Episode 37 – Stuti Jaiswal: Improving sleep health with wearable devices

Drew (00:07):

Hello everyone and welcome back to Science Changing Life with me, drew Dublin. Today we have woken up to be discussing the importance of sleep for health and disease and many of the issues surrounding getting a good night's slumber. I'm joined with physician scientist Stuti Jaiswal, who is part of the digital clinical trials team. She's studying how fitness trackers and other wearables can be used in sleep medicine as well as in our personal lives to help understand sleep better and inform any future interventions. So let's join Stuti as she describes how the passion for neuroscience and the care for her patients made her the sleep expert she is today.

Stuti (00:44):

It's hard for me to remember a time where I didn't really have science as a really big interest, and as I got into high school, it got even bigger. When I got to college, I wavered a little bit and I, I thought I might do business and go to like finance and all this, but I think I was even more solidified after taking more and more sort of biochem classes. And I loved neuroscience. I took one neuroscience class and I was just, I was addicted <laugh>. So, so yeah, I mean, hard to think about if there was a really early turning point for science, but definitely just something that feels like it was ingrained for a long time.

Drew (01:18):

Well, that's interesting that you were so, uh, interested in biochemistry and neuroscience. So then when did the interest in sleep come in?

Stuti (01:27):

So, it's funny, I took kind of a, almost a circuitous route to get to where I am. I got into neuroscience, I was doing neuroscience lab work, and then I got into sort of the PhD program and I was going that road, ended up getting in a medical school right around the same time and I ended up doing a really pretty basic science PhD between my second and third year of medical school. And I loved the basic science research. I thought that I would not practice clinically, but I got to my third and fourth year and I loved taking care of patients, like loved taking care of patients. And it was hard to find a spot in medicine that I thought, you know, really fit with neuroscience and, and the things that I like to do clinically and the things that I like to do in the lab.

(02:13):

So I ended up becoming an internist and a hospitalist specifically. And sleep is one of those things that is really, really difficult for patients and it links really back to core neuroscience principles and a lot of things that we don't know in neuroscience relate to sleep medicine. So from a patient perspective, both in an ambulatory setting as well as an inpatient setting, sleep has been really important for the patients that I take care of. So that was probably the biggest thing that got me interested in sleep. So a lot of the things that we think about in sleep relate to many aspects of health, some of them still in brain science and others sort of just in health and human body in general.

Drew (02:51):

Yeah, I was gonna ask you, I mean, sleep just seems like one of this huge, uh, pillars of health. So I mean, can you, you speak to just how important it is and what some of these issues around sleep are and the connection to, you know, overall health and, and sort of, um, disease as well?

Stuti ([03:08](#)):

I think sleep is becoming, it's become so important, right? And the more and more that we understand about it, the more and more we realize that it's related to so many different aspects of our health. So that's probably one of the most interesting things about sleep, right? There's so much unknown about it. I would say as a medical student and as a, you know, medical resident, we don't get a lot of sleep as it is. And I sort of feel like that's where <laugh>, you know, it start, you start to feel the effects of it, right? So you know, as a person when you're not getting enough sleep that you are not at your optimal function, right? You feel like, I can't really think clearly I'm sluggish, you know, maybe I have more aches and pains than normal. Maybe you even feel like metabolically you're not functioning as well.

([03:49](#)):

Maybe you think you're, oh, I'm like putting on weight. I don't know. And what we're finding more and more is that when people do the research that what we fear when we lack sleep is probably fairly true. So, um, it impacts your heart, it impacts your blood vessels, it impacts even how you think. So there's been new research that suggests inadequate sleep or not sleeping enough may actually increase your risk for dementia down the line. So all this stuff that we sort of feel when we're sleeping, when we're not sleeping well, I think research is really starting to show that yes, this is really incredibly important for people and for specific health problems now, not just on how you feel.

Drew ([04:27](#)):

Right? And you just brought up the clinical setting and it's, it's sort of depressingly ironic that the people who are supposed to be safeguarding our health right, are getting some of <laugh> the worst sleep. I mean, is that still the case? Have you seen any, um, shifting in the tides there?

