot of questions from the kids about sleep.

Kids Crew: Is there a clear cut reason why we sleepwalk? Because it seems sort of dangerous and ill-advised. I'm just really curious, why do we sleepwalk?

Katie Stone: Yeah, what is sleepwalking? Like what's happening when people are sleepwalking? Is the brain, like it forgot it's asleep?

Vishal Sumra: What it really is, is your brain is asleep. You are technically dreaming, but there's certain things that happen when you sleep where your body kind of puts the brakes on you being able to move. So there's, you're still having those signals, even when in normal sleep, that your body's telling you to move. to get up if you're dreaming, for example, that you're walking, your body is still kind of creating those signals to walk. We are just able to kind of put the brakes and stop that from actually going into your body and moving. In people where they're sleepwalking, that isn't the

case. So those brakes aren't working as effectively or they aren't working at all. And so some people will get up, they'll be talking in their sleep, they'll be walking in their sleep, they might be eating in their sleep. That's another thing that happens as well.

Kids Crew: I'm curious if it can sort of appear at certain points in your life, because I know for myself, I didn't use to sleepwalk for a period of time. And then at one point in my childhood, I did it fairly frequently for maybe one or two years and then it completely went away. So can it just appear? Is there a reason why it goes away on its own? What's the deal with that?

Vishal Sumra: I'm glad to hear that it stopped because it's slightly dangerous to be sleepwalking. It's a little bit different for different people. The brains are really cool organ where as we develop things are changing so much. So from what you're telling me, it might be that your brain was still developing certain areas and that you might have not had those brakes on to stop movement. And then as you kind of age a little bit, those brakes were able to be put on properly. But that also obviously is something that you would have to put you in a scanner, get an E.E.G (electroencephalogram) of seeing what your brain waves are, do a sleep study while you're sleepwalking. And then after that I'd stop to see what's changing because things are so different for different people.

Katie Stone: Why is it that if I yawn, then Amadeus is gonna yawn and all of a sudden we're all, in fact, I just said the word yawn and people are yawning in the room. Why is that?

Vishal Sumra: Yeah, I mean, so in terms of why that happens, it's hard to say definitively why. There's one theory where there's a type of cell in the brain called a mirror neuron. And a mirror neuron is just when you see something visually. Those mirror neurons actually activate the same patterns in our brain that would activate if we were doing that same thing. So sometimes if you're watching a YouTube video and you see someone kind of get hit and you kind of, oh my God, that's your mirror neurons activating that same type of response in you. And it's the same thing that happens when you're yawning where you see someone yawning, you're more inclined to yawn, you know, in that same way. It also happens when people kind of gag when they're about to vomit, someone gags, another person near them will also gag. So one of the main hypotheses is those kind of mirror neurons where you see something and your brain kind of wants you to do it as well. But it's again not 100% clear cut just yet.

Katie Stone: That's Vishal Sumra. And you can learn a lot more about him and about sleep and find some activities related to sleep at childrenshour.org. Look for this episode, Sleep. And for teachers, we have some lesson guides and other curriculum there for you as well. You're listening to The Children's Hour. We have so much more coming up about sleep, including how animals sleep underwater. And we've got a book review from Max, but first this is the Beatbuds.

{Music: The Beatbuds, It's Time To Sleep}

{Music: The Re-Bops, Outro: Father Goose Sleepwalk}

Kids Crew: You're listening to the Children's Hour, Kids Public Radio. We'll be right back.

Katie Stone: Many thanks to the Outpost Performance Space for hosting The Children's Hour. Children's Hour is supported by United Way of North Central New Mexico. Support for The Children's Hour provided by New Mexico Arts, a division of the New Mexico Department of Cultural Affairs and by the National Endowment for the Arts. Support for The Children's Hour provided by the City of Albuquerque Cultural Services Department and the Urban Enhancement Trust Fund. You can keep up with The Children's Hour by signing up for our monthly newsletter at ChildrensHour.org.