Stuti ([04:44](#)):

I think so. So actually, um, oddly enough, I work as a nocturnist. So my hospital shifts are primarily at nighttime. I rarely do days. So I think I see the worst of both in a way. So the patients who cannot sleep in the hospital, I have patients who are 85 who've never taken a sleep medicine in their life begging to be placed on one people who are awake all night, not only because of their own illness, but because of, you know, just the hospital environment being incredibly busy, you know, a lot of care being provided even at odd hours, um, you know, your antibiotics have to be given on a certain schedule, right? So I mean, you get woken up. I mean, your clinical care comes first over your sleep in a way. In terms of errors, I think we have made a difference.

([05:27](#)):

And I, so in terms of patients, you know, we see that, but also, I mean, nurses are exhausted, physicians are exhausted. You know, you're not thinking as clearly at 3:00 AM no matter how much sleep you tried to get during the daytime. So there is a lot of, you know, concern on shift work, right? So people who work night shifts not only on their own health, but how are they taking care of patients? I think some of the improvements that we've made in that regard are the length of shifts that we make trainees work. So if you're a medical student or a resident, there are now limits that are placed on, on the number of hours that you can be in the hospital. So I think that has been an important change and my understanding is that has improved sort of the errors that, that are associated with that. But I think, you know, I tell colleagues who take over care in the morning to always just, you know, double check or make sure that, you know, we've, we've done everything right in the middle of the night, so have to sort of be extra alert. I feel like in a way,

Drew (06:20):

I dunno if you know this, but my background is actually, uh, circadian rhythms. So

Stuti (06:24):

Really? <laugh>.

Drew (06:26):

Yeah. It's actually been interesting seeing that recognition of sort of what people are calling chronotherapy, right? You know, can we time medicines perhaps, uh, in a better way in the clinic or at least adjust the lighting schedule so people can sleep better. So it's interesting to see how the science maybe butts up against some of these like logistical challenges.

Stuti (06:46):

Yeah, and I think it's also stuff that what's, you know, we really wanna try and apply to patient care, so I'm also very interested in sort of the inpatient sleep setting, but you know, can we change things like the, you know, the light, uh, during the daytime, the amount of light and nighttime. So one of the studies that we did in the hospital was, you know, how much light and sound are patients exposed to both during the day and during the nighttime. And you know, it's just such a low level of lighting in the hospital at nighttime, it's barely probably office lighting and for your own circadian rhythm, it doesn't keep you on track and then you end up with other hospital problems like delirium if you're an older adult or just not being able to think as clearly, you know, as a patient and focus on your own care. So circadian rhythm stuff is really, you know, I feel like, uh, playing a bigger role in more and more things in the inpatient setting and maybe in the outpatient setting too.

Drew (07:35):

Sure. And then, yeah, moving away from the clinic then and sort of the broader public, it strikes me that people really aren't sleeping as much perhaps as they were used to. So do you feel like that's the case? You know, how much sleep do we tend to get on average as a nation, and do you know why there has perhaps been a, a decrease in sleep if that's the case?

Stuti (07:56):

Yeah, I really feel like there's at least a decrease in perceived sleep, but I think if you look back at, you know, to like the 1960s, I think there's actually been some data that's been published on, you know, are we really losing sleep as, uh, you know, as a society now that we're kind of getting into this, you know, I mean, we're working 24/7, right? I mean, people are working through weekends, people are working late at night, you know, and our, our social lives also sort of take over and really, I don't think the objective data supports a huge loss of sleep, but I definitely think people feel they are not sleeping either as well or as much as they were before. And for adults, most sleep societies recommend on the order of seven to nine hours of sleep per night. And I would say about 60 to 65% of the population generally meets that, and that's based on people who report their own sleep and also studies that we've done based on sleep measurements that we've tried to take.

(08:50):

But that leaves about 30% of our population that is at risk for short sleep duration. But yeah, I think as a society, I, I think what's problematic is that we don't feel like we're sleeping well <laugh>, you know? And, and why is that? So, and that kind of goes to, you know, the, your sleep quality, you know, like how

are you, how do you feel like you're sleeping? And that can be different for every different person, right? I mean, we, you and I can maybe get the same amount of sleep each night, but have a different perception on how we feel like we slept.

Drew (09:16):

Yeah. Got it. That's fascinating. And so in terms of the measurements then, I understand you and the team at the Translational Institute have sort of come up with this novel approach, uh, to study sleep. So can you perhaps sort of talk about that broadly and what it is you're looking at?

Stuti (09:33):

Yeah, and so I think, um, traditionally when we think about how we measure sleep, I think people might think about a sleep lab, right? So a person sent into a very clinical setting, they're hooked up to multiple different wires and cannulas. They've got, you know, an EKG, they have stuff on their forehead, they have, you know, pipes going into their nose. I mean, it's very, you know, it's, it's elaborate and you can't do that at home, right? So if you get like a sleep measurement, you had to go somewhere else that was a sort of a measured. So most of the stuff in terms of sleep that we know has been self-reported. So it's people saying, oh yeah, I think I sleep this much, or this is how much sleep I got you based on sleep diaries or basically just patient report. Um, but what's been really interesting, I think since we have integrated accelerometry technology into almost everything that we have, we've been able to get these passive measurements of sleep data.

(10:26):

So accelerometry is basically what's built into your Fitbit device or your Apple watch, or even your phone. People are building them to stickers you can put on your forehead, you can have an accelerometer in a mattress. I mean, you were able to really now pick up and detect these, uh, activity changes between day and night. And we can get a general sense at least of what people are sleeping, uh, in terms of their duration and maybe, you know, how much they're awakening at night and what time they're in bed and what time they're getting out of bed. So the, you know, the data that we get from activity trackers isn't really, it's not polysomnography, right? So it's not the gold standard measurement of sleep, but it gives you a pretty good idea or pretty general view of how people are sleeping from an objectively measured way.

(11:10):

So we're really trying to harness that type of objective information that is out there in the population already, and we're trying to bring that into the research studies that we do. So, you know, these are really passive measurements. The participant doesn't really have to do a whole lot, right? I mean, they're just wearing an activity track where they're probably, they're not putting too much thought into it for the most part in terms of how much did I sleep, right? They're not having to report that they're just getting a measurement. So we're really trying to harness that data that is out there, uh, kind of in really large quantities <laugh>, um, and bring that into the clinical questions that we have regarding sleep and whether there are similar questions to, um, what has been previously answered with subjectively reported sleep or, you know, new questions now that even surround, you know, how we think and or how um, how our sleep impacts how we think or, you know, cardiology, um, related outcomes or even obesity related outcomes.

Drew (12:04):

For sure. And in these large scale data studies then, are you looking across sort of the whole population? Are you just looking at healthy people or people with sleep issues already or other, uh, health problems?

Stuti (12:15):

I think it's a good question, right? Because who signs up for a sleep study <laugh>, right? Is it someone who sleeps just fine or is it people are, are, are they people who have trouble with their sleep and they want to know more? So it is a question that we have, but I think some of the data that we're able to get, um, is so large scale that it covers a really broad percentage of the population, right? So our goal in that is, we'd like to break it down though in terms of are these people who are having trouble with their sleep and when we pull them into a study, we're able to survey them on what they feel like is a problem. So some people, people will tell you if they feel like they have a sleep problem or not, so then you can start dividing it out into, maybe this is a question we're gonna address for people who have insomnia, you know, obesity in this particular group of individuals.

(13:00):

So there's a lot of data to be had. So <laugh>, anybody who wears a Fitbit or anybody who has like a, you know, Apple device or whatever it is, any activity tracker, we, we, um, we're hoping to capture larger and larger groups of people to be involved in these studies. Um, especially trying to attract people and um, trying to get people into the study who, um, may be underrepresented. Right? Well, a lot of times we have such difficulty capturing what is going on in more, uh, underrepresented areas of medicine. So it would be nice to at least get these studies out there onto a really broad degree to include as many people as we can.

Drew (13:37):

And you just mentioned these fitness trackers having a sort of broad idea of, of what someone's sleep is like. And uh, that was actually gonna be one of my questions. I mean, do we know how accurate these things are and how do they work? Is it based on activity? Is it heart rate, is it other things that these trackers can measure?

Stuti (13:55):

Sure. So I feel like, uh, I I, I have a Garmin device now and I feel like it tells me things that I never even thought to ask about my own health <laugh>. And I dunno, sometimes I, what tells me like what my mood has been and I just, you know, I dunno how these companies kind of come up with these algorithms, but so the way these devices work, um, it's actually the base technology and all of them is a fairly old technology based on accelerometry. So an accelerometer is basically, um, it takes the movements in either your wrist or your hip or depending on where you place it, it can put it in many different places. But it does measure activity. So in a certain period of time, say in a 15 second or a 30 second period, it measures how much activity was, um, recorded in that minute or in that period of time.