[40:00]

Katie Stone: This is The Children's Hour and we're learning about sleep. Stick with us, we're going to speak with an author and have a book review. This is John Legend.

{Music: John Legend: Go To Sleep}

Katie Stone: This is the Children's Hour. I'm Katie Stone and today's show is all about sleep. We have a lot more information at childrenshour.org. Look for this episode called sleep. But have you ever wondered about animals and sleep? I mean we all know our pets sleep because we see them sleep or they sleep with us. But what about the other critters? Our next guest, Stephen J. Simmons, has explored exactly that topic in his series of books on sleep and animals.

Stephen J. Simmons: The first book started about five years ago when I was behind my house and I saw all these butterflies and squirrels and rabbits and honeybees all playing behind the house and I thought it would be a great idea to have a children's book about when the children went to sleep. What happened to all these creatures? Where did they go? So I wrote a children's book, *Where Do Creatures Sleep At Night?* And then the idea continued and I I co-wrote the second book with my son Cliff, and that focused on big animals. So where does a lion or a giraffe or a kangaroo or a crocodile sleep? And how do they sleep? And then finally, we both thought, Cliff and I, it'd be great to write about ocean creatures. So we developed the book, *Where Do Ocean Creatures Sleep at Night?* So where does a whale sleep or an octopus? or a shark. Each of the animals are portrayed at the beginning of their section with the kind of activities they do during the day and then how they sleep at night. It emphasizes that when these creatures sleep or rest or nap, if you will, they need to get their bodies strong. They need to get their brains refreshed. And it's the same thing with children. For children to grow strong, for the muscles to grow strong, for them to have the energy to face the next day and learn, they need to sleep as well.

Katie Stone: That's Stephen J. Simmons, and along with his son Clifford Simmons, they've just published *Where Do Ocean Creatures Sleep At Night?* It's part of their *Animals Sleeping* series. You can find links and more information at childrenshour.org. Look for this episode's sleep. And stay tuned, Max from our Kids Crew has a review of this book. But first, this is William Shatner, right here on The Children's Hour.

{Music: William Shatner: Where Would The Animals Sleep}

Kids Crew: My name is Max and this is my book review. This book is called *Where Do Ocean Creatures Sleep At Night?* Author is Stephen J. Simmons and Clifford R. Simmons, illustrated by Ruth E. Harper. Published by Charles Rich. What is this book about? This book is about how sea animals sleep underwater. It is a book of poems for kids. It is a very short book. I like the illustrations, they look very real. The octopus is my favorite. In this book, you can learn how animals underwater sleep, rest, and hide. My favorite fact from this book is the parrot first sleeps in a mucus cocoon. There are two other books in the series. *Where do creatures sleep at night?* And *where do big creatures sleep at night?* I think this book is for ages 7 to 10, but it can be enjoyed by everyone.

Katie Stone: The book is called *Where Do Ocean Creatures Sleep At Night* by Stephen J. Simmons and Clifford R. Simmons. It's illustrated by Ruth E. Harper and published by Charles Bridge Press.

{Music: The Relative Minors: Most of what We Do is Sleep}

Katie Stone: That was The Relative Minors and that's all the time we have for The Children's Hour. Find a full playlist and teacher tools and more to learn at childrenshour.org. Look for this episode's sleep. I'm Katie Stone. We'll catch you next time for another edition of The Children's Hour.

Kids Crew: The Children's Hour is produced by The Children's Hour Incorporated, a New Mexico non-profit.

Kids Crew: You can find photos, links, learn-along guides, and more about us at childrenshour.org.

Katie Stone: Today's show was written and produced by me, Katie Stone, with production help from Sarah Gabrielli and Thaniel Lentz. Our shows are recorded at Outpost by Chad Scheer, and our learning tools were created by Ronnie Reynolds.

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Kids Crew: We post our photos and more on Instagram and Facebook.
Find us at TCH Radio.

Kids Crew: Our theme music was written by C.K. Barlow.

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