(14:38):

And then that's sort of tracked over the course of the day. And then it's the, these devices are able to have algorithms that can compare when there's the longer period of inactivity compared to when there are larger periods of, of activity and it measures it based on multiple regions around the particular time in question. So that is probably the most base level just based on the activity technology that we use. And that gives us the idea, or at least gives us a sense of the amount of sleep, people get so sleep duration, and then now we are adding in heart rate to some of these devices. And that more so is trying to get it sleep staging information. So the newer Fitbits and the newer activity trackers, a lot of that

when they're including heart rate and heart rate variability in those measurements, they're trying to get it a more complex measurement of sleep, but you don't need very much just to get the, you know, general gist of how a person is sleeping throughout the day.

Drew (15:31):

And those stages of sleep, is that what we mean by sort of sleep quality then? If you're getting the right sort of cycling between, you know, different stages and does that relate to maybe when you dream versus if you're just in sort of a deeper rest state?

Stuti (15:45):

Yeah, so I mean, I think to sleep quality can be a really subjective thing, but part of it can be based on the, you know, the proportion of deep sleep or rapid eye movement sleep (REM) that you're getting. So when you're thinking about dream stay, you're thinking more so like the rapid eye movement sleep. So yes, those devices are trying to capture those periods. And so I feel like the technology on that is getting better and better, but also is still more so under investigation for applying to more research based studies or kind of the sort of that research grade technology that we use. But I do think some of the quality, um, metrics that you might get from the devices that people use are based on that, you know, how much rest did you get in REM? When was that? You know, how long was your deep sleep period? So it it is it definitely being used for those quality metrics that I think people get, like a sleep score or some things like that on those devices.

Drew (16:36):

Do you ever see sort of disparities between what the data might say on your watch versus how you feel? Because you might wake up feeling like, oh, I feel really well rested, <laugh> your tracker and it's like you're all in the red with these scores. <laugh>? Yeah,

Stuti (16:51):

No, <laugh> totally <laugh> and I think people sometimes tell me, uh, you know, my, my Fitbits said I only got four hours, but I feel fine. You know, <laugh> and I think that really goes to, you know, how you feel like you slept is totally subjective and different between two people, right? I mean you could have somebody who, you know, slept eight hours last night and was awake three times and one person might say like, oh, I only got eight hours, I woke up three times last night and I just could not get back to sleep. And somebody else might be like, oh, I was a sleep for eight hours, I only woke up three times. <laugh>, you know, so you could have the same sleep pattern and you feel differently. I will say this, I think having like a fully charged device, uh, is actually really important on that measurement.

(17:32):

I have had people who I think, uh, you know, when their battery is really low, I do wonder about that sleep measurement. Sometimes I wonder if that's what's going on for, for people in there. But I think there's a natural discrepancy between how people feel like they sleep and what their devices might measure, what we might measure. And both of those are really important, but some of the studies show that the objective measurements are what are linked to more health related outcomes. So, you know, how you feel you sleep isn't necessarily been shown in some certain studies to link to the health outcome that was studying. But the real measured sleep was what? Um, what related.

Drew (18:07):

Oh man, that's even more depressing. <laugh>, because you might think, oh I don't need to do a sleep study. I, I always sleep great. And then it's like, oh, maybe I'm not.

Stuti (18:16):

<laugh>Yeah, no, I mean that's important to know, like, you know, maybe you feel like you run fine on four and five hours of sleep, but you know, studies will suggest that actually no, your outcomes are if you truly your sleeping four or five hours, your health outcomes are not, um, they're linked more so to that short sleep instead of how you feel you sleep.

Drew (18:33):

And something else that strikes me with patterns in sleep is, uh, when people get older perhaps maybe they sleep less or the sleep becomes sort of fragmented with age. So do you know why that is and is this something you might be measuring too?

Stuti (18:47):

Yes. So, um, how older adults sleep is a really big area of interest for us. And yes, your sleep patterns certainly change over time. Your sleep stages sort of get more consolidated and you need less time to get through all of the cycles of sleep that you need. So people and older adults tend to have sort of a natural predisposition to have less sleep in general. Uh, there's also, um, health related issues and age related issues can make you wake up more at nighttime. Um, so whether that's pain or, you know, adults with like prostate issues or even um, even like anxiety and depression, all those things sort of, you know, relate to how you sleep. But older adults do, um, tend to have more awakenings at nighttime, um, which can, um, impact how they sleep. There's also been some studies that are kind of interesting that show that impaired sleep early on. So if you are someone who has a lot of sleep impairment, it may actually be early sign of like a cognitive issue, so like a dementia related issue or Alzheimer's related issue. So there's some we're not totally sure, sure. What comes first, you know, is it the sleep related, is it the sleep problem that comes first that may relate to dementia? Or is it an impaired sleep as an early sign of dementia? There's still some, you know, back and forth about that and the data. We're still working on some of those questions.

Drew (19:58):

Something I'm interested in hearing from you, because you said you were a nocturnist, is, is the timing of sleep as important as say like overall duration? Because people have sort of, um, different habits, right? With, you know, whether they are a early riser and they go to bed early versus if they stay up all night and then sleep in?

Stuti (20:19):

Yeah, yeah. So there, there's a lot of question surrounding that I feel like I, I don't wanna bring, like I feel like this is a positive podcast <laugh>, but I feel like I'm gonna, I feel like I'm gonna bring like this doomsday view, but really, uh, the time when you get your sleep is actually really important. So I mean if you take the, um, idea of shift workers, so if you think of, say for example nurses that might work night shifts, it's the more night shifts that you work in in a month, like your outcomes for cancer are far worse. Like so including like breast and GI um, cancers. So they did this, uh, study for women, I was in the nurse's heart health study some time ago and they tracked how much shift work these participants were getting, how much sleep they felt like they were getting in the day.

(21:02):

And the timing of your sleep is important. So that circadian rhythm, that matters <laugh>. So I mean, trying to catch up in the daytime, you don't really get that same type of sleep when your circadian rhythm is totally thrown off. So there's been, um, some interesting research even done at Scripps Research that's talked about sort of metabolic and cellular level changes that are important based on the timing of when sleep occurs. So there are things that just happen in your body that during the time of day that you need sleep for those cellular activities to function properly. And then when we talk about also, um, so duration, I would say, so if you're kind of just thinking about people who sleep at nighttime and not thinking about sleep, people who sleep like shift work, people who sleep during the day, um, and are awake at night, um, duration matters is probably the most.

([21:48](#)):

So just thinking about the general population, so how much sleep you get in a day, whether you get like a nap in the, in the morning and seven hours of sleep, the total amount of sleep duration you get matters. What we're also finding is that people who maybe have like less sleep during the weekdays, maybe there are six hour sleepers on the weekday, but maybe like a eight or nine hour sleeper on the weekend, those individuals also have maybe are, are linked to more, um, worsened health outcomes. So your sleep variability or how regular your sleep is also matters. Um, maybe not as much as duration matters, but the irregularity does matter.

Drew ([22:25](#)):

Oh, so try and keep a regular schedule then. Yes,

Stuti ([22:28](#)):

<laugh> definitely. Um, so I think the people who, who we think probably do best, and this is still stuff that we're studying and working out for different outcomes, but people who probably do best are the ones who get maybe exactly seven and a half hours every night. So, you know, people who are trying to catch up or get extra sleep on the weekends might actually be doing themselves a disservice. But again that's assuming that you're having a good sleep duration at minimum on those weekdays.

Drew ([22:52](#)):

Yeah, I thought the most recent data I had seen was that uh, that rotational shift work seemed to really be really, really bad. Like it wasn't just, um, if you are flipped and you, um, only sleep in the day, it was like if you are constantly going from day to night, day to night, and you can never really adapt in a way.

Stuti ([23:09](#)):

Yes. Yeah. And then you think how many people really are awake in the daytime though for 30 days out of the month, or sorry, sleeping during the daytime over 30 days out of the month. Right. People who do shift work, I mean, for the most part they do have that up and down, but yes, that has definitely also been shown to be problematic. So, cause I think it's just so few people who are, you know, truly fully nocturnal <laugh> where, you know, they spend 365 days out of the year sleeping, um, sleeping during the daytime, which I, I'm sure at that point maybe your circadian rhythm would shift, but, uh, most people, I mean we live on, on a social schedule, right? I mean children, family work, you know, I mean activities that happen in the day, I mean our, our life sort of forces us to be awake in the daytime for, for many different reasons.

Drew ([23:56](#)):

So I guess that bottom line then with, uh, the shift work that you just mentioned was, you know, just try and get as much sleep as you can if it's not an optimal timing.

Stuti (24:05):

Yeah, I think, yeah, you do the best that you can, right? I think overall, um, those shift work is probably one of the things that we're gonna have to work on or think about, um, ways to reduce for people overall. And again, it's sort of dose dependent, right? So the more that you do or the more transitions that you have, we think it's probably worse for you.

Drew (24:22):

So then do you use a wearable device to track your sleep? And, uh, if so, you know, what have you noticed and has it changed any of your habits?

Stuti (24:31):

I've gone through many different devices <laugh>, so, um, yes, and I think part of it is, um, my interest in sleep. Uh, so I'm not someone who I think, uh, sleeps poorly, so I, I didn't wear it for that reason. Um, but I, I wear mine at nighttime because of, for these reasons to check accuracy of devices and to kind of see what I like. And it does, it did actually change my habits quite a bit because it would tell me how much I was sleeping and I found I was, I thought I was getting a full eight hours of sleep, if not more, and my device was telling me pretty much every night I was getting, you know, five and a half to six and a half. And so I did really try and make sure I was in bed on time and you know, not waking up early.

(25:11):

So it did actually change my habits, which I think, you know, if you, if you're hyper-focused on it, that's not a great thing. But if you can get an idea of your own sleep, I think they are beneficial in helping maybe make some habit changes. Um, and some people are surprised to find, um, the number of hours they sleep. You know, people tell me like, I didn't, do you really think it's possible that I'm awake this many times a night? And yeah, I mean the truth is you might actually be having these, you know, small awakenings from sleep that you're not even aware of. So I think people do learn quite a bit about themselves, um, from that. And I do kind of hope it changes people's habits. You know, I changed my own, um, to a degree and I learned some surprising information. So I think, um, I hope, I hope others are the same <laugh> I'm not. Yeah. What about you, have you made any changesto your sleep?

Drew (25:56):

I don't use one of the wearables, but I've definitely had issues in the past with trying to get to sleep, um, not being able to get back to sleep if I wake up. And I think for me, as with perhaps a lot of people, it's sort of a lot of times tied to maybe, you know, stress or, you know, constantly thinking about things. And I think sort of trying to be more mindful in the day and and de-stressing, I think has helped a lot with at least my <laugh> perception of how our sleep.

Stuti (26:27):

Yeah, no, I mean I, I think, uh, I think that information helps you, what, I mean, I, like I said, I think the hyper focus on it is, um, not super helpful, but I think just getting a general idea of where you are to make some broader change.

Drew (26:40):

It's funny you said some of the devices you've used give you sort of metrics around mood and things like that. It's funny how much data they have. Have you found those extra piece of information to be accurate or useful?

Stuti (26:52):

I think, uh, the one, uh, that's alarmed between the most is stress. Like at the, one of my, one of the devices is, uh, like reading how much stress I have. And I think, uh, if that's true, then I probably need to make some lifestyle adjustments <laugh>. Uh, but I do think for the most part I, it does kind of get a sense of, um, yeah, I, I think to some degree it might be accurate. Uh, you know, at least the stress piece. Like it kind of tells you like over the time of day and I'm like, well, you know, I guess like if I think back on it, that's probably true. So I don't know how they're doing it and it's probably has quite a bit to do with, um, you know, the heart rate and activity potentially, uh, that it's picking up. But, um, uh, or maybe like how anxious your wrist movements are while you're awake. I don't know. But I think, I think it's fascinating the information that, um, these wearables are able to potentially give us.

Drew (27:43):

Yeah, I feel like with some of them, with the heart rate measurements, it looks like you've had some intense bout of exercise and you've just instead been sitting in traffic <laugh> or nervous for some meeting.

Stuti (27:54):

It's so true. I mean, you're like, why is my heart rate 115 <laugh>? Um, no, and it's, you know, what I also found is, um, uh, I, I think I was sick and it wasn't a covid related illness, but it was just like a respiratory illness, but like my heart rate was high for probably a couple days after that and I was, I was like, you know, am I really dehydrated what happened? But I think it gives you a sense of maybe your own recovery from illness just in some of these different ways. So I don't know. I feel like, um, and also more and more devices are kind of providing, um, oxygen sensing, uh, and I mean I think that's really important for sleep and sleep apnea in the middle of the night.

Drew (28:29):

Yeah, that sleep apnea is a good one. That's, god, that's scary. That's like a silent killer, isn't it? That one.

Stuti (28:35):

A little bit, yeah. <laugh>, um, unfortunately, and especially for men, there's a much higher propensity, um, for men to have sleep apnea at least until women hit menopause. So estrogen for whatever reason, is fairly protective, um, against sleep apnea. So young men who are overweight, uh, what we see in some of the Fitbit and some of this like device data that we get back is younger men who are overweight have horrible sleep patterns. They have short sleep duration, terrible sleep irregularity. And, and what we suspect is these are, um, individuals who have untreated or undiagnosed sleep apnea and yeah, so kind of how we talked about earlier, um, sleep apnea is so important for many of the different, um, diseases that people are thinking about including diabetes, high blood pressure, cardiac disease, including both arrhythmia and coronary artery disease.

Drew (29:24):

Yeah, that scared me as well, learning about, um, not just overweight, but I know, you know, a few, uh, guys who've talked about it and they're, you know, fit guys, like muscular, but they've got a lot of mass up here and even that is causing the, the sleep apnea issues.

Stuti (29:40):

Yes, absolutely. So I mean, even your jaw architecture, right? I mean, you could have a totally normal weight and just how your airways are built may predispose you to having sleep apnea. So yes, it's not only a diagnosis for people who are necessarily unhealthy, um, or even or obese or you know, however you wanna categorize it, but many different things can contribute to that. So people you don't expect to have sleep apnea can certainly have it as well.

Drew (30:05):

All right, so moving away from the doomsday stuff, t <laugh>.

Stuti (30:09):

Oh no! <laugh>

Drew (30:13):

When you're not studying sleep, uh, what are some of your other hobbies sort of outside?

Stuti (30:19):

Um, I play a lot of tennis. I've joined some, uh, middle-aged ladies, tennis leagues. So that's been a lot of fun. I have a seven year old, we do a lot of things that he needs to do for school or whatever it might be. I read a lot still, which is a lot of fun.

Drew (30:37):

Favorite genres?

Stuti (30:38):

You know, I have a tendency to really like old, um, Russian literature, so I've actually been revisiting, um, uh, Anna Karenina has been the most recent one. And then, uh, I kind, I think I just like some of the classic literature. Uh, and then, uh, Persuasion came out on Netflix. I actually went and read that again, <laugh>, big Jane Austen fan. But, uh, I was probably not very exciting for your listeners, honestly.

Drew (31:03):

<laugh>. No, that's fun. I, you know what, I've had a few people tell me, uh, what they've been reading, so it's always actually kind of interesting to know outside of just scientific literature what people's tastes are.

Stuti (31:14):

Yeah. And I don't know why, but I find like that historical sort of, um, stories to be very relaxing. So <laugh>, I don't know, maybe it's because it's unrelated to anything else that I could possibly do, you know?

Drew (31:24):

Yeah. It's probably a good thing. Yeah,

Stuti ([31:27](#)):

I think so. I think everybody needs some way to sort of like decompress.

Drew ([31:29](#)):

Okay. Well maybe I'll just end this with my final roundup question. I'd like to throw all my guests, which is, if you could give one piece of, uh, advice or your golden wisdom to anyone in the realm of work, career progression, life, health, self-improvement, anything, what would it be and why?

Stuti ([31:46](#)):

I think, you know, in some ways, I have to say, I think adaptability is so important, right? And I think that applies to like, whether you're in your career, whether it's your life, whether you know, you've got family issues, whatever it might be. But I feel like our, our ability to adapt is basically what allows us to maybe function on a day-to-day basis, right? I mean, if we expect things to be the same or, you know, I mean, uh, you know, if you have, you know, if your kid has problems or you know, if your, your family has unexpected health problems, right? We've gotta be able to change for whatever situation comes for us. And I think, um, you know, I think back to, you know, all the science principles that we learn, right? I mean of, you know, just thinking about how organisms have evolved over time, the ones that have been the most adaptable and able to change, I think, um, tend to do the best.

Drew ([32:31](#)):

A great answer there. And in an ever-changing world, adaptability is the name of the game. A big thank you to Stuti today for sharing this innovative sleep research, and she's definitely made me consider tracking my own sleep more closely. In the show notes, you can find more information about ongoing sleep studies by the Digital Trials Center, as well as links to the Scripps Research Magazine and other content. Remember to subscribe and hit that five star rating if you haven't already, and look out for more episodes coming soon. Thank you as always for listening and sleep well.